ALASKA LNG

DOCKET NO. CP17-___-000

RESOURCE REPORT NO. 8

LAND USE, RECREATION, AND AESTHETICS

PUBLIC

DOCUMENT NUMBER: USAI-PE-SRREG-00-000008-000

RESOURCE REPORT NO. 8 SUMMARY OF FILING INFORMATION[1]	
Filing Requirement	**Found in Section**
1. Classify and quantify land use affected by: (§ 380.12(j)(1)) a. Pipeline construction and permanent rights-of-way (§ 380.12(j)(1)); b. Extra work/staging areas (§ 380.12(j)(1)); c. Access roads (§ 380.12(j)(1)); d. Pipe and contractor yards (§ 380.12(j)(1)); and e. Aboveground facilities (§ 380.12(j) (1)). • For aboveground facilities provide the acreage affected by construction and operation, acreage leased or purchased, and describe the use of the land not required for operation.	8.2
2. Identify by milepost all locations where the pipeline right-of-way would at least partially coincide with existing right-of-way, where it would be adjacent to existing rights-of-way, and where it would be outside of existing right-of-way. (§ 380.12(j)(1)) • This may apply to the offshore as well.	Appendix N of Resource Report No. 1
3. Provide detailed typical construction right-of-way cross-section diagrams showing information such as widths and relative locations of existing rights-of-way, new permanent rights-of-way and temporary construction rights-of-way. (§ 380.12(j)(1))	Resource Report No. 1 Section 1.3.2.1 and Appendix E
4. Summarize the total acreage of land affected by construction and operation of the Project. (§ 380.12(j)(1)) • This applies to the offshore as well.	8.2
5. Identify by milepost all planned residential or commercial/business development and the timeframe for construction. (§ 380.12(j)(3)) • Identify all planned development crossed or within 0.25 mile of proposed facilities.	8.3
6. Identify by milepost special land uses (i.e., maple sugar stands, specialty crops, natural areas, national and state forests, conservation land, etc.). (§ 380.12(j)(4)) • This applies to the offshore as well, where it may include oyster and other shellfish beds, special anchoring or lightering areas, and shipping lanes.	8.6.4
7. Identify by beginning milepost and length of crossing all land administered by Federal, state, or local agencies, or private conservation organizations. (§ 380.12(j)(4)) • This applies to the offshore as well.	8.5
8. Identify by milepost all natural, recreational, or scenic areas and all registered natural landmarks crossed by the Project. (§ 380.12(j)(4&6)) • This applies to the offshore as well. • Identify areas within 0.25 mile of any proposed facility.	8.6
9. Identify all facilities that would be within designated coastal zone management areas. Provide a consistency determination or evidence that a request for a consistency determination has been filed with the appropriate state agency. (§ 380.12(j)(4&7))	8.10
10. Identify by milepost all residences that would be within 50 feet of the construction right-of-way or extra work area. (§ 380.12(j)(5))	8.3.1
11. Identify all designated or proposed candidate National or State Wild and Scenic Rivers crossed by the Project. (§ 380.12(j)(6))	8.6.1
12. Describe any measures to visually screen aboveground facilities, such as compressor stations. (§ 380.12(j)(11))	8.14
13. Demonstrate that applications for rights-of-way or other proposed land use have been or soon will be filed with Federal land-managing agencies with jurisdiction over land that would be affected by the Project. (§ 380.12(j)(12))	SF 299 filed with the Bureau of Land Management (BLM), draft

[1] Guidance Manual for Environmental Report Preparation (FERC, August 2002). Available online at: http://www.ferc.gov/industries/gas/enviro/erpman.pdf.

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Filing Requirement	**Found in Section**
	Plan of Development (POD) will be filed concurrent with the Federal Energy Regulatory Commission (FERC) application
Additional Information Often Missing and Resulting in Data Requests	
Identify all buildings within 50 feet of the construction right-of-way or extra work areas.	8.3.1 8.3.2
Describe the management and use of all public lands that would be crossed.	8.5
Provide a list of landowners by milepost or tract number that corresponds to information on alignment sheets.	To be provided prior to the start of the DEIS
Provide a site-specific construction plan for residences within 50 feet of construction.	To be provided after the Final Environmental Impact Statement (FEIS) but prior to start of construction.

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BLM	9/26/2016	The location of compressor stations and supporting infrastructure can have long lasting impacts on the recreation community due to their changing of the visual landscape due to structures, sound of equipment and influence of light on the night sky. In the short term, man-camps will have similar impacts if not well managed and situated.	See Sections 8.14.2.2 and 8.15.2.2 for impacts and mitigations for Aboveground Facilities.
BLM	9/26/2016	The colors, shapes, locations, used for the short term (man-camps) and long term infrastructure needs to be carefully selected to best minimize contrast to the landscape from proposed surface-disturbing activities. The objective is to protect the scenic values of lands within the proposed area of the gas line as well as the man-camps used during the construction phase of the project.	The Applicant will address this comment prior to the initiation of the Environmental Impact Statement (EIS) process.
BLM	9/26/2016	In recent years the location of mineral sites has proven to have adverse impacts on recreation users and commercial recreation permittees (Special Recreation Permits). Hours of operations at mineral sites (gravel pits) should be limited to with no activity after 8 PM or before 7 AM. Consideration to non-operational activities needs to be considered. Maintenance on equipment should not impede the soundscape or experience of the recreational users.	The Applicant will address this comment prior to the initiation of the EIS process.
BLM	9/26/2016	The linear formation of a gas line with the gravel pad may be more visually intrusive than the current TAPS line. Where possible, use of natural vegetative breaks between the roadway and the gas line can break up the linear appearance of the gas line and provide the public with views of the region more indicative of the natural state of the environment.	The Applicant will address this comment prior to the initiation of the EIS process.
BLM	9/26/2016	Service roads connecting the highway to the gas line can be oriented in such a way as to reduce visual impacts. The angle of services roads to where they intersect the highway should be considered and key observation points recorded to best determine the orientation of these access roads.	See revised text in 8.14.2.3.
BLM	9/26/2016	The lack of background sound-scape data is evident throughout the proposed area of the project. Areas away from development nodes (per the BLM Utility Corridor Plan 1991) are of greatest concern for impacts from gas line project created sound. At present, the location of the compressor station at Tea Lake would in all likelihood create a constant sound scape impact on users in the Galbraith Lake area for many miles around. Relocating this proposed compressor station to an area using natural topographic land breaks between the compressor station and Galbraith Lake could reduce or alleviate these impacts.	See Section 9.43 of Resource Report No. 9 and Section 10.2 of Resource Report No. 10.
BLM	9/26/2016	The Dalton Highway is the only maintained road in the U.S. that provides access to the Arctic, offering a unique opportunity for the public to see this region. From the Yukon River, the Dalton Highway travels north for over 400 miles through spruce-tundra lowlands, crossing the Brooks Range and the Arctic coastal plain to Deadhorse, Alaska and the Arctic Ocean. There are several recreation sites such as campgrounds and waysides that the driving public and tour companies use year round. Winter tours for viewing the northern lights, is a growing commercial activity. While the Dalton Highway corridor is recognized as a utility and transportation corridor, the Alaska Liquefied Natural Gas Pipeline proposal will alter the visual landscape with linear features and facilities.	The Applicant will address this comment prior to the initiation of the EIS process.
BLM	9/26/2016	The 1986 BLM resource management plan (RMP) determined that Dalton Highway corridor will be managed as a visual	Thank you for your comment and specific information on possible

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		resource class IV, which allows extensive modification of the landscape. There is a new RMP currently underway which may change the visual resource classification of the area and require more mitigation to reduce the visual impacts from this project proposal. The proposed pipeline and associated temporary and permanent facilities will have visual impacts to the casual user driving the Dalton Highway.	changes to Visual Resource Management classes for the Dalton Highway/Utility Corridor in the Central Yukon RMP currently in the alternative development phase. The Applicant will monitor the development of the Central Yukon RMP and Visual Resource Management classes for the Utility Corridor and may comment on the Preliminary Alternative Concepts.
BLM	9/26/2016	Permanent Facilities - This project proposes to bury a 48" diameter pipeline and clear a 100-foot wide path during construction. Upon completing construction, a 75-foot wide gravel pad and occasional above ground gate valves with access roads will remain. Revegetation and gravel pad maintenance is not proposed, although access to maintain pipeline gate valve facilities would be maintained.	The project proposes to bury a 42-inch diameter pipeline in a construction ROW that will vary in width across the terrain. A permanent easement of 53.5 feet will be maintained for operations.
BLM	9/26/2016	There are three permanent compressor station sites proposed that will affect BLM- managed lands near Galbraith Lake, Coldfoot, and the Ray River sites. The sites include clearing vegetation for 800-feet by 1200-feet, a 700-foot by 1000-foot gravel pad, multiple building (heights unknown), a 40-foot high communications tower, lights, fence, helipad, and access road. The current proposed sites are within 1000-feet of the highway and are expected to vent water vapor and emit a "humming sound" at approximately 55 dB during normal operations.	See Section 9.43 of Resource Report No. 9 and Section 10.2 of Resource Report No. 10.
BLM	9/26/2016	Temporary Facilities - Construction is expected to take 4-5 years with several temporary work camps and storage areas proposed. These camps will have structures and facilities for worker lodging and dining, compounds for equipment and material storage, and maintenance. These areas will have frequent noise, lighting, vehicle traffic, dust, and other activities consistent with an active construction camp.	The Applicant will address this comment prior to the initiation of the EIS process.
BLM	9/26/2016	There are several mitigation measures that can be used to reduce the visual contrast of man-made modifications to the landscape. -Locate permanent & temporary facilities to reduce summer & winter visual impacts to local communities, recreation sites, and the casual highway user. - Use of vegetation screening whenever applicable to "hide" or screen the facility site from casual view from the highway and recreation sites. - Paint buildings and structures to blend into the background, usually a compatible earth tone color that is 1.5 to 2 times darker than the background color. - Require all lighting to be shielded and directed downward to reduce light scatter and glare. - Angle or "dogleg" the access roads so that there isn't a straight-line view to the facility entrance. - Allow some revegetation of the pipeline pad to reduce contrast and blend with the surrounding landscape. - Gravel pits and material sites need to be screened from local communities, recreation sites, and the casual highway user. Rehab should include recontouring and revegetation of the site. - Temporary camps and material sites should be rehabbed and include recontouring and revegetation of the site. - Monitor long-term operation of the Compressor Stations to determine if the vapor emitted is adversely affecting the highway traffic through increased ice fog, road surface icing, or other factors. - Monitor operation of the temporary sites and permanent facilities to	For BLM managed lands, the Grant of ROW will include a discussion of BLM's stipulations. The Applicant will work with BLM during development of the ROW Grant.

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		determine if the lighting is adversely affecting residential, recreational, or commercial users, and if there is a reduction of dark sky visibility. - Monitor long-term operation of the Compressor Stations to determine if the noise level is adversely affecting residential, recreational, or commercial users.	
BLM	9/26/2016	Comments on Wildfire Management: The proposed pipeline runs through an area where large, severe, stand-replacing, lightning-caused wildfires are the natural fire regime. In general, the strategy is to allow fires to burn as they would naturally in areas away from human settlement and put them out where human settlements exist. Please address the following in a Wildfire Management Section: 1. Effect of the project on Fire Ecology: eg. The land clearing of XX acres of land associated with the project will likely obstruct fire spread in areas of Limited and Modified Fire management. The effect is expected to last XX years or remain indefinitely. This is either a cumulative effect with other rights of way or not, depending on the final route.; 2. Effect of the project on Fire Suppression: eg. The project design is such that it will or will not require protection from wildfire. Estimated cost is XX this will be paid by XX. Address the pipeline as well as associated infrastructure and man camps for construction phase. Ideally, the project would be designed such that it did not require protection from wildfire, if this is not possible, the need for suppression should be communicated in advance to the land management agencies. In areas of Limited and Modified Fire management, it would be particularly important to address this since the general strategy is to allow wildfire in those areas. ; 3. Effect of the project on Fire Suppression: eg. Firebreaks created by the clearing of XX acres of land will assist with fire suppression in areas of Critical or Full Suppression. The effect is expected to last XX years or remain indefinitely. ; 4. Effect of and potential for human caused Fires: eg. Those responsible for human caused fires will be held liable for associated costs, including but not limited to, suppression costs and resource damage costs. List any potential design features such as fire suppression tools, spark arrestors on small engines, etc	The Applicant would develop wildfire management plans prior to construction and would follow, as appropriate, the guidance for implementation of federal wildland fire management policies outlined in the 2016 Alaska Interagency Wildland Fire Management Plan that (BLM 2016). A draft fire prevention and suppression plan is provided in Appendix G of Resource Report No. 8.
BLM	9/26/2016	Comments on Wildfire Management : 5. TAPs has a bit of a summary on Wildfire Management in the renewal FEIS. Basically they describe the Fire management plan, the roles of jurisdictional and protection agencies and state that the pump stations would need more protection than the rest of the pipeline. In practice, they seem to be more concerned about something falling and hitting the pipeline (either as a result of structural damage from burning or suppression operations) than heat from the actual fire: http://tapseis.anl.gov/documents/index.cfm Probably worth taking a look at their approach. Some helpful resources: Alaska Interagency Fire Management Plan: http://fire.ak.blm.gov/content/admin/agencyadministratorguide/Appendices/Appendix%20B%20-%20Alaska%20Fire%20Management%20Plans/01.%20AIWFMP/2016%20AIWFMP.pdf Fire management options map: http://fire.ak.blm.gov/predsvcs/maps.php	Because the pipeline would be buried across federal lands, concerns about equipment dropping on the pipe are moot for this design. The Applicant would develop wildfire management plans prior to construction and would follow, as appropriate, the guidance for implementation of federal wildland fire management policies outlined in the 2016 Alaska Interagency Wildland Fire Management Plan (BLM 2016).
EPA	9/30/2016	We recommend that induced development and land use changes associated with the overall project be evaluated for areas of the North Slope, Nikiski on the Kenai Peninsula, along the mainline corridor and other locations in Alaska. Land use changes could include an increase in infrastructure	See Section 8.2.2 for land use in the project area and Section 5.4 of Resource Report No. 5 for potential project socioeconomic impacts. Note that workers will be

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		development, residential, commercial, industrial and recreational development. We recommend the relevant Reports evaluate the population increases associated with the addition of workers for construction and operation of the project and the subsequent effects on land use in the surrounding areas.	housed in closed construction camps.
EPA	9/30/2016	Environmental Justice (EJ) - The EJ information and analysis would be better suited in Resource Report 5. Socioeconomic Resources. Information regarding income, poverty levels, and demographics are provided in Report 5 and should eliminate redundancy of information between Reports. We recommend that the EJ analysis evaluate project impacts to human health of minority and low income populations. The information and data from the Health Impact Assessment (HIA), discussed in Report 5, should be used to evaluate EJ impacts. This is another basis for including the EJ section in Report 5.	The environmental justice analysis has been moved to Resource Report No. 5. The analysis includes an evaluation of project impacts to human health.
EPA	9/30/2016	We recommend including a map of Alaska that depicts the five boroughs and one census area, and the thirteen block groups and census tracks.	See Figures 5.3.7-1 and 5.3.7-2 as well as Figures 5.3.1-1 and 5.3.2-1 in Resource Report No. 5.
EPA	9/30/2016	We appreciate the inclusion of mitigation measures for potentially environmental justice impacts. We recommend the development of an Environmental Justice Plan to address potential project impacts from the construction and operation of the AK LNG Project. The EJ Plan should include opportunities for empowering local communities and groups, such as Nikiski and the gill net fishing groups, etc. We recommend involving communities in designing and implementing mitigation measures, strategies, and plans. We recommend that communities be involved with monitoring of the mitigation to ensure project success. We recommend that the mitigation strategies and plans include building community capacity and specifying the actions to be taken during the project.	See Environmental Justice impacts and mitigation measures in Sections 5.4.2.10 and 5.4.3.8 of Resource Report No. 5. The project team would enforce any FERC Order requirements specific to EJ communities prior to construction and/or operations.
EPA	9/30/2016	Induced Growth and Indirect Land Use Effects – We recommend that the Reports discuss and evaluate induced growth and land use effects associated with the overall project on the North Slope, the Nikiski area on the Kenai Peninsula, along the mainline corridor and other locations in Alaska. For example, the project would result in potential increases in natural gas production in Alaska (upstream effects) and potential increases in natural gas consumption in foreign countries (downstream effects). We recommend the Reports evaluate both the upstream and downstream induced growth and their impacts. Land use effects could include increase in infrastructure development, housing, industrial and recreational development, etc. We recommend the Reports evaluate the increase in population from workers for construction and operations of the project and the subsequent impacts to land use.	See Section 5.4 in Resource Report No. 5 for potential Project socioeconomic impacts; the Project Team has provided estimated direct and indirect (induced) changes in population, housing, and employment. Resource Report No. 5 also includes a fiscal impact analysis (see Section 5.4.3.7). Potential effects related to access are addressed in Sections 8.11 and 8.12 of Resource Report No. 8. Cumulative effects as a result of existing and reasonably foreseeable actions have been addressed in Resource Report No. 1, Appendix L, Section 4.0. Additional indirect effects are unknown, would be speculation, and are not required by FERC.
NPS	9/26/2016	There are only 3 KOPs for the Denali area (KOPs 28, 29, 30). NPS suggest others, including: from the park road at the turn to the post office (looking SE), from Government Hill, from the Mt. Healy and/or Rock Creek Trails, from the Triple Lakes Trail, from the railroad above Horseshoe Lake, approaching	Additional Key Observation Points (KOPs) near Denali surveyed in 2016 include: KOP M Grande Denali Lodge KOP L Denali Princess

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		the park road entrance from the south. Additionally, the KOPs and renderings will be more useful if they depict both alternatives in the same image. A video "fly over" simulation would be very helpful. There is reference to the visual impacts from a pipeline bridge over Lynx Creek in RR 10. That impact should be discussed and compared in RR 8 as well.	Wilderness Lodge KOP K McKinley Chalet Resort KOP J Denali RV Park and Motel Regulatory agencies reviewed and approved a list of potential KOPs in August 2015 and in June 2016 provided several additional locations that were surveyed in 2016. Local communities provided input during public meetings and open houses in the fall of 2015. Additional KOPs were added as a result of these consultations and the visual analysis at these KOPs was completed in July 2016. See Resource Report No. 8, Appendix L, Section 4.4 KOPs.
NPS	9/26/2016	There is a reference to backpacking, hiking, camping mountain climbing, but the impacts to the aesthetic resources in the impacted area would largely impact landscape/vista viewing, photographers, hikers, rafters, sight-seers, visitors at visitor center and on the highway and rails... while all of these activities do not technically happen in the park, it's important to recognize that the aesthetic experience for recreationists in Denali Park is impacted while both in and near the park. There should also be acknowledgement that in the pipeline might also create new recreation experiences by virtue a corridor in which to build a trail or other visitor facilities.	See additional language in Section 8.14 regarding potential construction impacts and mitigation measures on visual resources.
NPS	9/26/2016	A discussion of visual resource mitigations should include proposals to lessen impact on the character of the area, particularly if a Denali Route is proposed.	Mitigation measures to reduce impacts on visual resources are included in Sections 8.14 and 8.15, the purpose of which is to reduce impacts and preserve the existing character of the landscape. Visual resource analyses are not considered for route alternatives (according to Table 10.3-1 of FERC Guidance Manual for Environmental Report Preparation). Siting requirements for the Project include project facilities "that would avoid or reduce as appropriate, to the extent practicable, impacts to known ... visual resources" (see Section 10.1.5 Project Siting Requirements).
NPS	9/26/2016	8.5.1.2 states no NPS-administered lands will be used. NPS-administered land is impacted as it impacts the use of NPS land.	There is no footprint of the Project on NPS-administered land. The Denali alternative is just that, an alternative route and is not the applicant's proposed alternative. Indirect impacts to land use for recreation and other use are addressed in Sections 8.11.2.1.1.4 and 8.12.2.1.1.5.
NPS	9/26/2016	Mitigation measures are generically addressed to include vegetative screening of construction activities, angling access	The Denali National Park and Preserve (DNPP) Alternative is

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		roads, and downcasting of light during winter work; NPS proposes additional long term mitigation within NPS affected or visible sections of the pipeline cleared corridor with the desired intent to reduce visual interruption of the vegetated scenery while providing aesthetic contrast consistent with undeveloped areas; specific design techniques should be coordinated with NPS landscape architects, including variable clearing widths within construction corridor, feathering removal of vegetation edge within construction corridor, planting and seeding of native, indigenous materials where revegetating, and establishment of maintenance processes that emulate natural surroundings versus a periodic clear cut approach. Consider conducting inspections of operational ROW by foot within view of Denali National Park to allow more revegetation.	currently not the preferred route. These issues will be further defined if and when the Alternative Route through DNPP becomes the preferred route.
NPS	9/26/2016	Describe how KOPs were ultimately chosen and in what location	See Resource Report No. 8, Appendix L, Section 4.4 KOPs.
NPS	9/26/2016	Nine (9) KOPs illustrate visual classification along GAAR, but only three (3) in the area of DENA; need for more KOPs from park and along Parks Highway	See Resource Report No. 8, Appendix L, Section 4.4 KOPs.
NPS	9/26/2016	Explain the absence of other recommended KOPs in this Denali National Park area.	See Resource Report No. 8, Appendix L, Section 4.4 KOPs.
NPS	9/26/2016	KOP 30 as the single location used for the seven (7) mile section for DENA adequately explains the visual impacts; primarily, the selected location utilizes a developed foreground landscape and a particular photograph expressing middle ground vegetation that may block views to a proposed pipeline route to the east thereby providing a basis for the minimal or "not visible" rating; the entire sensitive area within the DENA locale needs to be re-evaluated expanding on the Design Alaska analysis completed in September 2011; the number of KOPs need to be greatly expanded in the area to account for views from the railroad depot, Wilderness Center, Healy Mountain trail overlook, and other locations in the park frontcountry.	See Resource Report No. 8, Appendix L, Section 4.4 KOPs.
NPS	9/26/2016	There is no methodology provided for how the simulations were developed. NPS recommends that AK- LNG follow the process in the guidelines in the NPS visual impact assessment guide: https://irma.nps.gov/DataStore/Reference/Profile/2214258	Please refer to Section 2.0 of Appendix L of Resource Report No. 8 for simulation methodology added.
NPS	9/26/2016	The simulation images in the report are too small to be of value for analysis (assuming some will be required from additional KOPs in Denali). They should be able to be viewed on 11x17 minimum or on a computer screen. Also need to include viewing instructions that would provide a closer approximation of the actual view.	This is a common way to depict simulations.
NPS	9/26/2016	Light shielding is the only potential mitigation listed here and throughout Report 8, with one or two exceptions. Lighting design for all facilities should minimize visual and ecological impacts through other criteria in addition to full-cutoff shielding. General NPS guidelines include warm color temperature, minimizing the number of outdoor light fixtures at each facility, reducing the amount of time each light is illuminated, reducing the wattage (brightness) to the minimum necessary for safety and function, and avoiding bluish-white light, which may occur as hidden, short-wavelength spikes within some warmer-colored LED bulbs. These recommendations can reduce operational costs by saving electricity while protecting dark night skies. See www.nps.gov/subjects/nightskies/practices.htm. This comment	The DNPP Alternative is currently not the preferred route. These issues will be further defined if and when the Alternative Route through DNPP becomes the preferred route.

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		applies to other references to outdoor lighting in the Resource Reports.	
NPS	9/26/2016	The Gates of the Arctic National Park and Preserve General Management Plan Amendment was finalized in May 2016.	There is no footprint of the Project on Gates of the Arctic National Park and Preserve.
SOA / ADNR / DOF	9/25/2016	See the "Timber Inventory of State Forest Lands in the Tanana Valley 2013" for current size and units: "total TVSF acres= 1,798,727". Page 8-100 gives two different acreage amounts for size of Tanana Valley State Forest.	The Applicant will address State of Alaska comments during required permitting activities.
SOA / ADNR / DOF	9/25/2016	"The volume of commercial timber within the Mainline construction ROW is currently not quantified." It would assist the Division of Forestry in assessing the 'timber management plan' if the volume of commercial timber and firewood affected by construction were known.	The Applicant will address State of Alaska comments during required permitting activities.
SOA / ADNR / DOF	9/25/2016	Table 8.5.2-2 Note that while the TVSF LDA is within the ETAP planning area; the state forest is managed by DOF using the TVSF Management Plan (the DOF is the primary manager). The ETAP's management guidelines do not directly apply to lands located within the TVSF.	The Applicant will address State of Alaska comments during required permitting activities.
SOA / ADNR / DOF	9/25/2016	General comment- Only those forested acres cleared for the permanent ROW, permanent facilities and retained access roads should be exempt from the requirement for reforestation (AS 41.17.110 & 11 AAC 95.200 Land Use Conversion). Note that if clearing takes place, but the project does not proceed further, the exemption from reforestation requirements that was based upon the intended conversion to another use expires.	The Applicant will address State of Alaska comments during required permitting activities.
SOA / ADNR / DOF	9/25/2016	Wildland Fire risk mitigation is critical during both construction and operation – ensure that any above ground elements are robustly 'fire-adapted' – and not just to past acceptable standards. Construction and operations phase for pipeline needs to fully consider the changing dynamics of the wildland fire regime in Alaska –such as its increased frequency and especially the more intense, extreme wildland fire behavior taking place during some incidents, and plan accordingly.	The Applicant will address State of Alaska comments during required permitting activities.
SOA / ADNR / DOF	9/25/2016	The "Timber Management Plan" was not available for review. The DOF requests to be contacted by the applicant when that plan is developed.	The Applicant will address State of Alaska comments during required permitting activities.
ADNR / SHPO	9/25/2016	Please ensure that the Visual Resource Analysis section addresses potential viewshed impacts to significant historic properties, such as the Iditarod Trail, and associated trails, and that it appropriately cross-references to the RR #4.	The Applicant will address State of Alaska comments during required permitting activities.
SOA / ADNR / OHA / SHPO	9/25/2016	RR 4 needs to cross-reference other related resource reports, including but not limited to RR5, RR6 and RR8 (for visual).	The Applicant will address State of Alaska comments during required permitting activities
ADNR / SHPO	9/25/2016	The Visual Resources Analysis section should identify areas of visual concern (i.e., historic trails, railroad corridors, roads, and other cultural resources susceptible to visual impacts). This analysis should be incorporated into and cross-referenced in RR 4.	The Applicant will address State of Alaska comments during required permitting activities.
ADNR / SPCS	9/25/2016	Assumptions for major highways: The Parks Highway alignment was built on top of Federal Aid Primary (FAP) routes 35, 52, and 37 which are omnibus roads. As such the general highway width of the Parks Highway should be assumed to be at 300 feet (150 feet each side of centerline) not at 200 feet.	The Applicant will address State of Alaska comments during required permitting activities.
ADNR / SPCS	9/25/2016	This appendix outlines AKLNG's waste management plan for the project however there is no direct information within it addressing how the disposal sites for pipeline excavated	The Applicant will address State of Alaska comments during required permitting activities.

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		material will be developed. Would the site be surface or subsurface? Would biodegradable materials be mixed with rock which would lead to subsidence over time? ETC.	
SOA / ADNR / DMLW / NRO and SCRO	9/25/2016	Utilities—are there any plans to coordinate with utility providers to share the ROW with fiber optic cables or other beneficial uses of a buried corridor?	The Applicant will address State of Alaska comments during required permitting activities.
SOA / ADEC	9/25/2016	The second sentence in this section should be revised to read "All known past and present contaminated sites, underground storage tanks, and LUST sites in the State of Alaska are listed and tracked through the ADEC CSP (ADEC, 2011a)." This edit would clarify that there may be contaminated sites or LUST sites that the State of Alaska is not aware of at this time.	The Applicant will address State of Alaska comments during required permitting activities.
USFWS	9/26/2016	Hydrocarbon Spills- The RRs do not contain an in-depth spill analysis for LNG and other petroleum products. A thorough discussion of impacts associated with accidental releases of liquefied natural gas and/or fuel spills into watercourses and the coastal and marine environments of Cook Inlet and the Beaufort Sea is warranted. Section 4.12 of the NPR-A IAP/EIS (2012) (http:www.blm.gov/ak) could be used as a template for this discussion. The Service would appreciate reviewing the spill analysis before the RRs are finalized.	Comment acknowledged. The Applicant would develop a Spill Prevention, Control, and Countermeasure (SPCC) Plan during the EIS and would finalize it prior to construction. Other plans, such as all stormwater pollution prevention plans (SWPPP) would also require spill prevention and response planning during this same time frame.
FERC	11/16/2016	The following commitments were made by Alaska LNG in the resource report as information to be provided or pending in response to previous comments made by FERC or other agencies. If the information will not be included in the application as indicated by Alaska LNG, provide a schedule for when it will be filed with FERC or provided to the requesting agency as applicable.	See below.
FERC	11/16/2016	a. A list of landowners by milepost or tract number, corresponding to information on alignment sheets.	A line list containing landowners is included in Resource Report No. 1, Appendix K. MP and tract details will be provided prior to the start of the DEIS.
FERC	11/16/2016	b. Mitigation related to impacts on seasonal and year round recreation at Denali State Park and Captain Cook State Recreation Area.	Mitigation will be developed in the course of obtaining the lease with the State of Alaska. The stipulations to the ROW lease contain mitigation required by the landowner that will be applied as a condition of the lease.
FERC	11/16/2016	c. Visual renderings of the proposed pipeline within state park units.	KOPs O, P, Q, R, and S are within Denali State Park. Simulations were created for the 16 KOP locations with the greatest anticipated Project-related visual contrast. No additional simulations are planned for the application.
FERC	11/16/2016	d. Additional information on facility lighting, including existing conditions and the impact of facility lighting on wildlife or the surrounding area, at the GTP, Liquefaction Facility, and other aboveground facilities during construction and operation.	Facility lighting is addressed in Resource Report No. 8, Appendix O.

Resource Report No. 8 Agency Comments and Requests for Information Concerning Land Use, Recreation, and Aesthetics			
Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	e. The type and duration of the institutional controls for Leaking Underground Storage Tank and contaminated sites identified as "Cleanup Complete with Institutional Controls," including mitigation measures for sites where the Project would affect institutional controls (see section 8.7.2, page 8-61).	The Applicant has added a table to Appendix E of Resource Report No. 8 that includes information about institutional controls of four closed sites within the Project footprint. Mitigation measures for such sites would be: follow relevant institutional control restrictions, as well as the provisions of Resource Report No. 8, Appendix I (Unanticipated Contamination Discovery Plan) and Appendix J (Waste Management Plan). This information has also been summarized in Section 8.7.2.
FERC	11/16/2016	f. Additional information on plans for how dredged spoils would be tested for contamination and disposed of properly.	It is anticipated that sampling of dredge areas will be completed in the course of permitting with the U.S. Army Corps of Engineers (USACE) and other agencies and the data would be provided at that time.
FERC	11/16/2016	g. Additional information on the descriptions of the current landscape conditions and visual character for each landscape character unit (LCU) (i.e., ecoregion) in summer and winter, based on EPA Level III ecoregions for Alaska, or more refined levels.	See Section 3.2 Ecoregions of Appendix L of Resource Report No. 8.
FERC	11/16/2016	h. Scenic quality assessments and ratings for each LCU or subsections within LCUs based on BLM's scenic quality field inventory and classification system.	See Section 5.1 of Appendix L of Resource Report No. 8 for an explanation of scenic quality ratings.
FERC	11/16/2016	i. Additional information regarding the full list and summary descriptions of all sensitive visual resource areas (SVRA) within 15 miles of the Project.	See Attachment A of Appendix L of Resource Report No. 8.
FERC	11/16/2016	j. Detailed descriptions of all residential areas and communities within 15 miles of the pipeline right-of-way and Liquefaction Facility.	See a list of communities provided in Section 8.3. DCRA Community Index provides detailed community information and is available at https://www.commerce.alaska.gov/dcra/dcraexternal/community/
FERC	11/16/2016	k. Additional existing condition and post-construction visual simulations for not less than 50 Key Observation Points (KOPs), including day and night simulations of the Liquefaction Facility.	See Section 5.0 of Appendix L of Resource Report No. 8. Simulations were completed for 16 KOPs with the greatest visual contrast. No other simulations will be completed.
FERC	11/16/2016	l. Photorealistic visual simulations of the Project viewed from not less than 20 KOPs selected in consultation with key agency representatives knowledgeable of the Project area and SVRAs.	See Appendix L for survey protocols and agency input into designing the field work for 2015 and 2016.
FERC	11/16/2016	m. Elements of the visual work plan provided in appendix C not already addressed (from previous comments).	The visual work plan was approved by the reviewing agencies and the completed study analysis is found in Appendix L of Resource Report No. 8.

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Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	n. Additional descriptions, diagrams, and/or detailed plans for minimizing visual impacts in areas where the Project would be collocated with scenic byways or other public use infrastructure.	Collocation is a visual impacts mitigation measure. By collocating the Project with existing road and infrastructure rights-of-way (ROWs) the visual contrast/impact is reduced. Other mitigations are typically included in the stipulations of a Right-of-Way lease that is agreed upon with the land owner prior to construction.
FERC	11/16/2016	o. Additional descriptions of the appearance of aboveground elements of the Mainline, PBTL, PTTL, ancillary facilities, and GTP, including types and numbers of elements (e.g., tanks), typical heights, typical layouts, colors, lighting, and other details.	The Applicant will address this comment prior to the issuance of the Draft EIS (DEIS).
FERC	11/16/2016	p. Additional mapped information related to the management areas of all federal, state, and local entities discussed in this section, including the various BLM field offices, National Park Service units, and local government boroughs.	The Applicant will address this comment prior to the initiation of the EIS process.
FERC	11/16/2016	q. Additional detail on the types of potential visual impacts that may result from Project construction (e.g., visual impacts due to vegetation removal, temporary construction work areas, construction access roads, temporary lighting for safety and security) and specific mitigation measures for these impacts.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	r. Additional information on the types of potential visual impacts that may result from Project operation, and mitigation for these effects.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	s. Additional renderings and simulations, including existing conditions, post-construction, and post reclamation during both winter and summer.	The Applicant will address this comment after the DEIS but prior to the issuance of the FEIS.
FERC	11/16/2016	t. Site-specific Public Land Use and Recreational Use Coordination Plans, provided as appendix I to Resource Report 8.	The Applicant will address this comment after the FEIS but prior to construction start.
FERC	11/16/2016	u. An updated visual assessment to address changes to the design of Compressor Station 8 and related agency comments on the first design study.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	v. Visual impact mitigation measures for Compressor Station 12, including siting considerations and alternative site options for the compressor station.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	w. Additional information on planned residential developments, such as Agate Estates between the Kenai Spur Highway and the pipeline route.	Information regarding impacts and mitigation to planned residential development is included in 8.11.2.1.1.1.
FERC	11/16/2016	x. Lighting plans that address light shielding and other potential mitigations	Facility lighting is addressed in Resource Report No. 8, Appendix O.
FERC	11/16/2016	y. Lighting plans for the GTP and Liquefaction Facility that address light shielding and other potential mitigations	Facility lighting is addressed in Resource Report No. 8, Appendix O.
FERC	11/16/2016	z. An analysis of direct and indirect impacts on recreational and Special Use Areas.	An analysis of direct and indirect impacts of Project construction on recreational and special use lands is included in Table 8.11-1. An analysis of direct and indirect impacts of Project operation on recreational and special use lands is included in Table 8.12-1.

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Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	aa. A detailed list of residences and other structures within 200 feet of the Project area and Non-Jurisdictional Facilities (including the Kenai Spur Highway relocation), including residences and other structures within the Project pipeline right-of-way, and a statement of whether those structures would need to be removed or could be avoided.	See Sections 8.3.1 and 8.3.2.
FERC	11/16/2016	bb. Site-specific Public Land Use and Recreational Use Coordination Plans.	The Applicant will address this comment after the FEIS but prior to construction start.
FERC	11/16/2016	cc. Details regarding visual impacts of the PBTL.	See Sections 8.14.2.1.2 and 8.15.2.1.2
FERC	11/16/2016	dd. Details regarding visual impacts of the PTTL.	See Sections 8.14.2.1.3 and 8.15.2.1.3
FERC	11/16/2016	ee. A visual analysis methodology for the Pipeline Aboveground Facilities [and] a set of KOPs specifically focused on aboveground facilities.	See updates to Section 8.13.1.2.2
FERC	11/16/2016	ff. A viewshed analysis (including a map series) extending 15 miles from all components of the Project (listed as appendix N).	See Appendix M of Resource Report No. 8, Visual Resource Sensitive Resources Mapping; Appendix K includes maps with the 15-mile buffer from Project facilities.
FERC	11/16/2016	gg. Details regarding visual impacts of the GTP.	See Sections 8.14.2.4 and 8.15.2.4. The Applicant will address this comment after the DEIS but prior to the issuance of the FEIS.
FERC	11/16/2016	hh. KOPs and analysis of non-jurisdictional facilities.	Because these facilities are designed, permitted and built by others (not Alaska LNG), and their regulatory approvals do not require a visual analysis, no other information is available from those Project sponsors.
FERC	11/16/2016	ii. KOPs and associated analysis for non-jurisdictional facilities.	Because these facilities are designed, permitted and built by others (not Alaska LNG), and their regulatory approvals do not require a visual analysis, no other information is available from those Project sponsors.
FERC	11/16/2016	jj. Imagery and analysis for the KOP at Trading Bay Beach.	Please refer to Section 5.10.2 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	kk. Additional details pertaining to the Pipeline Associated Infrastructure KOPs.	Please refer to Section 5.0 of Appendix M of Resource Report No. 8. Additional KOPs completed in 2016 were added to the analysis. Also refer to revised text in Section 8.14.2.2.
FERC	11/16/2016	ll. Visual resources, KOPs, and analysis associated with Non-Jurisdictional Facilities.	Because these facilities are designed, permitted and built by others (not Alaska LNG), and their regulatory approvals do not require a visual analysis, no other information is available from those Project sponsors.
FERC	11/16/2016	mm. Visual analysis methodology and completed analysis (including KOPs, if necessary) for Pipeline Aboveground	Please refer to Section 5.0 of Appendix L of Resource Report

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		Facilities (e.g., compressor stations, heater stations, meter stations, mainline block valves).	No. 8. Additional KOPs completed in 2016 were added to the analysis. Also refer to revised text in Section 8.14.2.2.
FERC	11/16/2016	nn. Additional detail pertaining to water views of the pipeline associated infrastructure within Cook Inlet.	There will be no facilities in Cook Inlet visible from the water surface, the pipeline will be laid on the ocean bottom. The shore crossings will be buried and will have no above ground facilities. The temporary MOF will be adjacent to the existing one.
FERC	11/16/2016	oo. Mitigation measures for visual impacts from Pipeline Associated Infrastructure.	See revised text in Section 8.14.2.3.
FERC	11/16/2016	pp. The exact height of the GTP communication tower.	The GTP communication tower will be approximately 150 feet tall. The exact height of the GTP tower will be determined in later stages of the Project design. See Section 13.1.17.14 of Resource Report No. 13.
FERC	11/16/2016	qq. The likely size and design of tanks, as well as aircraft and marine lighting, along with any "other features" referred to in this section.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	rr. The Environmental Justice Impacts and Mitigation Analysis.	See Environmental Justice impacts and mitigation measures in Sections 5.4.2.10 and 5.4.3.8 of Resource Report No. 5.
FERC	11/16/2016	Include a map with locations of the Mainline, Pipeline Aboveground Facilities, and the Pipeline Associated Infrastructure in state-managed areas.	Maps depicting Project infrastructure across all land status categories are included in Appendix B. State-managed areas and Project infrastructure are identified.
FERC	11/16/2016	Confirm whether section 8.1.3 and table 8.1.3-1 are current with regard to consultations that have been completed. The most recent consultations listed are through October 2015. Include additional consultation updates as appropriate.	Resource Report No. 1 Appendix D provides a current and comprehensive summary of agency and stakeholder consultation.
FERC	11/16/2016	Include text descriptions of land use and land ownership for the PBTL, PTTL, and Pipeline Associated Infrastructure, consistent with the land use and land ownership details provided for the Mainline.	The text descriptions are found in the cross-referenced locations. The Applicant has cross-referenced these text locations in order to avoid repeated text. This is a common practice with large project reports.
FERC	11/16/2016	Revise text to consistently refer to land owned or used by Alaska Native entities. The text uses the terms "Native" land, "Native Village Corporation" land, and "Native Regional Corporation" land inconsistently. Define and use a single term, or discuss why these terms are used separately. This is a global comment for Resource Report 8. For specific examples, see section 8.2.2.2.1.1, page 8-24; section 8.2.2.2.2, page 8-25; section 8.2.2.2.3, page 8-25; and section 8.11.2.3.1.4, page 8-156.	Revised to Alaska Native Corporations.
FERC	11/16/2016	Revise table 8.2.2-1 to ensure that acreages cited for various land use categories match subtotals, totals, and footnotes. Notable specific discrepancies are listed below. If these	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.

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		discrepancies are the result of rounding error, add a footnote to identify such cases.	
FERC	11/16/2016	a. The table shows Liquefaction Facility-Marine Terminal-Temporary MOF as 7.3 acres of open land impact and 10.0 acres of open water impact during construction. Footnote "e" indicates that 18.3 acres out of 28.3 acres of total MOF construction impact are included in the MOF construction dredging footprint. Verify footnote "e" and address this discrepancy.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	b. Forest, Open Land, and Residential Land impact acreage for Meter Stations and MLBVs are included in Pipeline Aboveground Facilities impact totals; however, footnote "c" specifies that acreage of the MLBVs and Meter Stations are not included in the Pipeline. Aboveground Facilities totals. Verify impact acreage totals and correct the table so the footnote and table are consistent. (table 8.2.2-1, page 8-14)	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	c. Similar to previous comment, the PTTL MLBVs and PTTL Meter Stations: are included in impact totals; however, footnote "c" specifies that acreage of the PTTL MLBVs and PTTL Meter Stations are not included in the totals. Verify impact acreage totals and correct the table so the footnote and table are consistent. (table 8.2.2-1, pages 8-14 and 8-15)	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	d. The construction impact subtotal for Compressor Station Camps references footnote "e," which applies to the MOF. Verify if footnote "c," which specifically references compressor station camps, is the appropriate footnote. (table 8.2.2-1, page 8-16)	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	e. Open Water operational impacts are shown as 67.3 acres for the dredge channel and turning basin, but the Operational subtotal shows 0.0 acre. Clarify the discrepancy. (table 8.2.2-1, page 8-19)	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Review all acreages, subtotals, and totals in tables 8.2.2-2, 8.5-1, 8.5-2, 8.5-3, 8.6-1, 8.11-1, and 8.12-1. For discrepancies that are the result of rounding error, add a footnote to identify such cases. In general, acreages for various land use categories do not necessarily match subtotals and totals, or may be inconsistent with acreages reported elsewhere. Specific citations are listed below. This finding also applies to table 1.4-1 in Resource Report 1.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	a. Verify whether the construction total for "other state of Alaska" should include 1,200 construction impact acres for the Liquefaction Facility.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	b. Resolve the discrepancy between the "Approximate Crossing Length" column showing a total of 804.2 miles, but its individual components sum to 827.8 miles. Additionally, address rounding issues in the percentage column.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	c. Review the subtotal in the "Pipeline ROW," and verify if subtotal should be 8,423.3 acres.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	d. Review the "Footprint Total" value, and verify whether it should be 15,308.3 acres.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Verify the acreages and percentages for Project construction right-of-way described in the text for open water compared to the data shown in table 8.2.2-1.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.

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Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	Review the acreages and other data cited in the following text to ensure consistency with table 8.2.2-1 and revise as appropriate.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	a. Clarify the apparent discrepancy between the acreage in table 8.2.2-1 and the acreage cited in the text for "Pipeline Associated Infrastructure" land use during operation.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	b. Clarify the apparent discrepancy between the acreage in table 8.2.2-1 and the acreage cited in the text for GTP "Associated Infrastructure" during operations.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	c. The text in section 8.2.3.2.2 indicates that each helipad would include up to 10 acres of clearing; however, table 8.2.2-1 only indicates 0.6 acre of impact for the PTTL helipad during construction. Clarify the discrepancy. Also, if 10 acres is correct, provide a justification for the need for this amount of land.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	d. Clarify the apparent discrepancy between the acreage in table 8.2.2-1 and the acreage cited in text for Pipeline Associated Infrastructure land ownership during construction.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	e. Clarify the apparent discrepancy between the acreage in table 8.2.2-1 and the percentage cited in text for Pipeline Aboveground Facilities Open Land.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	f. Clarify the apparent discrepancy between the acreage in table 8.2.2-1 and the percentage cited in text for the percentage of GTP construction footprint that is open land.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	g. Clarify the apparent discrepancy between the acreage in table 8.2.2-1 and the percentage cited in text for the amount of GTP open land conversion as percentage of total Project footprint. (section 8.11.2.5.1.4, page 8-164)	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Clarify the apparent discrepancy between the acreage in table 8.2.2-2 and the acreage cited in text for Point Thomson Unit Expansion Project.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Review the acreages and other data cited in the following text and ensure consistency with table 8.3.1-1. Revise if appropriate.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	a. Verify the number of total residences near the Mainline Associated Infrastructure.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	b. Verify the number of buildings within 200 feet of the GTP.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	c. Verify the number of buildings near the Mainline right-of-way, consistent with the response to item 1.bb above.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Revise the acreages and other data cited below and ensure consistency with table 8.3.2-1.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.

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Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	a. Verify total number of commercial areas within 200 feet of the Project area. (section 8.3.2, page 8-36)	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	b. Verify the number of resource sale licenses within 200 feet, and specify how many of those are within 50 feet of Mainline Associated Infrastructure.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	c. Confirm the number of commercial/industrial buildings within 200 feet of the Mainline right-of-way.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Clarify the following apparent discrepancies between the acreage in table 8.5-1 and the acreage cited in text for the following Project facilities and sites:	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	a. land ownership affected by Liquefaction Facility construction;	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	b. Borough lands affected by Liquefaction Facility operations;	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	c. land ownership affected by the GTP during construction and operations;	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	d. "Native Regional Corporation" ownership of Pipeline Associated Infrastructure land during construction; and	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	e. land ownership affected by PBTL construction and operations.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Clarify the apparent discrepancy between the acreage in table 8.5-2 and the acreage cited in text for state ownership and private land ownership for the Prudhoe Bay Unit Major Gas Sales.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Review the acreages and other data cited in the following text, and ensure consistency with table 8.6-1. Revise if appropriate.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	a. Verify acreage of Mainline impact on recreational and special use land.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	b. Clarify the discrepancy in the of PTTL right-of-way impact on recreational and special use areas.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Include an estimate of the affected acreage, by land use and ownership type, associated with each primary alternative for the Kenai Spur Highway relocation.	All tables have been re-run, acreages verified and discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Resolve inconsistencies in describing and identifying the amount of land managed (e.g., percent and/or acres) for Interdependent Project Facilities. Review and ensure that this	All tables have been re-run, acreages verified and

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		section is consistent with acreages cited elsewhere in Resource Report 8.	discrepancies resolved and/or explained as appropriate.
FERC	11/16/2016	Include information on the proposed crossing methods for linear recreation and special use features, such as trails and byways. If the crossing of the feature is proposed to be open-cut, describe the timing of the crossing, any measures to ensure use of the feature is maintained during construction, the duration of the closure of the cut area (if applicable), and any additional land impact totals which would be cleared to conduct the crossing using open cut. Additionally, discuss the visual impact of open cut crossings.	The Applicant will develop crossing methods and mitigation measures with the trail stakeholders and landowners through the easement process, ultimately ensuring alternate access is provided.
FERC	11/16/2016	Show the Iditarod National Historic Trail on figure 8.6-1.	See revised Figure 8.6-1.
FERC	11/16/2016	Include information on existing use of, access to, and management guidance for Denali National Park and the Arctic NWR. Provide an evaluation of consistency with any designated management plans for these areas. Include information on visitation, access routes, and visual or noise management objectives that could be affected by Project construction. This information is required to understand the planned Project's indirect effects during construction (effects on recreational resources that are not crossed, but that would be close enough to the Project to be affected).	The Applicant will not be providing an evaluation of consistency with management plans for federal conservation system units that are not directly impacted by the Project footprint. This would effectively expand the boundaries of those CSUs to encompass the Alaska LNG Project. While, the Applicant has addressed impacts to CSU's in Sections 8.11.2.1.1.4 and 8.12.2.1.1.3 of Resource Report No. 8, we strongly disagree with the directive to provide a formal consistency evaluation with management plans that, by definition, apply only to lands that are subject to those management plans.
FERC	11/16/2016	Include information on local government-managed recreational resources affected by all aboveground Project facilities (potentially in a new section 8.6.4.3). For example, discuss the effects of the Project on the recreational trails (managed by Kenai Borough) near Nikiski Middle/High School.	The Applicant will coordinate with local government planning departments, recreational service areas, and volunteer trail groups who maintain recreational trails traversed by the Project in order to avoid or reduce impacts to recreational use and access. For example, the trails referenced in the comment are not managed by the Kenai Peninsula Borough but instead by the North Peninsula Recreational Service Area. See text added in Section 8.6
FERC	11/16/2016	Include information about typical use of the Iditarod National Historic Trail (specifically, confirm that this trail is only used in the winter) to support the conclusions in section 8.11.2.1.1.4 that the Project construction would have no impact on this trail.	Information on usage of the Iditarod National Historic Trail (INHT) crossed by the Mainline ROW has been updated and the description of impacts and mitigation has been updated in Section 8.11.2.1.1.4.
FERC	11/16/2016	Clarify the statement "The proposed Mainline right-of-way would intersect the Arctic NWR at approximately MP 142–166; however, no acreage would be affected by construction."	Text has been revised in 8.11.2.1.1.4.
FERC	11/16/2016	Include specific section and page numbers from appendix M when referring to the appendix throughout Resource Report 8.	Specific Sections of Appendix L have been added.

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Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	Clarify if the assessment of visibility includes tall elements associated with compressor stations, heater stations, flares, communication towers, visible plumes, and other Project features. If not, include these elements in the visibility assessment.	See revised text in Section 8.13.1.
FERC	11/16/2016	Include a table that identifies the 113 potential SVRAs, as well as the 54 potential SVRAs that have been determined to have views of the Project corridor or other Project features. Include distances between each SVRA and the closest Project area, and include a summary of relevant information from attachment A of Resource Report 8 appendix M.	See Table 8.13.1-1 added to Section 8.13.1.
FERC	11/16/2016	Include a section in Resource Report 8 that summarizes the methodology used for the visual analysis, including:	Please refer to Section 8.13.1.
FERC	11/16/2016	a. identifying and assessing SVRAs;	See Table 8.13.1-1 added to Section 8.13.1.
FERC	11/16/2016	b. identifying and selecting KOPs for analysis (including suggestions and recommendations by, and coordination with, stakeholders in selecting KOPs);	See revised text in Section 4.4 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	c. determining which KOPs require visual simulations (including coordination with key stakeholders to confirm selection of KOPs requiring visual simulations); and	See revised text in Section 4.4 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	d. applying the BLM Visual Resource Management (VRM) system methodology.	See revised text in Section 4.4 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	Include a map that identifies and labels the features in the bulleted list of areas with sensitive resources within 15 miles of the Liquefaction Facility.	Sensitive Visual Resource Maps are in Appendix L.
FERC	11/16/2016	Regarding the Liquefaction Facility, include the following additional information:	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	a. the maximum height of the flare extending above the Low Pressure (LP) Flare stack identified in table 8.13-1;	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	b. the heights of any other visible flares; and	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	c. the frequency that visible flares are anticipated to be used.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	Describe whether compressor and heater stations would produce any visible vapor plumes, and, if so, include specifications on the size, height, frequency, duration, and general visibility of these plumes. Describe what weather conditions these plumes are likely to occur under.	Any plumes will be addressed in Resource Report No. 9.
FERC	11/16/2016	Include a table in an appropriate section of Resource Report 8 listing all KOPs, and include for each KOP:	See Appendix L Section 4.5 Tables 4a and 4b.
FERC	11/16/2016	a. location information (i.e., latitude/longitude, closest pipeline milepost, or closest Project facility);	See Appendix L Section 4.5 Tables 4a and 4b.
FERC	11/16/2016	b. the primary Project feature(s) each KOP is associated with (e.g., pipeline milepost, material site, camp, storage yard, compressor station); and	See Appendix L Section 4.5 Tables 4a and 4b.
FERC	11/16/2016	c. the distance from the KOP to that feature.	See Appendix L Section 4.5 Tables 4a and 4b.
FERC	11/16/2016	Clarify the location and distance of the original Prudhoe Bay discovery well (ARCO No. 1) site relative to KOP 1 and describe how the view from the Central Gas Facility pad or West Dock access road will be maintained.	See revised text in Section 8.13.3.2.2.1.
FERC	11/16/2016	Include maps in appendix M at a suitable scale showing all existing VRM and Visual Resource Inventory (VRI) classes	See Appendix L of Resource Report No. 8, Visual Resource

Resource Report No. 8 Agency Comments and Requests for Information Concerning Land Use, Recreation, and Aesthetics			
Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
		mapped for BLM lands affected by the Project, as well as the boundaries of all BLM Resource Management Plans. The maps should have recent aerial photography background.	Sensitive Resources Mapping. Of note, for a majority of the Bureau of Land Management (BLM) lands within 15 miles of the Project area, the BLM has not assigned Visual Resource Management (VRM) classes. Thus, consistency with VRM classes is not applicable to most of the Project area. VRM classes are detailed in the individual KOP discussions in which they apply (see Appendix L).
FERC	11/16/2016	Include information describing the recovery period(s) for vegetation affected by construction of the Liquefaction Facility and Interdependent Project Facilities (i.e., the time period(s) anticipated for vegetation to grow to pre-construction conditions).	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	Describe how future KOPs for waterways will be identified, when this task will occur, and when the analysis of the KOPs will be provided. Identify the locations of aboveground water crossings and where these aboveground pipeline crossings will be visible to recreationists or other viewers.	Final visual analysis methodology for waterways and water crossings would be developed during permitting in consultation with the Bureau of Land Management (BLM) and the Alaska Department of Natural Resources (ADNR). Because there was extensive agency consultation for the two field seasons, no additional field surveys are planned in the near term.
FERC	11/16/2016	Include a new table, similar to table 8.6.6-2, which describes the management policies, goals, objectives, and/or guidelines for visual resources, scenery, or aesthetics identified in each management plan, comprehensive plan, or other policy guiding document for public lands affected by the Project (i.e., the applicable management plans listed in appendix M).	Applicable management policies, goals, objectives, and/or guidelines are provided in the text for specific Project facilities and are summarized in Appendix L in Tables 4a and 4b.
FERC	11/16/2016	Include a visual impact analysis of the Kenai State Highway relocation including both during the construction phase and operational phase of the Project.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	Include a table, organized by facility (e.g., Liquefaction Facility, Mainline, PBTL, pipeline aboveground facilities), that summarizes the visual impacts for each associated KOP and identifies the applicable mitigation measure(s) for each KOP. This table should include specific mitigation measures to be implemented during construction and operations.	Mitigation measures for each KOP are included in Sections 5.4 through 5.79 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	Include a discussion of the long-term visual impacts associated with vegetation removal along the pipeline right of way and aboveground facilities. Include any mitigation measures Alaska LNG proposes to implement to minimize the duration of the visual impact.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	Clarify whether each disposal site, materials site, or railroad spur would continue to be present during operations. Include additional analysis of the long-term visual impacts of vegetation removal during operations for these facilities.	The Applicant will address this comment prior to the issuance of the DEIS.
FERC	11/16/2016	Include an analysis of the visual impacts of the GTP along with a conclusion about those impacts.	See Sections 8.14.2.4 and 8.15.2.4.

Resource Report No. 8 Agency Comments and Requests for Information Concerning Land Use, Recreation, and Aesthetics			
Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	Add a column to tables 8-16-1 and 8-16-2 to identify percentages of Alaska Native population as a subset of minority/low-income populations	Percentages of Alaska Native populations is already included in Section 5.3.1.3 and Figure 5.3.1-1 of Resource Report No. 5. Environmental Justice sections and associated tables have been moved to these sections in Resource Report No. 5.
FERC	11/16/2016	Include figures depicting the Project site and block groups and census tracts that intersect the Mainline and associated infrastructure. Denote, visually, which census units exceed the criteria identified in Section 8.16 for both race and poverty. Include as many figures as needed for readability and clarity.	See Sections 5.3.1 and 5.3.7 of Resource Report No. 5.
FERC	11/16/2016	Summarize subsistence and human health in the context of environmental justice. Describe the environmental effects of the Project, including human health, subsistence, and economic effects of the Project on minority and low-income communities or Alaska Natives (section 8.16). Discuss these effects by facility type, and characterize the location, type of Project activities, and impacts that would occur to each of the census units that exceed the criteria identified in Section 8.16.	Environmental Justice has been moved to Resource Report No. 5. Impacts to minority and low-income communities would consider human health impacts once information is provided in the Health Impact Assessment. The Health Impact Assessment will be completed by the State of Alaska with inputs from the Resource Reports.
FERC	11/16/2016	Describe the positive and adverse impacts of the Project on the Environmental Justice communities identified and describe any mitigation measures that have already been undertaken to address these impacts (the current version describes possible future mitigation measures only).	See Environmental Justice impacts and mitigation measures in Sections 5.4.2.10 and 5.4.3.8 of Resource Report No. 5.
FERC	11/16/2016	Review and revise the maps in appendix L for legibility, scale, and clarity, as follows. If necessary, include more than one series of maps.	Now appendix K. See revised mapbook in Appendix K.
FERC	11/16/2016	a. Enlarge the map scale to approximately 1 inch = 5 miles, and include the maps with a page size of 11x17 inches.	See above
FERC	11/16/2016	b. Remove the topographic lines (including shading) and section lines.	See above
FERC	11/16/2016	c. Show and label all boundaries for boroughs, parks, refuges, preserves, roads, railroads, trails, streams, communities, areas of development, Trans-Alaska Pipeline System line, and other key landmarks and features.	See above
FERC	11/16/2016	d. Label and include distinctive symbols for (i.e., line color and weight) historic trails, scenic byways, wild and scenic rivers, National Rivers Inventory waterbodies, and other features discussed in Resource Report 8.	See above
FERC	11/16/2016	e. Show major Project features (e.g., preferred pipeline route, alternate routes, compressor and heater stations, pipe storage yards, material sites, construction camps, LNG Plant).	See above
FERC	11/16/2016	f. Show mileposts at 1-mile increments for the proposed pipeline and label mileposts at 10-mile increments.	See above
FERC	11/16/2016	g. Label and include distinctive symbols for (i.e., polygon border and fill) all SVRAs.	See above
FERC	11/16/2016	h. Label and include distinctive symbols for all KOPs, with separate symbols for KOPs with and without visual simulations.	See above
FERC	11/16/2016	i. Show visual distance zones as defined in BLM's VRM system.	See above

Resource Report No. 8 Agency Comments and Requests for Information Concerning Land Use, Recreation, and Aesthetics			
Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	Include a detailed explanation of how the BLM VRM methodology was modified for this analysis and include a justification for the methodology change. Include documentation of any consultations with federal and state agencies on this modified methodology.	See revised text in section 2.0 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	Describe the process used to select KOPs for simulations as well as the methodology used in preparing the visual simulations (e.g., lens setting, camera height, scale references, software programs used, etc.).	See revised text in section 2.0 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	Include the visual simulations in a format suitable for evaluation, as follows.	See Section 5.0 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	a. Include existing condition and simulation photos in panorama format (i.e., approximately 13 inches wide by 4.5 inches high, a ratio of approximately 2.9:1).	See Section 5.0 of Appendix L of Resource Report No. 8. Visual simulations were completed on a scale acceptable under the VRM methodology.
FERC	11/16/2016	b. For each KOP, produce two 11x17-inch pages:	See Section 5.0 of Appendix L of Resource Report No. 8. Visual simulations were completed on a scale acceptable under the VRM methodology.
FERC	11/16/2016	i. one page showing existing conditions and proposed post-construction conditions panorama images together on the same page.	See Section 5.0 of Appendix L of Resource Report No. 8. Visual simulations were completed on a scale acceptable under the VRM methodology.
FERC	11/16/2016	ii. one page showing existing conditions and proposed post-reclamation conditions panorama images together on the same page.	See Section 5.0 of Appendix L of Resource Report No. 8. Visual simulations were completed on a scale acceptable under the VRM methodology.
FERC	11/16/2016	c. Prepare all visual simulations for summer conditions, except where agency consultation also indicates the need for winter simulations.	See Section 5.0 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	Describe the process applied for identifying comparable management objectives, including assessing scenic quality and visual sensitivity levels.	See revised text in Section 3.0 of Appendix L.
FERC	11/16/2016	Include figure 2 (Ecoregions Crossed by the Project) in higher resolution (at least 300 dpi), so ecoregions and KOP locations can be easily discerned.	See updated Figure 2 in Appendix L.
FERC	11/16/2016	Update table 3 (Management Plans) and table 4 (Key Observation Points) to include sufficient information to fully assess compliance with the applicable plans. In particular, identify the specific management policies, goals, objectives, and/or guidelines for visual resources, scenery, or aesthetics identified in each management plan, comprehensive plan, or other policy guiding document for public lands crossed or otherwise affected by the Project.	See revised text in Section 3.1 of Appendix L. The classification system and associated visual components of applicable management plans were used to determine the level of impact. Compliance is implied by the application of the policies, goals, objectives, and or guidelines in determining the visual classification and associated impacts and mitigations.
FERC	11/16/2016	Include a table, organized by Project component, summarizing the visual impacts during construction and operation for each associated KOP, as well as applicable mitigation measures.	Mitigation measures for each KOP are included in Sections 5.4 through 5.79 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	In table 5, asterisks are placed next to some management classes. Clarify what the asterisks represent.	See footnote added to Table 5a of Appendix L of Resource Report No. 8.

Resource Report No. 8 Agency Comments and Requests for Information Concerning Land Use, Recreation, and Aesthetics			
Agency	**Comment Date**	**Comment**	**Response/Resource Report Location**
FERC	11/16/2016	In section 6.2 of appendix M, state the definitions and rationale for the sensitivity levels and scenic quality levels listed in table 5.	See methodology section 2.0 of Appendix L of Resource Report No. 8 for sensitivity levels and scenic quality level rationale.
FERC	11/16/2016	Revise table 5 in appendix M to include the correct VRI classes along with the VRI forms used to identify the VRI classes. The table currently shows various management classes that do not match the VRI classes identified in the analysis for the respective KOPs.	See corrections to Tables 5a and 5b as well as the VRI forms for each KOP included in Sections 5.4 through 5.79 of Appendix L of Resource Report No. 8.
FERC	11/16/2016	Include visual analysis (consistent with the analysis of previously-identified KOPs in appendix M) and, where appropriate, visual simulations for the features and locations identified in the table below. Also include analysis and simulations from along the Alaska Railroad within or near Denali National Park. These locations reflect observations made by the Commission's consultant during tours of the Project area in August 2016. [Refer to table included in filed comments]	See response above.
FERC	11/16/2016	Show the original Prudhoe Bay discovery well (ARCO No. 1) national historic site on the map for KOP 1 in attachment B of appendix M.	This is more appropriately mapped in Appendix K, Sensitive Visual Resources. See update to Appendix K.
FERC	11/16/2016	Modify section 8.7.2 and corresponding data in appendix E to include information about the type and extent of contamination at known contaminated sites, and modify corresponding maps in appendix c to show the extent of contamination, as per FERC comments 12 and 13 (May 15, 2015).	The information contained in Resource Report No. 8 and appendices provides reasonable characterization of the existing environment, project impacts and potential mitigations related to contaminated sites. Additional information related to contaminated sites within project footprint classified as either "open" or "closed with institutional controls" has been added based on other comments. The level of additional requested information requires much interpretation of site information from the State of Alaska's contaminated sites database as well as underlying site investigation, geotechnical and monitoring reports; this appears to go well beyond contaminated site information required by the Guidance Manual for Environmental Report Preparation. The information provided should be sufficient.
FERC	11/16/2016	Modify appendix E to include a list of the institutional controls in place (or planned, as appropriate) at sites listed as "Cleanup Complete with Institutional Controls." Modify section 8.7.2 to discuss how construction will or will not affect these controls.	The Applicant has added a table to Appendix E of Resource Report No. 8 that includes information about institutional controls of four closed sites within the Project footprint. Mitigation measures for such sites would be: follow relevant institutional control restrictions, as well as the provisions of Resource Report No. 8, Appendix I (Unanticipated

Resource Report No. 8 Agency Comments and Requests for Information Concerning Land Use, Recreation, and Aesthetics			
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			Contamination Discovery Plan) and Appendix J (Waste Management Plan) . This information has also been summarized in Section 8.7.2.
FERC	11/16/2016	Modify section 8.7.2 to state whether Project construction would encounter contaminated materials at specific inventoried sites, and to describe the mitigation measures proposed for cases where construction would encounter such materials.	See previous comments related to modification of Section 8.7.2 and associated appendices.
FERC	11/16/2016	Modify the map legends in appendix C to include descriptions for key map items, such as Drinking Water Zone A, Drinking Water Zone B.	Individual maps in Appendix C may include 30 or more items in the legend, making prioritization and definition of key map items subjective and impractical. The Applicant has not made the requested changes.
FERC	11/16/2016	Update Section 8.5.2.1 to acknowledge the ADNR comment (April 3, 2015) that the Eastern Tanana Area Plan has not been adopted, and that the Tanana Basin Area Plan is still the active plan for these areas.	Section 8.5.2.1.1 has been updated accordingly.
FERC	11/16/2016	Update the cover note for appendix A to address EPA's comment (April 3, 2015) regarding land use classification.	Land Use Classifications table added to cover for Appendix A.
FERC	11/16/2016	Revise figure 8.6-1 to depict the location of each area identified in section 8.6 in relation to the Project facilities. If necessary, more than one figure may be included to clearly depict each of the areas.	See updated Figure 8.6-1.
FERC	11/16/2016	Characterize the landscape traversed by the pipeline between Nenana and Cantwell (or clarify that the paragraph at the top of page 8-197 actually applies to this area), per FERC comment 30 (May 15, 2015).	The Applicant will address this comment prior to the initiation of the EIS process.

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ACRONYMS AND ABBREVIATIONS

ABBREVIATION	DEFINITION
§	section or paragraph
AAC	Alaska Administrative Code
ACEC	Areas of Critical Environmental Concern
ACRES	Alaska Case Retrieval Enterprise System
ACS	American Community Service
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
AGDC	Alaska Gasline Development Corporation
AGI	Apex Gas Injection
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
APDES	Alaska Pollutant Discharge Elimination System
Applicant	Alaska Gasline Development Corporation
Arctic NWR	Arctic National Wildlife Refuge
ARRC	Alaska Railroad Corporation
AS	Alaska Statute
ASAP	Alaska Stand Alone Pipeline
ASRC	Arctic Slope Regional Corporation
ATWS	additional temporary workspace
BIA	United States Department of the Interior, Bureau of Indian Affairs
BLM	United States Department of the Interior, Bureau of Land Management
BMP	best management practice
C.F.R.	Code of Federal Regulations
CEQ	Council for Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGF	Prudhoe Bay Unit Central Gas Facility
CHA	Critical Habitat Area
CIRI	Cook Inlet Region, Inc.
CL	Classification Order
CO_2	carbon dioxide
CSD	Contaminated Sites Database
CSP	Contaminated Sites Program

ABBREVIATION	DEFINITION
DB	Denali Borough
DCRA	Department of Community and Regional Affairs
DEIS	Draft Environmental Impact Statement
DEM	Digital Elevation Model
DH	dock head
DHRMA	Dalton Highway Recreation Management Area
DMLW	Alaska Department of Natural Resources, Division of Mining, Land, and Water
DNPP	Denali National Park and Preserve
DPOR	Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
FAA	United States Department of Transportation, Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FERC	United States Department of Energy, Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FLIR	Forward Looking Infrared
FLPMA	Federal Land Policy and Management Act (of 1976) BLM
FNSB	Fairbanks North Star Borough
GIS	geographic information system
GMU	Game Management Unit
GTP	Gas Treatment Plant
HDD	horizontal directional drill
HP	high pressure
HSM	horizontal support member
IHA	Incidental Harassment Authorization
INHT	Iditarod National Historic Trail
KMTA	Kenai Mountains-Turnagain Arm
KOP	key observation point
KPB	Kenai Peninsula Borough
KSH	Kenai Spur Highway
KSOP	Kuukpik Subsistence Oversight Panel
LDA	Legislatively designated area
LNG	liquefied natural gas
LNGC	liquefied natural gas carrier
LP	low pressure

ABBREVIATION	DEFINITION
LUST	Leaking Underground Storage Tanks
LWCF	Land and Water Conservation Fund
Mainline	An approximately 807-mile-long, large-diameter gas pipeline
MLA	Mineral Leasing Act
MLBV	Mainline block valve
MOF	material offloading facility
MP	Mainline milepost
MSB	Matanuska-Susitna Borough
MGS	Major Gas Sales
NCC	Nikiski Community Council
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
NHA	National Heritage Area
NLCD	National Land Cover Database
NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
North Slope	Alaska North Slope
NPL	National Priority List
NPP	National Park and Preserve
NPS	United States Department of the Interior, National Park Service
NSB	North Slope Borough
NWR	National Wildlife Refuge
ONA	Outstanding Natural Area
PBTL	Prudhoe Bay Gas Transmission Line
PBU	Prudhoe Bay Unit
PHMSA	United States Department of Transportation, Pipeline and Hazardous Materials Safety Administration
PLF	Product Loading Facility
POD	Plan of Development
Project	Alaska LNG Project
PSY	pipe storage yard
PTTL	Point Thomson Gas Transmission Line
PTU	Point Thomson Unit
RCRA	Resource Conservation and Recovery Act
RMA	Recreation Management Area
RMG	Resource Management

ABBREVIATION	DEFINITION
RMP	Resource Management Plan
RNA	Research Natural Area
ROW	right-of-way
SGR	State Game Refuge
SHPO	Alaska Department of Natural Resources, Department of Parks and Outdoor Recreation, Office of History and Archaeology State Historic Preservation Office(r)
SPCS	State Pipeline Coordinator's Section
SRR	State Recreation River
SWIMS	Solid Waste Information Management System
TAPS	Trans-Alaska Pipeline System
TBD	To be determined
TUP	Temporary Use Permit
U.S.	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USDOE	United States Department of Energy
USDOI	United States Department of the Interior
USDOT	United States Department of Transportation
USFS	United States Department of Agriculture, Forest Service
USFWS	United States Department of the Interior, Fish and Wildlife Service
USGS	United States Department of the Interior, Geological Survey
VRM	Visual Resource Management
VSM	vertical support member
WSA	Waterway Suitability Assessment
WSR	Wild and Scenic River
YKCA	Yukon-Koyukuk Census Area

8.0 RESOURCE REPORT NO. 8 – LAND USE, RECREATION, AND AESTHETICS

Potential land use, recreation, and visual resource effects have been assessed in this Resource Report for both construction and operation of the proposed Project and are described for each of the proposed Project facilities and Non-Jurisdictional Facilities, as described in Resource Report No. 1. Land use effects have been assessed based on the Project's footprint (direct effects) and areas surrounding the construction and operation footprint (indirect effects) otherwise defined as:

- Crossing location of the proposed facilities across different land use types, public lands, special use or recreational areas, areas of contamination, and existing rights-of-way (ROWs);

- Federal Energy Regulatory Commission (FERC)-designated buffers defined as the zone established around the Marine Terminal determined through the Environmental Impact Statement (EIS) process; and,

- Existing residential and commercial buildings within 200 feet, hazardous and contaminated sites and planned residential and commercial areas within 0.25 mile, and recreational and special use areas within 1 mile of the proposed facilities.

Potential effects to aesthetics have been assessed on a viewshed basis, based on comments provided by state and federal agencies that reviewed the viewshed analysis workplan. Effect duration and extent are specific to the type of construction or operations activity (timing, equipment type, building size, and height) as described in the viewshed analysis workplan. For example, pipeline construction crews would create a temporary, moveable visual effect along the entire Mainline route, while permanent facilities would create a longer-term, stationary visual effect at a specific location.

8.1 PROJECT DESCRIPTION

The Alaska Gasline Development Corporation (Applicant) plans to construct one integrated liquefied natural gas (LNG) Project (Project) with interdependent facilities for the purpose of liquefying supplies of natural gas from Alaska, in particular from the Point Thomson Unit (PTU) and Prudhoe Bay Unit (PBU) production fields on the Alaska North Slope (North Slope), for export in foreign commerce and for in-state deliveries of natural gas.

The Natural Gas Act (NGA), 15 U.S.C. § 717a(11) (2006), and Federal Energy Regulatory Commission (FERC) regulations, 18 Code of Federal Regulations (C.F.R.) § 153.2(d) (2014), define "LNG terminal" to include "all natural gas facilities located onshore or in State waters that are used to receive, unload, load, store, transport, gasify, liquefy, or process natural gas that is ... exported to a foreign country from the United States." With respect to this Project, the "LNG Terminal" includes the following: a liquefaction facility (Liquefaction Facility) in Southcentral Alaska; an approximately 807-mile gas pipeline (Mainline); a gas treatment plant (GTP) within the PBU on the North Slope; an approximately 63-mile gas transmission line connecting the GTP to the PTU gas production facility (PTU Gas Transmission Line or PTTL); and an approximately 1-mile gas transmission line connecting the GTP to the PBU gas production facility (PBU Gas Transmission Line or PBTL). All of these facilities are essential to export natural gas in foreign commerce and will have a nominal design life of 30 years.

These components are shown in Resource Report No. 1, Figure 1.1-1, as well as the maps found in Appendices A and B of Resource Report No. 1. Their proposed basis for design is described as follows.

The new Liquefaction Facility would be constructed on the eastern shore of Cook Inlet just south of the existing Agrium fertilizer plant on the Kenai Peninsula, approximately 3 miles southwest of Nikiski and 8.5 miles north of Kenai. The Liquefaction Facility would include the structures, equipment, underlying access rights, and all other associated systems for final processing and liquefaction of natural gas, as well as storage and loading of LNG, including terminal facilities and auxiliary marine vessels used to support Marine Terminal operations (excluding LNG carriers [LNGCs]). The Liquefaction Facility would include three liquefaction trains combining to process up to approximately 20 million metric tons per annum (MMTPA) of LNG. Two 240,000-cubic-meter tanks would be constructed to store the LNG. The Liquefaction Facility would be capable of accommodating two LNGCs. The size of LNGCs that the Liquefaction Facility would accommodate would range between 125,000–216,000-cubic-meter vessels.

In addition to the Liquefaction Facility, the LNG Terminal would include the following interdependent facilities:

- Mainline: A new 42-inch-diameter natural gas pipeline approximately 807 miles in length would extend from the Liquefaction Facility to the GTP in the PBU, including the structures, equipment, and all other associated systems. The proposed design anticipates up to eight compressor stations; one standalone heater station, one heater station collocated with a compressor station, and six cooling stations associated with six of the compressor stations; four meter stations; 30 Mainline block valves (MLBVs); one pig launcher facility at the GTP meter station, one pig receiver facility at the Nikiski meter station, and combined pig launcher and receiver facilities at each of the compressor stations; and associated infrastructure facilities.

  Associated infrastructure facilities would include additional temporary workspace (ATWS), access roads, helipads, construction camps, pipe storage areas, material extraction sites, and material disposal sites.

  Along the Mainline route, there would be at least five gas interconnection points to allow for future in-state deliveries of natural gas. The approximate locations of three of the gas interconnection points have been tentatively identified as follows: milepost (MP) 441 to serve Fairbanks, MP 763 to serve the Matanuska-Susitna Valley and Anchorage, and MP 807 to serve the Kenai Peninsula. The size and location of the other interconnection points are unknown at this time. None of the potential third-party facilities used to condition, if required, or move natural gas away from these gas interconnection points are part of the Project. Potential third-party facilities are addressed in the Cumulative Impacts analysis found in Appendix L of Resource Report No. 1;

- GTP: A new GTP and associated facilities in the PBU would receive natural gas from the PBU Gas Transmission Line and the PTU Gas Transmission Line. The GTP would treat/process the natural gas for delivery into the Mainline. There would be custody transfer, verification, and process metering between the GTP and PBU for fuel gas, propane makeup, and byproducts. All of these would be on the GTP or PBU pads;

- PBU Gas Transmission Line: A new 60-inch natural gas transmission line would extend approximately 1 mile from the outlet flange of the PBU gas production facility to the inlet

flange of the GTP. The PBU Gas Transmission Line would include one meter station on the GTP pad; and

- PTU Gas Transmission Line: A new 32-inch natural gas transmission line would extend approximately 63 miles from the outlet flange of the PTU gas production facility to the inlet flange of the GTP. The PTU Gas Transmission Line would include one meter station on the GTP pad, four MLBVs, and pig launcher and receiver facilities—one each at the PTU and GTP pads.

Existing State of Alaska transportation infrastructure would be used during the construction of these new facilities including ports, airports, roads, railroads, and airstrips (potentially including previously abandoned airstrips). A preliminary assessment of potential new infrastructure and modifications or additions to these existing in-state facilities is provided in Resource Report No. 1, Appendix L. The Liquefaction Facility, Mainline, and GTP would require the construction of modules that may or may not take place at existing or new manufacturing facilities in the United States.

Resource Report No. 1, Appendix A, contains maps of the Project footprint. Appendices B and E of Resource Report No. 1 depict the footprint, plot plans of the aboveground facilities, and typical layout of aboveground facilities.

Outside the scope of the Project, but in support of or related to the Project, additional facilities or expansion/modification of existing facilities would be needed to be constructed. These other projects may include:

- Modifications/new facilities at the PTU (PTU Expansion project);
- Modifications/new facilities at the PBU (PBU Major Gas Sales [MGS] project); and
- Relocation of the Kenai Spur Highway.

8.1.1 Purpose of Resource Report

As required by 18 C.F.R. § 380.12, this Resource Report has been prepared in support of a future application under Section 3 of the NGA to construct and operate the Project facilities. The purpose of this Resource Report is to:

- Describe the existing land use, recreation, and aesthetic resources located in the vicinity of the Project area;

- Assess the potential effects to these resources resulting from Project construction and operation; and

- Identify mitigation measures to avoid or reduce potential effects identified.

Specific areas addressed include:

- Land use types;
- Consistent with applicable borough and municipal zoning and planning codes and ordinances;
- Residential and commercial areas;
- Natural, recreational, or scenic areas;
- Public or conservation lands;
- Hazardous waste and contaminated sites discussion;
- Special land use; and
- Aesthetic conditions.

The data for this Resource Report were compiled based on a review of the following:

- Feedback from FERC and other federal, state, and local agencies on Draft 1 of the Environmental Report;
- Engineering design and proposed construction plans;
- U.S. Geological Survey (USGS) topographic maps;
- Recent aerial photography;
- Field survey data;
- Geographic information system (GIS) data from federal and state agencies;
- Agency-supplied comments and data;
- Review of data from adjacent projects; and
- Public comments.

8.1.2 Effect Determination Terminology

The following definitions were used when assessing the duration, significance, and outcome of potential effects related to the Project:

- Duration**:** ***Temporary*** effects are those that may occur only during a specific phase of the Project, such as during construction or installation activities. ***Short-term*** effects could continue up to five

years. ***Long-term*** effects are those that would take more than five years to recover. ***Permanent*** effects could occur as a result of any activity that modified a resource to the extent that it would not return to preconstruction conditions during the 30-year life of the Project;

- Significance: ***Minor*** effects are those that may be perceptible but are of very low intensity and may be too small to measure. ***Significant*** effects are those that, in their context, and due to their intensity, have the potential to result in a substantial unfavorable change in the physical environment; and

- Outcome: A ***positive*** effect may cause positive outcomes to the natural or human environment. In turn, the effect may cause unfavorable or undesirable outcomes to the natural or human environment. ***Direct effects*** are "caused by the action and occur at the same time and place" (40 C.F.R. 1508.8). ***Indirect effects*** are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 C.F.R. 1508.8). Indirect effects are caused by the Project, but do not occur at the same time or place as the direct effects.

Impacts by the Project on land use are outlined in Sections 8.11 (construction) and 8.12 (operations) and in Tables 8.11-1 and 8.12-2 respectively.

8.1.3 Agency and Organization Consultations

This section describes consultations conducted to date with federal and state agencies and other parties interested in the Project.

8.1.3.1 Federal Agencies

Discussions were held with multiple federal agencies regarding various Project details. Table 8.1.3-1 includes meetings and correspondence (through March 2016) where discussions regarding land use, recreation, and aesthetics were raised.

A list of the required federal permits for the Project is provided in Resource Report No. 1, Appendix C. A preliminary summary of public, agency, and stakeholder engagement is provided in Resource Report No. 1, Appendix D.

TABLE 8.1.3-1

Summary of Consultations with Federal Agencies (through March of 2016)

Contact	Date Contacted	Summary
U.S. Army Corps of Engineers (USACE)	1/20/2015	Unexploded ordinance clearance for pipeline
FERC, National Marine Fisheries Service (NMFS), USACE, U.S. Coast Guard (USCG), U.S. Department of Energy (USDOE), U.S. Department of the Interior (USDOI), U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), and National Park Service (NPS)	02/10/2015	Project web mapping application and SharePoint overview for state and federal agency representatives
Pipeline and Hazardous Materials Safety Administration (PHMSA)	02/13/2015	PTTL and Mainline installation and characteristics
Bureau of Land Management (BLM), FERC, NMFS, PHMSA, USACE, USCG, USDOI, NPS, EPA, and USFWS	03/16–3/18/2015	FERC and agency Draft 1 Resource Report workshop
BLM and USFWS	03/31/2015	Gravel Summit Workshop. The BLM solicited input from stakeholders to update the Central Yukon Resource Management Plan and input related to gravel resource availability and proposed stipulations for mining and reclamation.
BLM	04/17/2015	BLM Casual Use Determination Letter
BLM	04/20/2015	BLM Fairbanks Casual Use Determination Letter
NPS, USFWS, FERC, and BLM	04/21/2015	Federal land managers' air quality meeting USFWS and USDOI visual classifications.
NPS, EPA, BLM, FERC, USACE and USFWS	05/12/2015	Multi-agency pipeline routing workshop
FERC	05/15/2015	FERC and other state/federal agency Draft 1 Resource Report comments
USCG, EPA, and Cook Inlet Subarea Committee	05/19/2015	Project overview to Cook Inlet Subarea Committee. Discussed potential LNG carrier (LNGC) transit routes in Cook Inlet.
Federal Aviation Administration (FAA)	05/20/2015	Discussed the FAA review process for towers and how to submit documentation to begin the review process. Lighting requirements were also discussed.
FERC, DOE, and USDOI	05/28/2015	Roundtable discussion of federal process for permitting the Project
USACE, USDOI, EPA, and USFWS	06/24/2015	Explanation of large-diameter natural gas pipeline construction planning and execution as it pertains to the Project including an overview of pipeline construction by season
BLM, USFWS, and NPS	08/07/2015	Project Visual Aesthetics Study Work Plan overview
BLM	08/11/2015	BLM ROW grant/plan of development (POD) preliminary discussion
FERC, NMFS, USACE, USCG, EPA, and USFWS	08/12/2015	Review of the GTP footprint
FERC, NMFS, USACE, and USFWS	08/19/2015	Cook Inlet Routing and Construction Review

TABLE 8.1.3-1

Summary of Consultations with Federal Agencies (through March of 2016)

Contact	Date Contacted	Summary
FERC, NMFS, USACE, USCG, and USFWS	09/02/2015	Review of the LNG Facility and Marine Terminal footprint
FERC, NMFS, USACE, USCG, EPA, and USFWS	09/03/2015	Dredging workshop
FERC	09/09/2015	Review of proposed modifications to wetland and waterbody crossing procedures (Procedures) with FERC
FERC	09/10/2015	Review of proposed modifications to Upland Erosion and Sedimentation Control Plan (Plan) with FERC
FERC	09/30/2015	Review of Liquefaction Facility/Marine Civil/Seismic/Geotechnical Design Criteria
FERC, PHMSA, United States Department of Transportation (USDOT)	10/01/2015	Review of Pipeline Civil/Seismic/Geotechnical Design Criteria
NMFS, USACE	10/13/2015	Cook Inlet 2016 test trench permitting pre-application meeting
NMFS	10/16/2015	Endangered Species Act (ESA) Section 7 Consultation for 2016 Incidental Harassment Authorization (IHA) Application
NMFS	10/22/2015	Review 2016 Cook Inlet (IHA) Application

8.1.3.2 State and Local Agencies

Discussions were held with multiple State of Alaska and local agencies, as well as private corporation representatives, regarding Project details. . Table 8.1.3-2 includes meetings and correspondence where discussions regarding land use, recreation, and aesthetics were raised.

A list of required state permits for the Project, as well as a summary of public, agency, and stakeholder engagement , is provided in Resource Report No. 1, Appendix D.

TABLE 8.1.3-2

Summary of Consultations with Alaska State and Local Agencies (through March of 2016)

Contact	Date Contacted	Summary
Alaska Department of Natural Resources (ADNR), State Pipeline Coordinator's Section (SPCS), and Alaska Department of Environmental Conservation (ADEC)	12/05/2014	Recommended ongoing communication with setnetter community in the proximity of Liquefaction Facility
ADNR	01/06/2015	General discussion of National Environmental Policy Act (NEPA) coordination processes
SPCS	01/06/2015	Project SPCS NEPA coordination meeting
Alaska Department of Transportation and Public Facilities (ADOT&PF)	01/14/2015	Relocation of the Kenai Spur Highway (KSH)

TABLE 8.1.3-2

Summary of Consultations with Alaska State and Local Agencies (through March of 2016)

Contact	Date Contacted	Summary
ADNR	02/06/2015	Waterway Suitability Assessment (WSA) Port Characterization report review and stakeholder meeting preparation
ADOT&PF	02/10/2015	Project web mapping application and SharePoint overview for state and federal agency representatives
Alaska Department of Fish & Game (ADF&G), Kenai Peninsula Borough (KPB)	02/12/2015	Shore fishery lease and commercial fishery schedule discussion
ADOT&PF	02/17/2015	Submittal of Project description and permit requirements for obtaining ADOT&PF approval to commence work in the state ROW
ADOT&PF	03/04/2015	Contract kickoff meeting for the Feasibility Study for the relocation of the KSH
Alaska Railroad Corporation (ARRC)	03/06/2015	Pre-application meeting
ADEC, ADF&G, ADNR, ADOT&PF, SPCS, and State Historic Preservation Office (SHPO)	03/16/2015 – 03/18/2015	FERC and agency Draft 1 Resource Report workshop
ADEC, Alaska Department of Military and Veteran's Affairs, ADF&G, Cook Inlet Regional Citizens Advisory Council, KPB, and United Cook Inlet Drift Association	03/31/2015	WSA information meeting. Project and WSA overview. Characterization of the Cook Inlet waterway. Participants' questions included the pipeline route, facility siting, hunting in the proximity of proposed Liquefaction Facility, and anchorages.
ADNR and ADOT&PF	03/31/2015	Gravel Summit Workshop. The BLM solicited input from stakeholders to update the Central Yukon Resource Management Plan, and related to gravel resource availability and proposed stipulations for mining and reclamation.
ADNR	04/17/2015	ADNR generally allowed use notification
ARRC	04/17/2015	ARRC permit application
KPB	04/20/2015	2015 Permitting for activities in the KPB
ADNR, SPCS, and ADEC	04/21/2015	Project and federal land managers' air quality meeting. USFWS and USDOI visual classifications.
ADEC	04/28/2015	Alaska Pollutant Discharge Elimination System (APDES) application review. ADEC permit conditions.
North Slope Borough (NSB)	05/01/2015	Project update focusing on portions within the NSB (Pipelines and Gas Treatment Plant [GTP]).
ADOT&PF	05/08/2015	Update on relocation of the KSH with ADOT&PF. ADOT&PF recommended a meeting with KPB representatives and pubic engagement. Discussion of ROW width.
ADF&G and SPCS	05/13/2015	Review of the proposed pipeline waterbody crossing plans with respect to timing (summer versus winter), methodology, and location with ADF&G representatives
KPB	05/18/2015	KSH Update

TABLE 8.1.3-2

Summary of Consultations with Alaska State and Local Agencies (through March of 2016)

Contact	Date Contacted	Summary
ADEC	05/19/2015	Project overview to Cook Inlet Subarea Committee. Discussed potential liquefied natural gas carrier transit routes in Cook Inlet.
ADEC	05/21/2015	Guidance on the permit condition
ADOT&PF and KPB	05/27/2015	Review of preliminary findings – relocation/reroute of KSH. Realignment routes discussed.
SPCS	06/04/2015	State Right-of-Way (ROW) Lease application review.
ADEC, ADF&G, ADNR, ADOT&PF, NSB, and SPCS	06/24/2015	Explanation of large-diameter natural gas pipeline construction planning and execution as it pertains to the Project including an overview of pipeline construction by season
Alaska Department of Health and Human Services, and SPCS	06/25/2015	Review of the proposed water crossing methods, season of construction, and alignment of crossing methods and season of construction
SPCS	07/02/2015	Debrief of June 24 and 25 Pipeline Construction workshops with SPCS
SPCS	07/29/2015	Associated facilities on Special Use Lands
ADNR	08/07/2015	Project Visual Aesthetics Study Work Plan overview
ADF&G, ADNR, NSB, and SPCS	08/12/2015	Review of the GTP facility footprint
ADF&G, ADNR, KPB, and SPCS	08/19/2015	Cook Inlet Routing and Construction Review
Alaska Department of Public Safety	08/20/2015	Meeting with Alaska State Troopers
ADOT&PF, KPB	08/24/2015	Relocation of KSH next steps.
ADOT&PF	08/26/2015	Discussion of ROW acquisition process and ADOT&PF and Federal Highway Administration (FHWA) engagement for relocation of the KSH
ADF&G, ADNR, ADOT&PF, KPB, and SPCS	09/02/2015	Review of the Liquefaction Facility and Marine Terminal footprint
ADNR and SPCS	09/03/2015	Dredging workshop
ADNR	09/16/2015	GTP exclusion zone discussion.
ADOT&PF	09/17/2015	KSH Memorandum of Understanding Planning
ADOT&PF	09/28/2015	Meeting on Feasibility Report for the relocation of the KSH
ADOT&PF	10/07/2015	Update on the relocation of the KSH
ADOT&PF	10/09/2015	Update on the relocation of the KSH
ADEC, ADNR, KPB, and SHPO	10/13/2015	Cook Inlet 2016 test trench permitting pre-application meeting
ADOT&PF	10/15/2015	Relocation of the KSH – General project issues, FHWA and the Uniform Relocation Assistance and Real Property Acquisition Policies Act
KPB	10/19/2015	Open House for relocation of the KSH
ADOT&PF	10/27/2015	Biweekly meeting with ADOT&PF (relocation of the KSH)

8.2 LAND USE

This section describes the existing land use at each of the proposed Project facility locations, including land use characteristics unique to the State of Alaska.

8.2.1 Land Use Classification

Land use classifications were made in the Project area using data from the National Land Cover Database (NLCD) 2011 (USGS, 2014) with land use types assigned based on the dominant vegetative cover and/or use of the land (e.g., cultivated land). Land use maps of the Project area are provided in Appendix A.

Six primary land use types were identified in the Project area:

- **Agricultural Land** – Agricultural land includes actively cultivated cropland and pasture/hay fields. Cultivated cropland areas are those used for the production of annual crops and orchards where crop vegetation accounts for greater than 20 percent of total vegetation. Pasture/hay fields areas are those where grasses and/or legumes are planted for livestock grazing or the production hay crops, where pasture/hay vegetation accounts for greater than 20 percent of total vegetation (NLCD codes 81 and 82);

- **Commercial/Industrial Land** – Commercial/industrial lands are highly developed areas, including power or utility stations; manufacturing or industrial plants; commercial or retail facilities; roads; military restricted areas; and oil and gas developments. Impervious surfaces account for 80 to 100 percent of the total cover of commercial/industrial lands (NLCD code 24);

- **Forest** – Forested lands include tracts of upland or wetland deciduous, evergreen, or mixed forest, dominated by trees generally greater than 16.4 feet (5 meters) tall, and greater than 20 percent of total vegetation cover (NLCD codes 41, 42, and 43). Additional details concerning specific vegetation types in the Project area, including forest lands and their locations, are provided in Resource Report No. 3;

- **Open Land** – Open land includes nonforested areas of barren land and areas of dwarf scrub/shrub, grasslands, sedges, emergent herbaceous wetlands, woody wetlands, lichens, and/or mosses (NLCD codes 31, 51, 52, 71, 72, 73, 74, 90, and 95). Additional details concerning wetland vegetation and potential effects are provided in Resource Report No. 2;

- **Open Water** – Open water consists of areas with less than 25 percent cover of vegetation or soil, and areas characterized by a perennial cover of ice and/or snow, generally greater than 25 percent of total cover (NLCD codes 11 and 12). Additional details concerning waterbodies and potential effects to them are provided in Resource Report No. 2; and

- **Residential Land** – Residential land includes yards in residential subdivisions and single-family housing units (including large-lot, single-family housing units), and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes (NLCD codes 21, 22, and 23).

8.2.2 Existing Land Use in the Project Area

A summary of the land requirements for the Project are described in Section 8.2.3. Note that the land use classifications are based on image interpretation on a large scale (NLCD database), do not reflect the locations of wetlands and waterbodies across the Project, and are the best available data collectively across all Project facilities. For information on wetlands and waterbodies, see Resource Report No. 2. Residential and commercial lands account for less than 3 percent of the total Project area. Existing land use in the Project construction ROW is predominantly open water (58 percent) because of the wide construction ROW required in Cook Inlet. Existing land use within the Project's permanent footprint is predominantly open land (52 percent). Note that land uses for the Liquefaction Facility are based on the preacquisition land use/land cover as mapped in the national database. Acquisition of the land would change all existing land uses to industrial upon building of the facility. Table 8.2.2-1 summarizes the acreage that would be affected during construction and by the permanent footprint of Project facilities.

TABLE 8.2.2-1

Summary of Land Use for Construction and Operations of the Project (acres)

		Agricultural Land		Commercial /Industrial Land[a]		Forest		Open Land		Open Water		Residential Land[a]		Subtotals	
Facility	**Borough/ Census Area**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**
Liquefaction Facility		**0.0**	**0.0**	**8.8**	**8.8**	**516.6**	**478.5**	**181.0**	**157.7**	**1,274.1**	**19.4**	**284.8**	**255.9**	**2,265.1[b]**	**921.8**
LNG Plant	KPB	0.0	0.0	8.8	8.8	478.5	478.5	157.6	157.6	0.9	0.9	255.9	255.9	901.6	901.6
Marine Terminal															
Temporary Material Offloading Facility (MOF)	KPB	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0	11.3[e]	0.0	0.0	0.0	10.0[e]	0.0
MOF Dredging Area	KPB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.7[e]	0.0	0.0	0.0	52.0[e]	0.0
Dredge Disposal	KPB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,200.0	0.0	0.0	0.0	1,200.0	0.0
Product Loading Facility (PLF)	KPB	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	18.5	18.5	0.0	0.0	18.7	18.7
LNG Terminal Shoreline Protection	KPB	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	0.0	0.0	0.0	0.0	1.5	1.5
LNG Construction Camp	KPB	0.0	0.0	0.0	0.0	38.1	0.0	14.4	0.0	0.0	0.0	28.8	0.0	81.3	0.0
Mainline		**2.8**	**0.2**	**3.0**	**0.0**	**11,754.3**	**2,742.3**	**11,640.6**	**2,984.2**	**38,390.1**	**340.8**	**1,183.0**	**182.7**	**62,973.7**	**6,250.3**
Mainline ROW	NSB	0.4	0.2	0.0	0.0	5,813.3	2,316.5	6,324.4	2,582.5	39.4	16.2	310.2	97.7	12,487.8	5,013.1
	Yukon-Koyukuk Census Area (YKCA)	0.0	0.0	0.0	0.0	10.6	4.6	2,755.5	1,114.9	11.2	4.4	176.8	52.0	2,954.1	1,175.9

TABLE 8.2.2-1

Summary of Land Use for Construction and Operations of the Project (acres)

		Agricultural Land		Commercial /Industrial Land[a]		Forest		Open Land		Open Water		Residential Land[a]		Subtotals	
Facility	**Borough/ Census Area**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**
	Denali Borough (DB)	0.0	0.0	0.0	0.0	2,613.1	1,027.7	2,194.3	899.6	16.6	7.1	63.2	19.4	4,887.2	1,953.7
	Fairbanks North Star Borough (FNSB)	0.0	0.0	0.0	0.0	681.7	275.4	652.0	269.2	3.6	1.3	30.6	11.3	1,367.9	557.2
	Matanuska-Susitna Borough (MSB)	0.0	0.0	0.0	0.0	42.6	15.8	0.0	0.0	0.0	0.0	0.0	0.0	42.6	15.8
	KPB	0.0	0.0	0.0	0.0	2,214.4	887.6	634.0	262.3	6.2	2.8	14.6	4.0	2,869.2	1,156.7
Offshore		**0.0**	**0.0**	**0.0**	**0.0**	**3.3**	**3.3**	**2.1**	**2.1**	**38,126.4**	**324.8**	**0.0**	**0.0**	**38,131.8**	**330.1**
Offshore ROW	KPB	0.0	0.0	0.0	0.0	3.3	3.3	2.1	2.1	38,126.4	324.8	0.0	0.0	38,131.8	330.1
PBTL		**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**7.2**	**7.2**	**0.0**	**0.0**	**0.0**	**0.0**	**7.3**	**7.3**
PBTL ROW	NSB	0.0	0.0	0.1	0.1	0.0	0.0	7.2	7.2	0.0	0.0	0.0	0.0	7.3	7.3
PTTL		**0.0**	**0.0**	**16.4**	**8.2**	**0.0**	**0.0**	**1,674.0**	**598.5**	**36.3**	**6.9**	**0.0**	**0.0**	**1,743.0**	**621.8**
PTTL ROW	NSB	0.0	0.0	16.4	8.2	0.0	0.0	1,674.0	598.5	36.3	6.9	0.0	0.0	1,726.6	613.6
Pipeline Aboveground Facilities[c]		**0.0**	**0.0**	**0.0**	**0.0**	**129.0**	**129.0**	**140.9**	**140.9**	**0.0**	**0.0**	**2.4**	**2.4**	**272.2**	**272.2**
	Total	**0.0**	**0.0**	**0.0**	**0.0**	**124.0**	**124.0**	**132.9**	**132.9**	**0.0**	**0.0**	**0.7**	**0.7**	**257.6**	**257.6**
	NSB	0.0	0.0	0.0	0.0	0.0	0.0	60.5	60.5	0.0	0.0	0.1	0.1	60.6	60.6

TABLE 8.2.2-1

Summary of Land Use for Construction and Operations of the Project (acres)

		Agricultural Land		Commercial /Industrial Land[a]		Forest		Open Land		Open Water		Residential Land[a]		Subtotals	
Facility	**Borough/ Census Area**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**
Compressor Stations/Heater Station	YKCA	0.0	0.0	0.0	0.0	50.3	50.3	40.3	40.3	0.0	0.0	0.3	0.3	90.9	90.9
	DB	0.0	0.0	0.0	0.0	0.0	0.0	30.3	30.3	0.0	0.0	0.0	0.0	30.3	30.3
	MSB	0.0	0.0	0.0	0.0	73.7	73.7	1.7	1.7	0.0	0.0	0.4	0.4	75.8	75.8
Mainline Meter Stations[c]	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**1.2**	**1.2**	**2.7**	**2.7**	**0.0**	**0.0**	**1.5**	**1.5**	**5.5**	**5.5**
	NSB	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.7	0.0	0.0	0.0	0.0	2.7	2.7
	KPB	0.0	0.0	0.0	0.0	1.2	1.2	0.0	0.0	0.0	0.0	1.5	1.5	2.7	2.7
Mainline Block Valves (MLBVs)	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**3.8**	**3.8**	**4.4**	**4.4**	**0.0**	**0.0**	**0.1**	**0.1**	**8.3**	**8.3**
	NSB	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	0.0	0.0	0.1	0.1	1.5	1.5
	YKCA	0.0	0.0	0.0	0.0	0.9	0.9	2.3	2.3	0.0	0.0	0.0	0.0	3.2	3.2
	DB	0.0	0.0	0.0	0.0	1.1	1.1	0.2	0.2	0.0	0.0	0.0	0.0	1.3	1.3
	MSB	0.0	0.0	0.0	0.0	1.7	1.7	0.1	0.1	0.0	0.0	0.0	0.0	1.8	1.8
	KPB	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.4	0.4
PTTL MLBVs	NSB	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.4	0.4
PTTL Meter Stations	NSB	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.5	0.5
Pipeline Associated Infrastructure		**2.0**	**0.0**	**5.8**	**0.0**	**5,906.8**	**310.7**	**5,540.4**	**252.0**	**234.0**	**0.0**	**884.8**	**73.6**	**12,573.8**	**636.3**
Mainline Additional Temporary Workspace (ATWS)	**Total**	**0.5**	**0.0**	**0.0**	**0.0**	**909.5**	**0.0**	**656.8**	**0.0**	**20.0**	**0.0**	**61.9**	**0.0**	**1,648.6**	**0.0**
	NSB	0.0	0.0	0.0	0.0	2.9	0.0	185.6	0.0	4.0	0.0	17.2	0.0	209.7	0.0
	YKCA	0.0	0.0	0.0	0.0	251.9	0.0	205.1	0.0	1.5	0.0	16.5	0.0	475.0	0.0

TABLE 8.2.2-1

Summary of Land Use for Construction and Operations of the Project (acres)

		Agricultural Land		Commercial /Industrial Land[a]		Forest		Open Land		Open Water		Residential Land[a]		Subtotals	
Facility	**Borough/ Census Area**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**
	DB	0.0	0.0	0.0	0.0	162.7	0.0	146.8	0.0	0.5	0.0	17.4	0.0	327.4	0.0
	FNSB	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0
	MSB	0.0	0.0	0.0	0.0	419.6	0.0	91.7	0.0	12.9	0.0	3.9	0.0	528.1	0.0
	KPB	0.5	0.0	0.0	0.0	66.6	0.0	27.6	0.0	1.1	0.0	6.8	0.0	102.6	0.0
Access Roads	**Total**	**1.5**	**0.0**	**1.2**	**0.0**	**1,223.6**	**308.5**	**1,296.8**	**249.3**	**142.6**	**0.0**	**359.3**	**73.5**	**3,025.0**	**631.4**
	NSB	0.0	0.0	0.9	0.0	2.6	0.0	552.5	2.2	136.5	0.0	86.5	0.6	779.0	2.8
	YKCA	0.0	0.0	0.0	0.0	584.2	52.7	234.4	1.6	1.7	0.0	116.3	0.2	936.6	54.4
	DB	0.0	0.0	0.0	0.0	76.7	13.7	83.0	5.6	0.6	0.0	31.5	0.9	191.7	20.2
	FNSB	0.0	0.0	0.0	0.0	128.5	100.9	106.1	100.6	0.4	0.0	47.7	47.7	282.8	249.2
	MSB	1.5	0.0	0.3	0.0	411.0	141.2	317.4	139.3	3.4	0.0	76.8	24.2	810.3	304.7
	KPB	0.5	0.0	0.0	0.0	930.2	0.0	660.2	0.0	20.0	0.0	62.4	0.0	1,673.2	0.0
Construction Camps	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**259.1**	**0.0**	**288.9**	**0.0**	**6.2**	**0.0**	**122.8**	**0.0**	**677.0**	**0.0**
	NSB	0.0	0.0	0.0	0.0	0.0	0.0	108.4	0.0	6.2	0.0	28.0	0.0	142.7	0.0
	YKCA	0.0	0.0	0.0	0.0	91.8	0.0	65.6	0.0	0.0	0.0	90.5	0.0	247.8	0.0
	DB	0.0	0.0	0.0	0.0	59.3	0.0	42.8	0.0	0.0	0.0	3.6	0.0	105.7	0.0
	KPB	0.0	0.0	0.0	0.0	70.6	0.0	72.1	0.0	0.0	0.0	0.0	0.0	142.6	0.0
	MSB	0.0	0.0	0.0	0.0	37.4	0.0	0.0	0.0	0.0	0.0	0.7	0.0	38.2	0.0
Compressor Station Camps[e]	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**13.9**	**0.0**	**11.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**25.2**	**0.0**
	NSB	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	5.8	0.0

TABLE 8.2.2-1

Summary of Land Use for Construction and Operations of the Project (acres)

		Agricultural Land		Commercial /Industrial Land[a]		Forest		Open Land		Open Water		Residential Land[a]		Subtotals	
Facility	**Borough/ Census Area**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**
	YKCA	0.0	0.0	0.0	0.0	6.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	8.6	0.0
	DB	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	2.9	0.0
	MSB	0.0	0.0	0.0	0.0	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.0
Disposal Sites	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**120.0**	**0.0**	**130.8**	**0.0**	**0.0**	**0.0**	**8.4**	**0.0**	**259.1**	**0.0**
	NSB	0.0	0.0	0.0	0.0	1.0	0.0	44.4	0.0	0.0	0.0	0.9	0.0	46.4	0.0
	YKCA	0.0	0.0	0.0	0.0	80.3	0.0	61.7	0.0	0.0	0.0	6.2	0.0	148.2	0.0
	DB	0.0	0.0	0.0	0.0	7.3	0.0	2.5	0.0	0.0	0.0	0.0	0.0	9.8	0.0
	MSB	0.0	0.0	0.0	0.0	31.4	0.0	18.5	0.0	0.0	0.0	0.0	0.0	49.9	0.0
	KPB	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	1.3	0.0	4.9	0.0
Double Joining Yards	**Total**	**0.0**	**0.0**	**1.8**	**0.0**	**156.1**	**0.0**	**20.8**	**0.0**	**1.3**	**0.0**	**19.8**	**0.0**	**199.7**	**0.0**
	FNSB	0.0	0.0	0.0	0.0	34.2	0.0	20.8	0.0	0.0	0.0	0.0	0.0	54.9	0.0
	MSB	0.0	0.0	1.8	0.0	121.9	0.0	0.0	0.0	1.3	0.0	19.8	0.0	144.8	0.0
Helipads	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**2.2**	**2.2**	**2.1**	**2.1**	**0.0**	**0.0**	**0.1**	**0.1**	**4.4**	**4.4**
	NSB	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.1	0.1	0.5	0.5
	YKCA	0.0	0.0	0.0	0.0	0.3	0.3	0.8	0.8	0.0	0.0	0.0	0.0	1.1	1.1
	DB	0.0	0.0	0.0	0.0	0.7	0.7	0.4	0.4	0.0	0.0	0.0	0.0	1.1	1.1
	MSB	0.0	0.0	0.0	0.0	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
	KPB	0.0	0.0	0.0	0.0	0.2	0.2	0.5	0.5	0.0	0.0	0.0	0.0	0.7	0.7
Pipe Storage Yards	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**190.2**	**0.0**	**213.4**	**0.0**	**0.1**	**0.0**	**70.5**	**0.0**	**474.2**	**0.0**

TABLE 8.2.2-1

Summary of Land Use for Construction and Operations of the Project (acres)

		Agricultural Land		Commercial /Industrial Land[a]		Forest		Open Land		Open Water		Residential Land[a]		Subtotals	
Facility	**Borough/ Census Area**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**
	NSB	0.0	0.0	0.0	0.0	0.0	0.0	96.2	0.0	0.1	0.0	9.5	0.0	105.8	0.0
	YKCA	0.0	0.0	0.0	0.0	75.2	0.0	53.2	0.0	0.0	0.0	56.3	0.0	184.6	0.0
	DB	0.0	0.0	0.0	0.0	19.1	0.0	22.9	0.0	0.0	0.0	0.1	0.0	42.2	0.0
	MSB	0.0	0.0	0.0	0.0	83.5	0.0	41.1	0.0	0.0	0.0	0.1	0.0	124.7	0.0
	KPB	0.0	0.0	0.0	0.0	12.4	0.0	0.0	0.0	0.0	0.0	4.5	0.0	16.9	0.0
Material Sites	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**3,017.3**	**0.0**	**2,552.3**	**0.0**	**54.6**	**0.0**	**239.8**	**0.0**	**5,864.0**	**0.0**
	NSB	0.0	0.0	0.0	0.0	9.0	0.0	1,205.0	0.0	53.0	0.0	2.4	0.0	1,269.4	0.0
	YKCA	0.0	0.0	0.0	0.0	1,628.6	0.0	784.9	0.0	1.6	0.0	199.0	0.0	2,614.2	0.0
	DB	0.0	0.0	0.0	0.0	502.3	0.0	243.0	0.0	0.0	0.0	32.2	0.0	777.5	0.0
	FNSB	0.0	0.0	0.0	0.0	55.0	0.0	74.0	0.0	0.0	0.0	0.0	0.0	129.1	0.0
	MSB	0.0	0.0	0.0	0.0	816.7	0.0	231.0	0.0	0.0	0.0	6.1	0.0	1,053.8	0.0
	KPB	0.0	0.0	0.0	0.0	5.7	0.0	14.3	0.0	0.0	0.0	0.0	0.0	19.9	0.0
Railroad Spurs	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**7.4**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**	**10.9**	**0.0**
	YKCA	0.0	0.0	0.0	0.0	1.4	0.0	0.9	0.0	0.0	0.0	0.2	0.0	2.5	0.0
	DB	0.0	0.0	0.0	0.0	0.4	0.0	3.5	0.0	0.0	0.0	0.0	0.0	4.0	0.0
	MSB	0.0	0.0	0.0	0.0	1.1	0.0	3.0	0.0	0.0	0.0	0.3	0.0	4.4	0.0
Railroad Workpads	**Total**	**0.0**	**0.0**	**0.0**	**0.0**	**12.0**	**0.0**	**22.8**	**0.0**	**0.0**	**0.0**	**1.8**	**0.0**	**36.7**	**0.0**
	YKCA	0.0	0.0	0.0	0.0	7.0	0.0	2.1	0.0	0.0	0.0	0.6	0.0	9.8	0.0
	DB	0.0	0.0	0.0	0.0	1.5	0.0	10.7	0.0	0.0	0.0	0.0	0.0	12.2	0.0

TABLE 8.2.2-1

Summary of Land Use for Construction and Operations of the Project (acres)

		Agricultural Land		Commercial /Industrial Land[a]		Forest		Open Land		Open Water		Residential Land[a]		Subtotals	
Facility	**Borough/ Census Area**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**
	MSB	0.0	0.0	0.0	0.0	3.5	0.0	9.9	0.0	0.0	0.0	1.2	0.0	14.7	0.0
PTTL Access Roads	NSB	0.0	0.0	0.5	0.0	0.0	0.0	196.1	0.0	5.6	0.0	0.0	0.0	202.2	0.0
PTTL ATWS	NSB	0.0	0.0	2.1	0.0	0.0	0.0	97.0	0.0	0.0	0.0	0.0	0.0	97.2	0.0
PTTL Construction Camps	NSB	0.0	0.0	0.2	0.0	0.0	0.0	196.1	0.0	5.6	0.0	0.0	0.0	202.2	0.0
PTTL Helipad	NSB	0.0	0.0	0.0	0.0	0.0	0.0	15.3	0.0	3.6	0.0	0.0	0.0	21.0	0.0
PTTL Pipe Storage Yards	NSB	0.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0
GTP		**0.0**	**0.0**	**3.5**	**3.5**	**0.0**	**0.0**	**272.2**	**272.2**	**8.2**	**8.2**	**0.0**	**0.0**	**283.9**	**283.9**
Operations Center Pad	NSB	0.0	0.0	0.0	0.0	0.0	0.0	54.8	54.8	1.2	1.2	0.0	0.0	56.0	56.0
GTP Pad	NSB	0.0	0.0	3.5	3.5	0.0	0.0	217.4	217.4	7.0	7.0	0.0	0.0	227.9	227.9
GTP Associated Infrastructure		**0.0**	**0.0**	**70.7**	**68.8**	**0.0**	**0.0**	**488.4**	**399.8**	**83.2**	**36.9**	**0.0**	**0.0**	**642.3**	**505.5**
Barge Bridge[d]	NSB	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.9	0.0
West Dock Head 4 (DH 4)[d]	NSB	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	30.1	0.0	0.0	0.0	32.1	0.0
Ice Pad	NSB	0.0	0.0	0.5	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	3.2	0.0
Module Staging Area	NSB	0.0	0.0	0.0	0.0	0.0	0.0	86.3	0.0	0.3	0.0	0.0	0.0	86.6	0.0
Associated Transfer Pipelines	NSB	0.0	0.0	2.3	2.3	0.0	0.0	68.1	68.1	0.0	0.0	0.0	0.0	72.6	72.6

TABLE 8.2.2-1

Summary of Land Use for Construction and Operations of the Project (acres)

		Agricultural Land		Commercial /Industrial Land[a]		Forest		Open Land		Open Water		Residential Land[a]		Subtotals	
Facility	**Borough/ Census Area**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**	**Construction**	**Operations**
Module Staging Area	NSB	0.0	0.0	0.1	0.0	0.0	0.0	86.0	0.0	0.2	0.0	0.0	0.0	86.4	0.0[d]
Berthing Basin	NSB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	0.0	0.0	0.0	13.7	0.0
Access Roads	NSB	0.0	0.0	66.5	66.5	0.0	0.0	161.5	161.5	30.8	30.8	0.0	0.0	325.3	325.3
Material Site	NSB	0.0	0.0	0.0	0.0	0.0	0.0	140.0	140.0	1.2	1.2	0.0	0.0	141.2	141.2
Water Reservoir and Pump Facilities	NSB	0.0	0.0	0.0	0.0	0.0	0.0	30.2	30.2	5.0	5.0	0.0	0.0	35.1	35.1
Grand Total		**2.8**	**0.2**	**12.1**	**9.2**	**12,263.8**	**3,213.6**	**14,610.8**	**4,427.2**	**38,612.4**	**412.6**	**1,558.3**	**514.0**	**67,060.1**	**8,576.8**

[a] Areas designated as residential in the PBU for GTP, PTTL, PBTL and Mainline are developed locations for oil and gas activity as indicated in review of aerial imagery in Appendix A of Resource Report No. 1. The category of land use prior to acquisition is reflected for the Liquefaction Facility site, not the current ownership by the Project.

[b] 1,200 acres of the 2,265 construction total is for dredge material placement.

[c] Acreage of a facility is not included in the total when it occurs within the construction or operation footprint of another facility (e.g., MLBV, meter stations): PTTL MLBVs = 0.3 acre, PTTL Meter Stations = 0.2 acre. Mainline MLBVs = 23.7 acres, Mainline Meter Stations = 0.5 acre, and Compressor Station Camps = 27.3.

[d] Subject to commercial negotiations.

[e] The MOF is a total of 28.3 acres; however, 16.98 acres is included within the MOF dredging footprint

* Values are not additive across all categories (see subtotals).

TABLE 8.2.2-2

Summary of Land Use for Construction of Non-Jurisdictional Facilities (acres)[a]

Facility	Borough/Census Area	Agricultural Land	Commercial/ Industrial Land	Forest	Open Land	Open Water	Residential Land[f]	Subtotals
PBU MGS Project		**0.0**	**164.6**	**0.0**	**340.7**	**8.3**	**0.0**	**513.6**
AGI to GC1	NSB	0.0	7.3	0.0	62.4	1.2	0.0	70.8
Branch to W Pad	NSB	0.0	1.8	0.0	2.0	0.0	0.0	3.8
CCP to AGI	NSB	0.0	13.9	0.0	9.6	0.3	0.0	23.8
CGF to LPC	NSB	0.0	14.5	0.0	30.5	0.4	0.0	45.4
EOA CO2	NSB	0.0	59.4	0.0	95.8	2.3	0.0	157.5
Pipeline ROW	NSB	0.0	0.1	0.0	7.2	0.0	0.0	7.3
WOA CO2	NSB	0.0	67.7	0.0	133.1	4.1	0.0	204.9
PTU Expansion Project		**0.0**	**0.0**	**0.0**	**135.9**	**0.0**	**0.0**	**135.9**
Central Pad Expansion	NSB	0.0	0.0	0.0	26.1	0.0	0.0	26.0
East Gathering Line[cd]	NSB	0.0	0.0	0.0	30.1	0.0	0.0	30.1
East Pad[c]	NSB	0.0	0.0	0.0	20.8	0.0	0.0	20.7
East Pad Road[c]	NSB	0.0	0.0	0.0	16.0	0.0	0.0	17.0
Gravel Mine Study Area[e]	NSB	0.0	0.0	0.0	43.0	0.0	0.0	61.7
Relocation of the KSH		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A[b]**
Alt 1 LNG	KPB	0.1	0.8	44.3	10.7	0.0	29.7	85.6
Alt 1 LNG S Variant	KPB	3.0	2.0	42.5	11.3	0.0	37.5	96.3
Alt 2 West	KPB	0.0	0.8	48.6	10.2	0.0	30.4	90.0
Alt 2 West N Variant	KPB	0.0	0.0	93.4	12.5	0.0	25.1	131.0
Alt 2 West S and N Variant	KPB	2.9	1.1	89.0	13.9	0.0	33.3	140.2
Alt 2 West S Variant	KPB	2.9	2.0	44.2	11.6	0.0	38.6	99.3
Alt 3 Miller Loop Rd	KPB	2.4	2.0	32.7	14.5	0.0	86.0	137.6

TABLE 8.2.2-2

Summary of Land Use for Construction of Non-Jurisdictional Facilities (acres)[a]

Facility	Borough/Census Area	Agricultural Land	Commercial/ Industrial Land	Forest	Open Land	Open Water	Residential Land[f]	Subtotals
Alt 4 East	KPB	0.0	0.2	130.8	13.7	0.7	23.9	169.3
Grand Total		**0.0**	**164.6**	**0.0**	**554.8**	**8.3**	**0.0**	**818.8[b]**

[a] Construction land use is not indicative of area of actual land fill since some uses such as ice roads and pads do not alter underlying land surface characteristics or available uses.
[b] Total acreage for relocation of the KSH will be provided when a route has been selected. The acres shown are for each alternative and are not cumulative; one alternative will be selected.
[c] Permitted under POA-2001-1082-M1; not yet constructed.
[d] Acreages include ROWs and/or temporary seasonal work areas (e.g., ice roads and pads)
[e] The gravel mine would be approximately 32 acres of excavation
[f] The category of land use prior to acquisition is reflected, not the current ownership by the Project.

8.2.2.1 Liquefaction Facility

The proposed location of the Liquefaction Facility is on the eastern shore of Cook Inlet in the Nikiski area of the Kenai Peninsula. Maps depicting land use in the vicinity of the Liquefaction Facility are provided in Appendix A.

The Liquefaction Facility and Marine Terminal during construction (prior to land acquisition for the Project changing the land use category as indicated here to industrial) would impact (see Table 8.2.2-1): commercial/industrial land (<1 percent); forest (23 percent); open land (8 percent); open water (56 percent); and residential land (13 percent). This includes the estimated 1,200 acres of open water that would be required for dredge material placement during construction of the temporary onsite Material Offloading Facility (MOF).

The land ownership of the Liquefaction Facility site prior to acquisition consisted of private land (75 percent), State of Alaska land (12 percent), Alaska Native Corporation land (7 percent), and Kenai Peninsula Borough (KPB) land (6 percent) (see Table 8.5-1). The vast majority of private land holdings have been acquired for the Project, and remaining tracts would be acquired, plus affected state and KPB lands. The Marine Terminal portion of the Liquefaction Facility is located on State of Alaska submerged and submersible lands within Cook Inlet.

Land use for the Liquefaction Facility and Marine Terminal calculated based on operations (permanent footprint) would impact (see Table 8.2.2-1): commercial/industrial land (<1 percent); forest (52 percent); open land (17 percent); open water (2 percent); and residential land (28 percent).

The land ownership of the Liquefaction Facility site during operations contains private land (88 percent), State of Alaska land (6 percent), and borough land (6 percent).

8.2.2.2 Interdependent Project Facilities

The Project's Interdependent Facilities include the Mainline, PBTL, PTTL, Pipeline Aboveground Facilities, Pipeline Associated Infrastructure, the GTP, and GTP Associated Infrastructure to move and process natural gas from the North Slope to the Liquefaction Facility.

8.2.2.2.1 Pipelines

8.2.2.2.1.1 Mainline

The proposed Mainline route begins at the GTP in the PBU and would generally follow the Dalton Highway (Alaska Highway 11) and Trans-Alaska Pipeline System (TAPS) southward from the Prudhoe Bay area to Livengood. From there, the route generally parallels the east side of the Tolovana River south, crossing west of Fairbanks near Minto Lakes, to the Tanana River and follows the Parks Highway (Alaska Highway 3) southward to a point just south of Trapper Creek. From this point, the Mainline route would continue cross-country to the south and southwest following along the west side of the Susitna River to the Deshka River. From the Deshka River, the Mainline route runs southwest to the north shore of Cook Inlet northeast of Viapan Lake, which is between the communities of Beluga and Tyonek. The offshore portion of the Mainline route crosses Cook Inlet to the Kenai Peninsula near Boulder Point. From the south shore of Cook Inlet near Boulder Point, the Mainline route continues south and west to the termination point at the proposed Liquefaction Facility.

Onshore land use for the Mainline calculated based on the construction ROW would impact (see Table 8.2.2-1): forest (46 percent); open land (51 percent); open water (<1 percent); and, residential land (2 percent). The offshore construction ROW required for crossing Cook Inlet and accommodating the pipeline's lay barge anchor spread would impact approximately 38,132 acres of open water.

The land ownership of the onshore and offshore Mainline during construction contains private land (<1 percent); State of Alaska land including Alaska Mental Health Trust and University of Alaska Land (90 percent); Alaska Native Corporation land (1 percent); city/borough land (1 percent); and federal land (7 percent) (see Table 8.5-1). The State of Alaska owns the Cook Inlet seabottom (which is approximately 75 percent of the total Mainline construction acreage).

Onshore land use for the Mainline calculated based on the operations ROW would impact (see Table 8.2.2-1): forest (46 percent); open land (52 percent); open water (<1 percent); and, residential land (2 percent). The offshore operation ROW required for crossing Cook Inlet and accommodating pipeline's lay barge anchor spread would impact 330 acres of open water.

The land ownership of the onshore and offshore Mainline during operations contain private land (2 percent), State of Alaska land (60 percent), Alaska Native Corporation land (5 percent), city/borough land (5 percent), and federal land (28 percent).

8.2.2.2.1.2 Prudhoe Bay Gas Transmission Line (PBTL)

Land use for the PBTL calculated based on construction and operations ROW would impact (see Table 8.2.2-1): open land (>99 percent); and commercial/industrial land (<1 percent).

The PBTL would be located entirely within the North Slope Borough (NSB) and cross public lands owned by the State of Alaska.

8.2.2.2.1.3 Point Thomson Gas Transmission Line (PTTL)

Land use within the PTTL calculated based on construction ROW would impact (see Table 8.2.2-1): open land (97 percent); open water (2 percent); and commercial/industrial land (1 percent).

The land ownership of the PTTL during construction contains private land (<1 percent) and State of Alaska Land (>99 percent) (see Table 8.5-1).

Land use within the PTTL calculated based on operations ROW includes the following (see Table 8.2.2-1): open land (98 percent); open water (1 percent); and commercial/industrial land (1 percent).

The land ownership of the PTTL during operations contain private land holdings (1 percent) and State of Alaska Land (99 percent).

8.2.2.2.2 Pipeline Aboveground Facilities

The Pipeline Aboveground Facilities include both Mainline Aboveground Facilities and PTTL Aboveground Facilities outlined in Table 8.2.2-1. These include compressor stations, heater stations, meter stations, gas interconnection point stations, MLBVs, and cathodic protection facilities. Land use

where the Pipeline Aboveground Facilities would be located would impact: forest (47 percent); open land (53 percent); and residential land (<1 percent).

The land ownership of Pipeline Aboveground Facilities contains private land (<1 percent), State of Alaska land (69 percent), Alaska Native Corporation land (8 percent), city/borough land (<1 percent), and federal land (22 percent) (see Table 8.5-1).

8.2.2.2.3 Pipeline Associated Infrastructure

The Pipeline Associated Infrastructure includes ice roads, access roads, ATWS, contractor yards, pipe yards, construction camps, rail spurs, temporary disposal sites, and material extraction sites for the Mainline and PTTL.

Land use for the Pipeline Associated Infrastructure, calculated based on construction ROW for all Pipeline Associated Infrastructure would impact (see Table 8.2.2-1): agricultural land (<0.1 percent); commercial/industrial land (<0.1 percent); forest (49 percent); open land (43 percent); open water (<1 percent); and residential land (7 percent).

The land ownership of the Pipeline Associated Infrastructure during construction contains private land (5 percent), State of Alaska land (64 percent), Alaska Native Corporation land (4 percent), city/borough land (5 percent), and federal land (22 percent) (see Table 8.5-1). Ownership information has not been verified through title verification for approximately 1 percent of land within the Pipeline Associated Infrastructure construction ROW.

Land use for the Pipeline Associated Infrastructure calculated based on operations ROW for all Pipeline Associated Infrastructure would impact: forest (65 percent); and open land (34 percent).

The land ownership of the Pipeline Associated Infrastructure during operations contain State of Alaska Land (93 percent), Alaska Native Corporation land (3 percent), city/borough land (3 percent), and federal land (<1 percent).

8.2.2.2.4 Gas Treatment Plant (GTP)

The proposed location of the GTP is on the North Slope near the Beaufort Sea coast. The GTP would be located within the PBU on land that is designated for oil and gas production facilities and operations. Maps depicting land use in the vicinity of the GTP are provided in Appendix A.

Land use for the GTP, calculated based on the GTP site footprint, would impact (see Table 8.2.2-1): open land (96 percent); open water (3 percent); and commercial/industrial land (1 percent).

The GTP would be located entirely on State of Alaska land.

8.2.2.2.5 GTP Associated Infrastructure

The GTP Associated Infrastructure includes a module staging area, West Dock modifications, a water reservoir, associated transfer pipelines, GTP access roads, construction camps, and material sites.

Land use for the GTP Associated Infrastructure calculated based on the construction footprint would impact (see Table 8.2.2-1): open land (76 percent); open water (13 percent); and commercial/industrial land (11 percent).

The land ownership of GTP Associated Infrastructure during construction contains State of Alaska land (>99 percent), and Native allotment land (<1 percent). (Prudhoe Bay operator, BP, has an unrestricted use agreement for the Native allotment land that would be used by Alaska LNG during construction for the West Dock access road/laydown area; see Table 8.5-1.)

Land use for the GTP Associated Infrastructure during operations would impact: open land (79 percent); open water (7 percent); and commercial/industrial land (14 percent).

The land ownership of GTP Associated Infrastructure during operations contains State of Alaska Land (>99 percent), and Native allotment land (<1 percent).

8.2.2.3 Non-Jurisdictional Facilities

The land use for the PBU MGS Project would impact (see Table 8.2.2-2): open land (66 percent); open water (1.5 percent); and commercial/industrial land (32 percent). The PBU MGS Project land ownership consists of State of Alaska land (98 percent); and privately owned land (<1 percent).

The PTU Expansion project is located on land classified as open land of which 80 acres are new development and 38 acres are already permitted.

The relocation of the KSH is a rerouting of 1.33-mile segment of the KSH located near the Nikiski industrial area. The KSH is a state-owned, two-lane highway located in the vicinity of the Nikiski industrial area. A recent study examined highway relocation routes beginning near KSH MP 18 and ending near MP 25. Alternatives have been evaluated and range in length from 2.73 miles to 3.97 miles. The total acreage for the KSH reroute would be nominally 100 acres (assuming a 200-foot ROW). Actual planned acreage for the relocation of the KSH will be provided when a preferred alternative is selected.

8.2.3 Land Requirements

The Project's proposed design includes land and open water that would be temporarily affected during construction, and land and open water that would be permanently used for operations.

Alaska contains over 570,641 square miles of land, and 94,743 square miles of water (U.S. Census Bureau, 2012). Anticipated land use required during Project operations would require less than 0.02 percent of the state's total available land area. The proposed facilities have been sited adjacent to existing infrastructure to the extent practicable, minimizing the amount of permanent changes that would occur to existing land use.

At this time, it is anticipated that the granular footprint for a number of the temporary facilities would remain in place after construction and would not be used for operations (see Table 8.2.2-1). The operational footprint of Project facilities would have the greatest effect on open land, followed by forested land.

8.2.3.1 Liquefaction Facility

The proposed Liquefaction Facility consists of the LNG Plant and Marine Terminal. The LNG Plant would include liquefaction processing and storage facilities and necessary utilities and offsite systems, and the Marine Terminal would include the trestle(s), piping, MOF, and berthing facilities associated with LNGC loading and berthing. The facilities and details of the design are provided in Resource Report No. 1.

8.2.3.2 Interdependent Project Facilities

8.2.3.2.1 Pipelines

Construction and operation ROW widths are currently being evaluated for all pipelines. Typical pipeline construction ROW configurations are provided in Table 1.4.2-1 of Resource Report No. 1. In general, the construction ROW width would vary depending on conditions along the pipeline route and the construction season. Other factors influencing the construction workspace requirements include proximity to permanent access roads, cross and longitudinal slopes, bedrock, soils, ice, wetlands, and construction traffic volume on the ROW.

8.2.3.2.1.1 Mainline

The Mainline would be a 42-inch-diameter natural gas pipeline, approximately 807 miles in length, extending from the GTP in the PBU to the Liquefaction Facility on the shore of Cook Inlet near Nikiski, including an offshore pipeline section crossing Cook Inlet. For the Mainline, a 100-foot-wide permanent easement would be acquired. The construction ROW width would vary depending on the type of terrain, the season of construction, and the ease of access from nearby roads. In general, the nominal construction ROW level surface would be 110 feet wide, with additional footprint necessary for travel lanes, cut/fill slope areas, and ATWS, as required. In addition, the width of the construction ROW would be wider in areas where temporary workspace is required, such as at river crossings and areas of steep cross slopes.

8.2.3.2.1.2 PBTL

A 120-foot-wide nominal construction ROW would be required for the PBTL (see typical ROW configuration in Appendix E). The PBTL would be installed on typical vertical support members (VSMs) connected to a horizontal support member (HSM). An ice road would be constructed within the construction ROW. In locations where additional laydown areas are needed, a wider construction ROW may be required. The VSM installation, pipeline assembly, and erection would be accomplished from the ice road. The PBTL would be located on State of Alaska land and prior to construction, a 100-foot-wide ROW would be acquired.

8.2.3.2.1.3 PTTL

The PTTL would be installed on typical VSMs connected to an HSM. A 110-foot-wide nominal construction ROW would be required for the PTTL (Table 1.4.2-1; see typical ROW configuration in Appendix E). The width of the construction ROW would likely be wider in areas where additional workspace is required, such as at river crossings. Additional workspace would be restricted in areas of

environmental or cultural sensitivity. The PTTL would be located on State of Alaska land and prior to construction, an 80-foot-wide ROW would be acquired.

8.2.3.2.2 Pipeline Aboveground Facilities

The Mainline and PTTL include several types of aboveground pipeline facilities. The proposed design for the Mainline includes eight compressor stations, one standalone heater station, two meter stations, multiple pig launching/receiving stations, multiple MLBVs, and five gas interconnection points. A list of the compressor stations, heater station, and meter stations is provided in Table 8.2.2-1. The location of the gas interconnection points and associated effects are discussed in Section 1.3.2.1 and Appendix L of Resource Report No. 1. The gas interconnection point facility would be within the pipeline permanent ROW and would not require additional land to build. The facilities built by the State of Alaska are addressed in Appendix M in Resource Report No. 1.

The Project's proposed design anticipates construction of typical compressor stations, including temporary construction camp and laydown areas. Each compressor station would require approximately 25 acres of land for construction. Heater stations are anticipated to require clearing an area of up to 20 acres of land for construction, including temporary construction camp and laydown areas.

Meter stations, MLBVs, launchers and receivers, gas interconnection points, cathodic protection facilities, and aboveground pipeline support buildings would be within the footprint or ROW of the facilities (e.g., Liquefaction Facility, Mainline, GTP, PTTL, and PBTL) such that no additional land would be necessary beyond those already associated with the facilities upon which they are built. However, the Project's engineering team is currently evaluating the potential need for additional land on a facility-specific basis as the Project progresses toward construction.

8.2.3.2.3 Pipeline Associated Infrastructure

Construction of the Mainline would require the use of additional temporary facilities and other resources in the area of the permanent pipeline ROW (see mapping provided in Appendix A). The associated infrastructure and facilities may include the following:

- Temporary workspace for construction activities (e.g., staging areas, truck turnarounds, and utility crossovers);
- Access roads and shoo-flies (i.e., temporary roads bypassing constrained sections of the construction ROW) to transport equipment, material, pipe, and personnel to the Project area, some of which may be maintained for permanent use during operations (see Resource Report No. 1, Appendix F);
- Water sourcing facilities to support camp raw water supply, snow and ice road construction, hydrostatic testing activities, earthwork moisture conditioning, and dust control;
- Equipment fueling facilities;
- Helipads to transport personnel to remote locations (see Table 8.2.2-1);

- Existing airstrips for transporting personnel and freight to and from the Project area under evaluation are shown in Table 1.3.6-1 in Resource Report No. 1;

- Construction camps (to house workers in remote areas), pipe storage areas (for stockpiling pipe prior to installation), contractor yards (for construction staging, material storage, and other contractor needs), and rail spurs (to facilitate offload of pipe and other materials) (see Resource Report No. 1, Table 8.2.2-1);

- Existing and new material sites to supply sand, granular material, and rock/stone for construction of the pipeline and related facilities (see *Gravel Sourcing Plan and Reclamation Measures* in Resource Report No. 6, Appendix E);

- Disposal sites for excavated material, stumps, blast rock, acid drainage rock, and slash removed from the permanent pipeline ROW (see Project's *Gravel Sourcing Plan and Reclamation Measures* in Resource Report No. 6, Appendix E); and

- Pipe coating yards and concrete coating facilities. These facilities have not been identified, but it is anticipated that these activities would take place in either pipe or contactor yards.

Each of the associated infrastructure and facilities are described in greater detail in the following paragraphs.

Access Roads

Existing access roads would be used to the extent practicable. North of Livengood, construction crews and operations staff would use the granular material and access roads that were built for TAPS and for the Dalton Highway, where appropriate. Additional access roads or upgrades may also be required north of Livengood. South of Livengood, the proposed design considers access approximately every 5 to 10 miles of pipeline from the nearest existing public or private road to the construction ROW.

Shoo-fly roads are required where traffic access is not possible along the ROW due to severe slopes or other impediments. The shoo-flies allow traffic to detour around the severe slope sections and maintain access along the ROW. A list and description of access roads and shoo-flies to be used by the Project are included in Resource Report No. 1, Appendix F, and illustrated in Resource Report No. 1, Appendix A.

After construction, access roads would be returned to the landowners for their use, or the areas would be restored per landowner agreements.

Helipads

Each helipad would be constructed with pad dimensions of approximately 150 feet by 150 feet and clearing of vegetation of up to 10 acres at each location. The affected land most likely would be within the construction camp site and/or the permanent operations ROW of the pipeline or a compressor station. In those cases, no additional land use would be necessary beyond that already associated with these facilities.

Airstrips

There are potential upgrades that may be required for existing public airports or private airfields. The main airstrips that would be used include Deadhorse, Fairbanks, and Anchorage. Other airstrips that may be used include: Beluga, Galbraith, Dietrich, Coldfoot, Prospect Creek, Five Mile Camp, Kenai, and Livengood. See Table 1.3.6-1 in Resource Report No. 1 for more information. The Applicant is still evaluating the airstrips that would be used for the Project.

Construction Camps, Pipe Storage Areas, Contractor Yards, and Rail Spurs

Temporary construction camps, pipe storage yards, and contractor yards would be built at various locations to support pipeline construction (see Resource Report No. 1, Appendices A and I). In general, construction camps would range in size from 23 to 37 acres, depending on the number of workers housed. Pipe storage yards would range in size from 7 to 20 acres and be spaced approximately every 20 miles along or near the pipeline construction ROW. In some cases, a pipe yard may be collocated with a contractor yard and/or a construction camp, depending on available acreage, access, and topography. To the extent practical, these sites would be located on previously disturbed areas. Construction camps would be located such that they take into consideration environmental, land use, and socioeconomic effects as well as the travel distance from the camps to the construction sites, the duration the camps would remain in the same location, the design occupancy, available water sources, and available preexisting disturbed areas.

After construction, temporary camps, pipe storage areas, and contractor yards would be disassembled and surface facilities removed unless other arrangements are made with the landowner or land-managing agency. Granular pads installed as part of camp or yard construction would be left in place or restored in accordance with land use agreements.

The Pipeline MOF would support the transportation of pipe, construction equipment, and other materials to the Mainline during the construction phase on the west side of Cook Inlet. After construction, the MOF would be left in place or area restored as per landowner agreements.

Material Sites

In general, a material site would be required approximately every 20 miles of pipeline ROW to support construction. Potential granular material locations are in the process of being evaluated and a list of potential sites that could be used in the Project's *Gravel Sourcing Plan and Reclamation Measures,* which is included as Appendix E of Resource Report No. 6, has been provided.

8.2.3.2.4 GTP

The acreage for the GTP would accommodate the associated infrastructure necessary to build the facility as well as the facilities required for operations. None of the roads, laydown yards, dock work, or granular material site would be restored, but instead would be left in place for use by the PBU operator. Maintenance dredging for West Dock would not be required during operations for the Project. If modules need to be delivered during operations, new permits would be acquired to dredge the channel to bring in the modules.

8.2.3.2.5 GTP Associated Infrastructure

8.2.3.2.5.1 Associated Pipelines

The fuel gas and propane pipelines would be installed on the same VSMs as the PBTL and share the same construction and operational ROWs (see Table 1.4.2-1). The water line from the reservoir to the GTP would be above ground and would be installed on VSMs. A 120-foot-wide nominal construction and anticipated 100-foot-wide permanent ROW would be required for the new water supply pipeline.

8.2.3.2.5.2 Module Staging Area

Land required for the module staging area would affect approximately 86 acres and would be constructed for placement of the modules immediately following offload. The staging area would be an extension off the northwest side of the K Pad road just south of the existing West Dock staging area (see Figure 1.3.2-2 in Resource Report No. 1). Following construction, the module staging area would remain in place for future equipment deliveries, turnarounds, and future decommissioning and dismantling of the facility.

8.2.3.2.5.3 Offshore West Dock

Based on the Project's proposed design, it is anticipated that modifications to West Dock would include adding Dock Head (DH) 4. This would require granular fill to add a new dock head (approximately 31 acres). A temporary barge bridge would be used to span the causeway.

8.2.3.2.5.4 Access Roads

Access roads would be required for the GTP, including adding a new section of causeway that parallels the existing causeway between DH 3 and DH 4, widening the existing causeway road from DH 3 to DH 2 and from DH 2 to land, as well as constructing new access roads.

8.2.3.2.5.5 Pioneer Construction Camp

A pioneer camp would be established to support development of construction infrastructure during GTP construction, including granular mine operations and construction of access roads, granular pads, reservoir, VSMs, and pipelines. The pioneer camp would be planned to be erected on an existing granular pad in the PBU or in the Deadhorse area and would be on approximately 15 to 30 acres.

8.2.3.2.5.6 Temporary Construction and Permanent Operations Camp

An onsite Integrated Construction and Operations Camp would be constructed to support GTP construction. The onsite construction camp would be located entirely within the main GTP pad acreage and would remain in place to house the operations center and housing for operations.

8.2.3.2.5.7 Material Sites and Water Reservoir

The sand and granular material required for construction of the GTP and related facilities would be obtained from existing and/or new material sites and the water reservoir location. The preliminary reservoir design includes a footprint of approximately 45 acres with a depth in range of 35 to 55 feet.

Additional details are provided in the Project's *Gravel Sourcing Plan and Reclamation Measures*, which is included as Appendix E of Resource Report No. 6. The proposed Project design includes a new standalone granular site approximately 1.5 miles south-southwest of the GTP site. Preliminary estimates are that the new granular mine could span approximately 141 acres. Additional details of the granular site are provided in Section 1.3.7.3 of Resource Report No. 1.

8.2.3.3 Non-Jurisdictional Facilities

Total acreage for the land used by the PBU MGS Project is approximately 514 acres. The PTU Expansion project encompasses approximately 215 acres. The total acreage for the relocation of the KSH is nominally about 100 acres (assuming a 200-foot ROW) based on the alternatives being evaluated. Once a preferred alternative has been selected, the actual total acreage for the relocation of the KSH would be provided.

8.3 RESIDENTIAL AND COMMERCIAL AREAS

There are 44 communities within 15 miles of Project facilities, listed here:

- Alexander
- Anderson
- Beluga
- Big Lake
- Birchwood
- Cantwell
- Chase
- Chugiak
- Clear
- Coldfoot
- College
- Eielson Air Force Base
- Eklutna
- Ester
- Fairbanks
- Ferry
- Fort Wainwright
- Fox
- Healy
- Houston
- Kenai
- Lignite
- Livengood
- Mckinley Park
- Meadow Lakes
- Moose Creek
- Nenana
- Nikiski
- North Pole
- Peters Creek
- Prudhoe Bay
- Ridgeway
- Salamatof
- Soldotna
- Suntrana
- Susitna
- Talkeetna
- Trapper Creek
- Two Rivers
- Tyonek
- Usibelli
- Wasilla
- Willow
- Wiseman

Detailed descriptions of these communities can be found in the Community Index of the Alaska Department of Community and Regional Affairs (DCRA 2016).

To determine the existing residences and commercial areas within 200 feet of the Project area, initially several datasets were searched to identify any visible structures, buildings, and monuments located within a 2,000-foot buffer area. The datasets used included a combination of Project imagery as well as queries of State of Alaska datasets:

- Dwellings and Buildings – Project-specific data created by collecting all prominent buildings identified from imagery, features identified during field surveys, and USGS National Structures Dataset for Alaska; and

- Shore Fishery Leases – Alaska Department of Natural Resources (ADNR) – Information Resource Management Section (ADNR, 2014a)

These datasets contain various categories (or data fields such as building, dwelling, structure, residence) that can be used to characterize the feature. Features noted to be buildings, dwellings, and residential houses were classified as "Residential Areas" and all others were considered "Commercial Areas," unless more detailed information was available to indicate otherwise. For example, several dwellings had additional information indicating the building was retail (e.g., hotel) or industrial (e.g., oil and gas). Some buildings had additional information indicating they were "Residential, Residence (other) or Mobile Home." Of note, commercial, industrial, and retail buildings located on land that is zoned as residential were still classified as Commercial Areas.

8.3.1 Residential Areas

Based on the Project's proposed design, there would be approximately 77 residential buildings within 200 feet of the Project area (see Table 8.3.1-1). There would be three residential buildings within 200 feet of Non-Jurisdictional Facilities (see Table 8.3.1-2), however this would be updated when a preferred alternative of the relocation of the KSH has been selected. No structures listed in the table would need to be removed or avoided.

TABLE 8.3.1-1

Residential Buildings Within 200 Feet of the Construction Work Area

Facility Name	Borough or Census Area	Building Category	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Line or Access Road (feet)	Bearing to Nearest Facility (degrees)
LIQUEFACTION FACILITY					
LNG Plant					
LNG Plant	KPB	Residence	MP 806.5	0	90
LNG Plant	KPB	Identified Site	MP 806.54	0	90
LNG Plant	KPB	Residence	MP 806.56	0	90
LNG Plant	KPB	Residence	MP 806.57	0	90
LNG Plant	KPB	Residence	MP 806.57	0	90
LNG Plant	KPB	Residence	MP 806.57	0	90
LNG Plant	KPB	Residence	MP 806.57	0	90
MOF – Not Applicable					
MOF Dredging Area – Not Applicable					
Dredge Disposal Area – Not Applicable					
Construction/ Access Area – None					
PLF – Not Applicable					

TABLE 8.3.1-1

Residential Buildings Within 200 Feet of the Construction Work Area

Facility Name	Borough or Census Area	Building Category	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Line or Access Road (feet)	Bearing to Nearest Facility (degrees)
LNG Associated Infrastructure – Not Applicable					
LNG Construction Camp – Not Applicable					
PIPELINES					
Mainline					
Mainline ROW	MSB	Residence	MP 608.7	134	317
Mainline ROW	MSB	Residence	MP 727.8	159	162
Mainline ROW	KPB	Residence	MP 797.2	131	176
Mainline ROW	KPB	Residence	MP 799.7	130	181
Mainline ROW	YKCA	Identified Site	MP 471.9	25	296
Mainline ROW	YKCA	Identified Site	MP 471.9	158	296
Offshore – None					
PBTL – None					
PTTL – None					
MAINLINE ABOVEGROUND FACILITIES – None					
PTTL – ABOVEGROUND FACILITIES – None					
PTTL – OTHER ASSOCIATED INFRASTRUCTURE – None					
PIPELINE ASSOCIATED INFRASTRUCTURE					
ATWS					
ATWS	YKCA	Residence	MP 438.8	132	324
ATWS	YKCA	Residence	MP 438.9	124.2	135
ATWS	YKCA	Identified Site	MP 472.4	0.0	90
ATWS	DB	Residence	MP 504.9	165	233
ATWS	DB	Residence	MP 505.8	155.6	45
ATWS	DB	Identified Site	MP 536.2	65	59
ATWS	DB	Identified Site	MP 536.3	163	5
ATWS	DB	Identified Site	MP 536.3	194	5
ATWS	DB	Identified Site	MP 536.7	171.6	270
ATWS	DB	Residence	MP 536.7	46.9	270
ATWS	DB	Residence	MP 556.5	62	96
ATWS	MSB	Residence	MP 557.0	90.9	0
ATWS	MSB	Residence	MP 608.7	49	137
ATWS	KPB	Identified Site	MP 727.2	115.0	0
ATWS	KPB	Residence	MP 797.8	120.5	180
ATWS	KPB	Identified Site	MP 798.2	180.5	90

TABLE 8.3.1-1

Residential Buildings Within 200 Feet of the Construction Work Area

Facility Name	Borough or Census Area	Building Category	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Line or Access Road (feet)	Bearing to Nearest Facility (degrees)
ATWS	KPB	Identified Site	MP 802.0	192.4	90
ATWS	KPB	Residence	MP 805.4	197	
Mainline Access Roads					
Mainline Access Roads	YKCA	Residence	MP 236.1	177	40
Mainline Access Roads	YKCA	Residence	MP 214.1	104	204
Mainline Access Roads	YKCA	Identified Site	MP 214.1	143	154
Mainline Access Roads	YKCA	Identified Site	MP 241.1	147	154
Mainline Access Roads	YKCA	Identified Site	MP 241.1	71	154
Mainline Access Roads	YKCA	Residence	MP 470.7	98	111
Mainline Access Roads	YKCA	Residence	MP 470.7	145	111
Mainline Access Roads	DB	Identified Site	MP 526.8	28	115
Mainline Access Roads	DB	Identified Site	MP 529.8	109	77
Mainline Access Roads	DB	Identified Site	MP 536.1	197	127
Mainline Access Roads	DB	Identified Site	MP 536.2	0	90
Mainline Access Roads	DB	Identified Site	MP 536.2	89	331
Mainline Access Roads	DB	Identified Site	MP 536.2	69	324
Mainline Access Roads	DB	Identified Site	MP 536.2	45	314
Mainline Access Roads	DB	Identified Site	MP 536.2	10	295
Mainline Access Roads	DB	Identified Site	MP 536.2	65	295
Mainline Access Roads	DB	Identified Site	MP 536.2	72	159
Mainline Access Roads	DB	Identified Site	MP 536.2	18	232
Mainline Access Roads	DB	Identified Site	MP 536.2	99	33
Mainline Access Roads	DB	Identified Site	MP 536.2	129	358
Mainline Access Roads	DB	Residence	MP 566.7	180	281
Mainline Access Roads	DB	Residence	MP 566.7	126	281
Mainline Access Roads	DB	Residence	MP 566.7	19	101
Mainline Access Roads	MSB	Identified Site	MP 749.1	75	277
Mainline Access Roads	MSB	Identified Site	MP 749.1	55	277
Mainline Access Roads	MSB	Identified Site	MP 749.1	6	277
Mainline Access Roads	MSB	Identified Site	MP 749.2	9	54
Construction Camps					
Camp	YKCA	Identified Site	MP 400.9	110	270
Pipe Storage Yards					
Pipe Storage Yard	YKCA	Identified Site	MP 241.1	196	155

TABLE 8.3.1-1

Residential Buildings Within 200 Feet of the Construction Work Area

Facility Name	Borough or Census Area	Building Category	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Line or Access Road (feet)	Bearing to Nearest Facility (degrees)
Pipe Storage Yard	YKCA	Identified Site	MP 241.6	47	155
Pipe Storage Yard	YKCA	Identified Site	MP 400.9	86	180
Pipe Storage Yard	YKCA	Identified Site	MP 401	18	180
Pipe Storage Yard	YKCA	Identified Site	MP 4001	0	90
Pipe Storage Yard	MSB	Identified Site	MP 664.7	137	277
Material Sites					
Material Sites	DB	Residence	MP 502.7	0	90
Material Sites	DB	Residence	MP 600	97	324
Materia Sites	DB	Residence	MP 566.1	156	4
Material Sites	DB	Residence	MP 566.10	144	180
Railroad Work Pad					
Railroad Work Pad	YKCA	Identified Site	MP 472	171	113
Railroad Work Pad	YKCA	Identified Site	MP 472	0	90
Railroad Work Pad	YKCA	Identified Site	MP 472	137	113
East Pad (PTTL) – Not Applicable					
Helipad (PTTL) – Not Applicable					
GTP – Not Applicable					
GTP ASSOCIATED INFRASTRUCTURE – Not Applicable					

Notes:
Dwelling locations were digitized for the Revision B centerline route within a 2,000-foot buffer.
Dwelling locations were determined by visually investigating along the Mainline centerline route within a 2,000-foot buffer using aerial imagery.
Identified Site = buildings identified from aerial imagery and the use is not confirmed

TABLE 8.3.1-2

Residential Buildings Within 200 Feet of Non-Jurisdictional Facilities

Facility Name	Borough or Census Area	Building Category	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Line, or Access Road (feet)	Bearing to Nearest Facility (degrees)
PBU MGS Project – Not Applicable					
PTU Expansion Project – Not Applicable					
Relocation of the KSH	KPB	Residence	N/A	95.7	0
Relocation of the KSH	KPB	Residence	N/A	10.4	0
Relocation of the KSH	KPB	Identified Site	N/A	82.0	0

8.3.2 Commercial Areas

Based on the Project's proposed design, there would be approximately 378 commercial areas (i.e., commercial buildings or buildings, resource sale permits, and shore fishery leases) within 200 feet of the Project area (see Table 8.3.2-1). There would be one commercial area within 200 feet of Non-Jurisdictional Facilities (see Table 8.3.1-2), however this would be updated when a preferred alternative of the relocation of the Kenai Spur Highway (KSH) has been selected. Where possible, additional information about the building or structure is provided. No structures listed in the table would need to be removed or avoided.

TABLE 8.3.2-1

Commercial Areas within 200 Feet of Construction Work Area

Facility Name	Borough or Census Area	Building Category or Source	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Boundary, or Access Road (feet)	Direction to Footprint
LIQUEFACTION FACILITY					
LNG Plant					
LNG Plant	KPB	BLDG	MP 806.56	0.00	E
LNG Plant	KPB	BLDG	MP 806.57	0.00	E
LNG Plant	KPB	BLDG	MP 806.57	0.00	E
LNG Plant	KPB	Material Sale (561)	MP 806.22	0.00	E
LNG Plant	KPB	OTHER	MP 806.50	51.95	S
LNG Plant	KPB	OTHER	MP 806.55	0.00	E
LNG Plant	KPB	OTHER	MP 806.55	0.00	E
LNG Plant	KPB	OTHER	MP 806.57	0.00	E
LNG Plant	KPB	OTHER	MP 806.57	0.00	E
LNG Plant	KPB	OTHER	MP 806.57	0.00	E
LNG Plant	KPB	OTHER	MP 806.57	0.00	E
LNG Plant	KPB	OTHER	MP 806.57	0.00	E
LNG Plant	KPB	OTHER	MP 806.57	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.55	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.55	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.55	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.55	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.55	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.57	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.57	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.57	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.57	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.57	0.00	E
LNG Plant	KPB	Shore Fishery Lease (558)	MP 806.57	51.33	NE
LNG Plant	KPB	STRC	MP 806.56	0.00	E
LNG Plant	KPB	STRC	MP 806.56	0.00	E
LNG Plant	KPB	STRC	MP 806.56	0.00	E
LNG Plant	KPB	STRC	MP 806.56	0.00	E
LNG Plant	KPB	STRC	MP 806.56	0.00	E
LNG Plant	KPB	STRC	MP 806.56	0.00	E
LNG Plant	KPB	STRC	MP 806.57	0.00	E
LNG Plant	KPB	STRC	MP 806.57	0.00	E
LNG Plant	KPB	STRC	MP 806.57	0.00	E
LNG Plant	KPB	STRC	MP 806.57	0.00	E
LNG Plant	KPB	STRC	MP 806.57	0.00	E
LNG Plant	KPB	STRC	MP 806.57	0.00	E
LNG Plant	KPB	STRC	MP 806.57	0.00	E
LNG Plant	KPB	STRC	MP 806.57	0.00	E

TABLE 8.3.2-1

Commercial Areas within 200 Feet of Construction Work Area

Facility Name	Borough or Census Area	Building Category or Source	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Boundary, or Access Road (feet)	Direction to Footprint
MOF					
MOF	KPB	ADNR Shore Fishery Lease	NA	0	180
MOF	KPB	ADNR Shore Fishery Lease	NA	0	180
MOF	KPB	ADNR Shore Fishery Lease	NA	0	180
MOF Dredging Area	KPB	ADNR Shore Fishery Lease	NA	0	180
PLF					
PLF	KPB	ADNR Shore Fishery Lease	NA	0	180
PLF	KPB	ADNR Shore Fishery Lease	NA	0	180
PLF	KPB	ADNR Shore Fishery Lease	NA	0	180
PLF	KPB	ADNR Shore Fishery Lease	NA	10	190
PIPELINES					
MAINLINE					
Mainline ROW	YKCA	BLDG	MP 358.38	199.73	NE
Mainline ROW	DB	BLDG	MP 558.94	0.00	E
Mainline ROW	DB	BLDG	MP 558.95	0.00	E
Mainline ROW	DB	BLDG	MP 570.91	0.00	E
Mainline ROW	KPC	BLDG	MP 799.41	40.24	SE
Mainline ROW	KPC	BLDG	MP 799.44	0.00	E
Mainline ROW	KPC	BLDG	MP 799.46	162.44	S
Mainline ROW	KPC	BLDG	MP 799.46	111.07	S
Mainline ROW	KPC	BLDG	MP 806.13	68.72	W
Mainline ROW	YKCA	Material Sale (561)	MP 371.88	0.00	E
Mainline ROW	YKCA	Material Sale (561)	MP 396.94	0.00	E
Mainline ROW	MSB	Material Sale (561)	MP 593.97	0.00	E
Mainline ROW	MSB	Material Sale (561)	MP 595.15	0.00	E
Mainline ROW	MSB	Material Sale (561)	MP 635.91	0.00	E
Mainline ROW	MSB	Material Sale (561)	MP 637.49	0.00	E
Mainline ROW	MSB	Material Sale (561)	MP 649.80	0.00	E
Mainline ROW	YKCA	Material Sale Site (560)	MP 238.61	178.04	E
Mainline ROW	YKCA	Material Sale Site (560)	MP 371.88	0.00	E
Mainline ROW	YKCA	Material Sale Site (560)	MP 384.38	0.00	E
Mainline ROW	YKCA	Material Sale Site (560)	MP 388.08	0.00	E
Mainline ROW	YKCA	Material Sale Site (560)	MP 388.76	0.00	E
Mainline ROW	YKCA	Material Sale Site (560)	MP 395.17	0.00	E
Mainline ROW	YKCA	Material Sale Site (560)	MP 396.94	0.00	E
Mainline ROW	YKCA	Material Sale Site (560)	MP 400.21	0.00	E
Mainline ROW	DB	Material Sale Site (560)	MP 498.38	0.00	E
Mainline ROW	MSB	Material Sale Site (560)	MP 593.97	0.00	E
Mainline ROW	MSB	Material Sale Site (560)	MP 595.15	0.00	E
Mainline ROW	KPB	Shore Fishery Lease (558)	MP 766.36	0.00	E
Mainline ROW	KPB	STRC	MP 799.88	175.75	S
Mainline ROW	MSB	Timber Sale (501)	MP 674.41	0.00	E

TABLE 8.3.2-1

Commercial Areas within 200 Feet of Construction Work Area

Facility Name	Borough or Census Area	Building Category or Source	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Boundary, or Access Road (feet)	Direction to Footprint
OFFSHORE – NOT APPLICABLE					
PBTL – NOT APPLICABLE					
PIPELINE ABOVEGROUND FACILITIES					
MAINLINE ABOVEGROUND FACILITIES					
COMPRESSOR STATIONS – None					
METER STATIONS – None					
MLBVS – None					
PTTL ABOVEGROUND FACILITIES					
PTTL	NSB	Building	PTTL - MP	57	176
PIPELINE ASSOCIATED INFRASTRUCTURE					
MAINLINE ASSOCIATED INFRASTRUCTURE					
ATWS					
ATWS	DB	BLDG	MP 553.01	96.76	E
ATWS	DB	BLDG	MP 556.52	6.48	W
ATWS	DB	BLDG	MP 556.54	174.44	W
ATWS	KPB	BLDG	MP 800.38	133.77	S
ATWS	NSB	Material Sale Site (560)	MP 77.75	0.00	E
ATWS	YKCA	Material Sale Site (560)	MP 376.26	191.68	N
ATWS	KPB	OTHER	MP800.29	175.45	N
ATWS	KPB	STRC	MP 804.50	170.48	S
ATWS	KPB	TANK	MP 800.26	66.84	N
ATWS	KPB	TANK	MP 800.26	188.30	NW
ACCESS ROADS					
Mainline Access Roads	NSB	BLDG	MP 0.02	120.98	NW
Mainline Access Roads	YKCA	BLDG	MP 279.19	154.28	SW
Mainline Access Roads	YKCA	BLDG	MP 279.26	190.52	SE
Mainline Access Roads	YKCA	BLDG	MP 279.27	109.99	SE
Mainline Access Roads	YKCA	BLDG	MP 468.99	183.84	SE
Mainline Access Roads	DB	BLDG	MP 526.53	160.24	S
Mainline Access Roads	DB	BLDG	MP 526.54	125.29	S
Mainline Access Roads	DB	BLDG	MP 526.54	120.45	S
Mainline Access Roads	DB	BLDG	MP 526.54	119.22	S
Mainline Access Roads	DB	BLDG	MP 526.54	100.96	S
Mainline Access Roads	DB	BLDG	MP 526.55	81.05	S
Mainline Access Roads	DB	BLDG	MP 526.57	0.00	E
Mainline Access Roads	DB	BLDG	MP 559.65	16.44	NE
Mainline Access Roads	DB	BLDG	MP 559.65	0.00	E
Mainline Access Roads	MSB	BLDG	MP 630.65	10.21	SW
Mainline Access Roads	MSB	BLDG	MP 630.67	0.00	E
Mainline Access Roads	DB	HOTEL	MP 526.61	144.36	N
Mainline Access Roads	DB	HOTEL	MP 526.61	144.36	N
Mainline Access Roads	MSB	HSTS	MP 630.68	191.10	E

TABLE 8.3.2-1

Commercial Areas within 200 Feet of Construction Work Area

Facility Name	Borough or Census Area	Building Category or Source	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Boundary, or Access Road (feet)	Direction to Footprint
Mainline Access Roads	NSB	Material Sale (561)	MP 11.42	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 11.42	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 11.42	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 11.42	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 17.91	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 18.01	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 31.67	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 40.47	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 54.51	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 75.87	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 113.99	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 113.99	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 113.99	0.00	E
Mainline Access Roads	NSB	Material Sale (561)	MP 113.99	0.00	E
Mainline Access Roads	YKCA	Material Sale (561)	MP 370.08	0.00	E
Mainline Access Roads	YKCA	Material Sale (561)	MP 370.08	0.00	E
Mainline Access Roads	YKCA	Material Sale (561)	MP 377.98	0.00	E
Mainline Access Roads	YKCA	Material Sale (561)	MP 394.35	0.00	E
Mainline Access Roads	YKCA	Material Sale (561)	MP 394.40	0.00	E
Mainline Access Roads	YKCA	Material Sale (561)	MP 469.11	0.00	E
Mainline Access Roads	DB	Material Sale (561)	MP 492.33	0.00	E
Mainline Access Roads	DB	Material Sale (561)	MP 498.96	0.00	E
Mainline Access Roads	DB	Material Sale (561)	MP 500.42	0.00	E
Mainline Access Roads	DB	Material Sale (561)	MP 509.46	182.13	E
Mainline Access Roads	DB	Material Sale (561)	MP 521.50	0.00	E
Mainline Access Roads	DB	Material Sale (561)	MP 521.50	0.00	E
Mainline Access Roads	MSB	Material Sale (561)	MP 595.95	86.89	SE
Mainline Access Roads	MSB	Material Sale (561)	MP 603.21	0.00	E
Mainline Access Roads	NSB	Material Sale Site (560)	MP 17.91	0.00	E
Mainline Access Roads	NSB	Material Sale Site (560)	MP 18.01	0.00	E
Mainline Access Roads	NSB	Material Sale Site (560)	MP 31.67	0.00	E
Mainline Access Roads	NSB	Material Sale Site (560)	MP 40.47	0.00	E
Mainline Access Roads	NSB	Material Sale Site (560)	MP 54.51	0.00	E
Mainline Access Roads	NSB	Material Sale Site (560)	MP 56.47	0.00	E
Mainline Access Roads	NSB	Material Sale Site (560)	MP 75.87	0.00	E
Mainline Access Roads	NSB	Material Sale Site (560)	MP 113.99	0.00	E
Mainline Access Roads	YKCA	Material Sale Site (560)	MP 236.12	0.00	E
Mainline Access Roads	YKCA	Material Sale Site (560)	MP 370.08	0.00	E
Mainline Access Roads	YKCA	Material Sale Site (560)	MP 377.98	0.00	E
Mainline Access Roads	YKCA	Material Sale Site (560)	MP 394.33	0.00	E
Mainline Access Roads	YKCA	Material Sale Site (560)	MP 404.97	0.00	E
Mainline Access Roads	DB	Material Sale Site (560)	MP 492.33	0.00	E

TABLE 8.3.2-1

Commercial Areas within 200 Feet of Construction Work Area

Facility Name	Borough or Census Area	Building Category or Source	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Boundary, or Access Road (feet)	Direction to Footprint
Mainline Access Roads	DB	Material Sale Site (560)	MP 498.96	0.00	E
Mainline Access Roads	DB	Material Sale Site (560)	MP 500.42	0.00	E
Mainline Access Roads	DB	Material Sale Site (560)	MP 509.46	182.13	E
Mainline Access Roads	DB	Material Sale Site (560)	MP 521.50	0.00	E
Mainline Access Roads	DB	OTHER	MP 507.75	6.03	N
Mainline Access Roads	DB	OTHER	MP 507.75	6.03	N
Mainline Access Roads	DB	RECREATIONAL	MP 526.61	144.36	N
Mainline Access Roads	KPB	Shore Fishery Lease (558)	MP 765.49	196.90	W
Mainline Access Roads	KPB	Shore Fishery Lease (558)	MP 766.41	131.62	NW
Mainline Access Roads	YKCA	STRC	MP 384.14	42.33	N
Mainline Access Roads	YKCA	STRC	MP 467.04	0.00	E
Mainline Access Roads	YKCA	STRC	MP 467.04	0.00	E
Mainline Access Roads	DB	STRC	MP 521.73	0.00	E
Mainline Access Roads	DB	STRC	MP 529.81	103.17	N
Mainline Access Roads	MSB	STRC	MP 637.60	0.00	E
Mainline Access Roads	MSB	STRC	MP 637.62	18.01	N
CONSTRUCTION CAMPS					
Construction Camps	YKCA	BLDG	MP 400.66	63.87	S
Construction Camps	YKCA	BLDG	MP 400.66	93.86	S
Construction Camps	YKCA	BLDG	MP 400.67	88.91	S
Construction Camps	YKCA	BLDG	MP 400.68	0.00	E
Construction Camps	YKCA	BLDG	MP 400.71	100.74	S
Construction Camps	YKCA	BLDG	MP 400.71	0.00	E
Construction Camps	YKCA	BLDG	MP 400.74	95.62	SW
Construction Camps	YKCA	BLDG	MP 400.87	131.18	SW
Construction Camps	YKCA	BLDG	MP 400.88	0.00	E
Construction Camps	YKCA	BLDG	MP 400.89	0.00	E
Construction Camps	YKCA	BLDG	MP 400.91	0.00	E
Construction Camps	YKCA	BLDG	MP 400.91	0.00	E
Construction Camps	YKCA	BLDG	MP 400.93	0.00	E
Construction Camps	YKCA	BLDG	MP 400.93	0.00	E
Construction Camps	YKCA	BLDG	MP 400.93	0.00	E
Construction Camps	YKCA	BLDG	MP 400.93	0.00	E
Construction Camps	YKCA	BLDG	MP 400.93	0.00	E
Construction Camps	YKCA	BLDG	MP 400.94	0.00	E
Construction Camps	YKCA	BLDG	MP 400.94	0.00	E
Construction Camps	YKCA	BLDG	MP 400.95	0.00	E
Construction Camps	YKCA	BLDG	MP 400.95	0.00	E
Construction Camps	YKCA	BLDG	MP 400.95	0.00	E
Construction Camps	YKCA	BLDG	MP 400.95	0.00	E
Construction Camps	YKCA	BLDG	MP 400.96	0.00	E
Construction Camps	YKCA	BLDG	MP 400.97	0.00	E

TABLE 8.3.2-1

Commercial Areas within 200 Feet of Construction Work Area

Facility Name	Borough or Census Area	Building Category or Source	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Boundary, or Access Road (feet)	Direction to Footprint
Construction Camps	YKCA	BLDG	MP 400.98	0.00	E
Construction Camps	YKCA	BLDG	MP 400.98	0.00	E
Construction Camps	YKCA	BLDG	MP 400.98	0.00	E
Construction Camps	YKCA	BLDG	MP 400.98	0.00	E
Construction Camps	YKCA	BLDG	MP 400.98	0.00	E
Construction Camps	YKCA	BLDG	MP 400.98	0.00	E
Construction Camps	YKCA	BLDG	MP 400.98	0.00	E
Construction Camps	YKCA	BLDG	MP 400.99	0.00	E
Construction Camps	YKCA	BLDG	MP 401.00	0.00	E
Construction Camps	YKCA	BLDG	MP 401.00	0.00	E
Construction Camps	YKCA	BLDG	MP 401.01	0.00	E
Construction Camps	YKCA	BLDG	MP 401.01	0.00	E
Construction Camps	YKCA	BLDG	MP401.02	0.00	E
Construction Camps	YKCA	BLDG	MP 401.02	0.00	E
Construction Camps	YKCA	BLDG	MP 401.02	0.00	E
Construction Camps	YKCA	BLDG	MP 401.02	0.00	E
Construction Camps	YKCA	BLDG	MP 401.03	0.00	E
Construction Camps	YKCA	BLDG	MP 401.04	0.00	E
Construction Camps	YKCA	BLDG	MP 401.05	0.00	E
Construction Camps	YKCA	BLDG	MP 401.05	0.00	E
Construction Camps	YKCA	BLDG	MP 401.06	0.00	E
Construction Camps	YKCA	BLDG	MP 401.06	0.00	E
Construction Camps	YKCA	BLDG	MP 401.06	0.00	E
Construction Camps	YKCA	BLDG	MP 401.06	0.00	E
Construction Camps	YKCA	BLDG	MP 401.07	0.00	E
Construction Camps	YKCA	BLDG	MP 401.07	0.00	E
Construction Camps	YKCA	BLDG	MP 401.08	0.00	E
Construction Camps	YKCA	BLDG	MP 401.08	0.00	E
Construction Camps	YKCA	BLDG	MP401.09	0.00	E
Construction Camps	YKCA	BLDG	MP 401.09	0.00	E
Construction Camps	YKCA	BLDG	MP 401.10	0.00	E
Construction Camps	YKCA	BLDG	MP 401.10	31.71	N
Construction Camps	YKCA	BLDG	MP 401.11	0.00	E
Construction Camps	YKCA	BLDG	MP 401.11	79.29	N
Construction Camps	YKCA	BLDG	MP 401.11	139.63	N
Construction Camps	YKCA	BLDG	MP 401.12	0.00	E
Construction Camps	YKCA	BLDG	MP 401.12	68.21	N
Construction Camps	NSB	STRC	MP 43.61	0.00	E
Construction Camps	YKCA	TANK	MP 400.89	1.23	W
Construction Camps	YKCA	TANK	MP 400.89	24.12	W
Construction Camps	YKCA	TANK	MP 400.90	20.11	W
Construction Camps	YKCA	TANK	MP 400.90	3.76	W

TABLE 8.3.2-1

Commercial Areas within 200 Feet of Construction Work Area

Facility Name	Borough or Census Area	Building Category or Source	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Boundary, or Access Road (feet)	Direction to Footprint
Construction Camps	YKCA	TANK	MP 400.90	3.11	W
Construction Camps	YKCA	TANK	MP 400.90	19.74	W
Construction Camps	YKCA	TANK	MP 400.90	3.39	W
Construction Camps	YKCA	TANK	MP 400.90	4.77	W
Construction Camps	YKCA	TANK	MP 400.91	22.44	W
Construction Camps	YKCA	TANK	MP 400.91	10.67	W
Construction Camps	YKCA	TANK	MP 400.91	24.98	W
PIPE AND STORAGE YARDS					
Pipe and Storage Yards	YKCA	BLDG	MP 400.99	0.00	E
Pipe and Storage Yards	YKCA	BLDG	MP 401.01	0.00	E
Pipe and Storage Yards	YKCA	BLDG	MP401.01	0.00	E
Pipe and Storage Yards	YKCA	BLDG	MP 401.01	0.00	E
Pipe and Storage Yards	YKCA	BLDG	MP401.03	0.00	E
Pipe and Storage Yards	YKCA	BLDG	MP 401.03	0.00	E
Pipe and Storage Yards	YKCA	BLDG	MP 401.09	0.00	E
MATERIAL SITES					
Material Sites	DB	BLDG	MP 559.28	0.00	E
Material Sites	DB	BLDG	MP 559.28	0.00	E
Material Sites	DB	BLDG	MP 560.03	152.59	W
Material Sites	YKCA	Material Sale (561)	MP 412.68	0.00	E
Material Sites	DB	Material Sale (561)	MP 502.62	0.00	E
Material Sites	DB	Material Sale (561)	MP 512.66	83.13	SE
Material Sites	DB	Material Sale (561)	MP 512.77	56.58	E
Material Sites	DB	Material Sale (561)	MP 522.13	0.00	E
Material Sites	DB	Material Sale (561)	MP 530.03	0.00	E
Material Sites	MSB	Material Sale (561)	MP 595.34	0.00	E
Material Sites	YKCA	Material Sale Site (560)	MP 412.68	0.00	E
Material Sites	YKCA	Material Sale Site (560)	MP 412.68	0.00	E
Material Sites	DB	Material Sale Site (560)	MP 502.62	0.00	E
Material Sites	DB	Material Sale Site (560)	MP 518.98	0.00	E
Material Sites	DB	Material Sale Site (560)	MP 530.03	0.00	E
Material Sites	MSB	Material Sale Site (560)	MP 595.34	0.00	E
Material Sites	YKCA	STRC	MP 378.01	0.00	E
Material Sites	YKCA	STRC	MP 378.01	0.00	E
Material Sites	DB	STRC	MP 500.43	0.00	E
Material Sites	DB	STRC	MP 500.44	0.00	E
Material Sites	DB	STRC	MP 521.44	0.00	E
Material Sites	DB	STRC	MP 521.45	0.00	E
Material Sites	DB	STRC	MP 521.46	0.00	E
Material Sites	DB	STRC	MP 521.46	0.00	E
Material Sites	DB	STRC	MP521.46	0.00	E
Material Sites	DB	STRC	MP 521.46	0.00	E

TABLE 8.3.2-1

Commercial Areas within 200 Feet of Construction Work Area

Facility Name	Borough or Census Area	Building Category or Source	Pipeline Milepost	Distance from Edge of Construction Work Area, Property Boundary, or Access Road (feet)	Direction to Footprint
Material Sites	DB	STRC	MP 521.46	0.00	E
Material Sites	DB	STRC	MP 521.47	0.00	E
Material Sites	DB	STRC	MP 521.47	0.00	E
Material Sites	DB	STRC	MP 521.48	0.00	E
Material Sites	DB	STRC	MP 521.48	0.00	E
Material Sites	DB	STRC	MP 521.48	0.00	E
Material Sites	DB	STRC	MP 521.48	0.00	E
Material Sites	DB	STRC	MP 521.49	0.00	E
Material Sites	DB	STRC	MP 521.49	0.00	E
Material Sites	DB	STRC	MP 521.51	0.00	E
Material Sites	DB	STRC	MP 521.64	0.00	E
Material Sites	DB	STRC	MP 521.64	0.00	E
Material Sites	DB	STRC	MP 521.68	0.00	E
Material Sites	DB	STRC	MP 521.69	0.00	E
Material Sites	DB	STRC	MP 521.70	0.00	E
Material Sites	DB	STRC	MP 521.71	0.00	E
RAILROAD SPURS – NOT APPLICABLE					
RAILROAD WORKPAD					
Railroad Work Pad	YKCA	Dwelling	MP 472.5	0	E
EAST PAD (PTTL) – NOT APPLICABLE					
HELIPAD (PTTL) – NOT APPLICABLE					
PTTL ASSOCIATED INFRASTRUCTURE					
PTTL Icepad Access	NSB	BLDG	BLDG	97.31	S
PTTL – Road ATWS	NSB	Material Sale Site (560)	Material Sale	4.13	W
PTTL - ROW	NSB	Material Sale (561)	Material Sale	4.13	W
GTP – NOT APPLICABLE					
GTP ASSOCIATED INFRASTRUCTURE – NOT APPLICABLE					

Notes:
Commercial locations were digitized within a 2,000-foot buffer of the Mainline centerline.
Commercial locations were determined by visually investigating along the Mainline centerline route within a 2,000-foot buffer using aerial imagery.

TABLE 8.3.2-2

Commercial Buildings Within 200 Feet of Non-Jurisdictional Facilities

Facility Name	Borough or Census Area	Building Category	Pipeline Milepost	Distance from Edge of Construction Work Area or Access Road (feet)	Bearing to Nearest Facility (degrees)
PBU MGS Project	N/A	N/A	N/A	N/A	N/A
PTU Expansion Project	N/A	N/A	N/A	N/A	N/A
Relocation of the KSH	KPB	Identified Site	N/A	81.8	225

8.3.3 Liquefaction Facility

There are two businesses within 200 feet of the construction work area. Seven shore fishery leases are present within the footprint of the Marine Terminal of the Liquefaction Facility; there are five additional shore fishery leases and one material sale site within 200 feet of the construction area of the Liquefaction Facility.

8.3.4 Interdependent Project Facilities

8.3.4.1 Pipelines

8.3.4.1.1 Mainline

A total of 6 residential buildings and 9 commercial buildings/resource sales sites have been identified within 200 feet of the Mainline ROW. There are four commercial buildings and no residential buildings within the footprint of the ROW. 17 material sale sites are located within 50 feet of the Mainline ROW.

8.3.4.1.2 PBTL

No residences or businesses have been identified within 200 feet of the construction ROW of the PBTL.

8.3.4.1.3 PTTL

No residences or businesses have been identified within 200 feet of the construction ROW of the PTTL. There is one commercial building, which is oil and gas related, and two material sale contracts within the ROW of the PTTL.

8.3.4.2 Pipeline Aboveground Facilities

No residences, resource permits, or fishery leases have been identified within 200 feet of the construction ROW of the Pipeline Aboveground Facilities (e.g., compressor stations, heater stations, meter stations, MLBVs). One commercial building has been identified with 200 feet of the PTTL Aboveground Facilities.

8.3.4.3 Pipeline Associated Infrastructure

There are 59 residences, and 93 commercial buildings, that have been identified within 200 feet of the Mainline Associated Infrastructure. Of these, 16 and 69, respectively, are located within 50 feet. In addition, there are 65 resource sale permits, 58 of which are within 50 feet, and two shore fishery leases within 200 feet of the Mainline Associated Infrastructure.

8.3.5 Non-Jurisdictional Facilities

No residences are located in the vicinity of PTU Expansion project. However, privately owned Native allotments located in the vicinity may be used part-time for subsistence activities. These subsistence activities could potentially include use of temporary camps; more information on subsistence uses on the North Slope can be found in Resource Report No. 5.

Residential and commercial areas would be identified when a preferred alternative of the relocation of the KSH has been selected (see Table 8.3.1-2 and Table 8.3.2-2).

8.3.6 Commercial Fishing Areas

The Project area is located in the ADF&G Upper Cook Inlet, Central District, Upper Sub-district "East Forelands" (244–42) and "Salamatof" (244–41) setnet management areas. Drift-net corridors 244–50 and 244–51 are located outside of but adjacent to the Project area in deeper waters (ADF&G, 2015). The management plan information discussed is subject to change based upon the management plan issued by the ADF&G.

The Marine Terminal construction footprint is in seven shore fishery leases. As manager of most of the state's tidelands out to the 3-mile limit, ADNR issues shore fishery (setnet) leases. A shore fishery lease gives the leaseholder first priority to use a shore fishery site for commercial salmon setnet fishing on state-owned tidelands. This "first priority" applies only when the leaseholder is personally fishing the site.

The commercial drift-net fishery opens in the Nikiski area on or after June 19 and runs through August 18. Openings are daylight only (typically lasting 12 to 15 hours) on Mondays and Thursdays, but can be modified by emergency orders. Emergency orders to open or close fishing days are very common and can be issued between two hours to two days in advance of an opening or closure. Drift-net fisheries are limited to within 1 mile of shore. Drift-net fishing in the Nikiski area is usually close to shore to avoid strong currents in deeper water. Drift-net openings and setnet openings often fall on the same days. Drift-netters are required to remain 600 feet from an active setnet site but otherwise can put their nets up to the shoreline (5 Alaska Administrative Code [AAC] 21. 310).

The commercial setnet fishery opens on or after July 8 and runs through August 19. Openings are also during daylight only on Mondays and Thursdays, typically lasting 12 to 15 hours, but can be modified by emergency orders. Emergency orders to open or close fishing days are very common and can be issued between two hours to two days in advance of an opening or closure. Commercial fishing days for the area have ranged between 14 and 27 days each year in the past six years (5 AAC 21.320).

8.3.7 Planned Residential and Commercial Areas

The Project passes through five boroughs and includes lands managed by these boroughs, the State of Alaska, the BLM, private land, and Native Corporations. To identify planned developments within 0.25-mile of the Project construction ROW, the boroughs' planning departments were contacted with a request for information on any residential or commercial planned developments in the vicinity of the proposed Project. Where available online, planning and permitting documents were also reviewed to identify planned developments not managed directly by the boroughs. The information compiled includes the results of phone calls with members of the planning departments in the NSB, Denali Borough (DB), KPB, and the Central Yukon Planning Area, as well as a review of the:

- Alaska Case Retrieval Enterprise System (ACRES) (http://sdms.ak.blm.gov/acres/acres_menu);
- ADNR Office of Project Management and Permitting for resources including transportation, mining, and oil and gas;
- Alaska Department of Transportation and Public Facilities (ADOT&PF) Statewide Transportation Improvement Program (2012–2015 Official Copy; 2016–2019 Draft (Original) (http://dot.alaska.gov/stwdplng/cip/stip/index.shtml);
- Capital Improvement Plans (FY 2017–2022; FY 2016–2020; FY 2015–2019) (MSB; http://www.matsugov.us/cip);
- Kaktovik Comprehensive Development Plan (2014) (NSB);
- Healy Proposed Transfer Station locations (email, DB Planning Department); and
- NEPA permits (https://eplanning.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do).

The majority of planned and ongoing activities, which include material sites and road rehabilitation, are managed by the ADOT&PF.

Identified planned residential and commercial areas that would be within 0.25 mile of the proposed Project facilities are included in the following sections. Several planned commercial areas and one planned residential development near MP 796 were identified. It should be noted that in rural areas of the boroughs, permits are not required; therefore, the summary of planned developments does not include developments that are not permitted or identified in any government documents.

8.3.7.1 Liquefaction Facility

No planned development activities have been identified within 0.25 mile of the Liquefaction Facility.

8.3.7.2 Interdependent Project Facilities

8.3.7.2.1 Pipelines

8.3.7.2.1.1 Mainline

There are 45 planned development activities that have been identified within approximately 0.25 mile of the Mainline ROW, including 24 road reconstruction or rehabilitation projects, 11 activities related to material pits, 6 related to oil and gas (four new pipelines and two borehole samplings), one residential development, an option for one borough transfer station, one crossing of an access road to a mine, one proposed hydro dam and mine-related project, and one diesel cleanup and restoration project.

8.3.7.2.1.2 PBTL

No planned development activities have been identified within approximately 0.25 mile of the PBTL.

8.3.7.2.1.3 PTTL

No planned developments have been identified within 0.25 mile of the construction ROW of the PTTL. However, there is mention of a "Discussed Road" between Prudhoe Bay and Kaktovik in the Kaktovik Comprehensive Plan (2014) but discussions are preliminary.

8.3.7.2.2 Pipeline Aboveground Facilities

No planned development activities have been identified within approximately 0.25 mile of the Pipeline Aboveground Facilities.

8.3.7.2.3 Pipeline Associated Infrastructure

No planned development activities have been identified within approximately 0.25 mile of the Pipeline-Associated Infrastructure.

8.3.7.2.4 GTP

The GTP would be located within the PBU, an area occupied by oil and gas production facilities and operations. No planned development activities have been identified within approximately 0.25 mile of the GTP.

8.3.7.2.5 GTP Associated Infrastructure

No planned development activities have been identified within approximately 0.25 mile of the GTP Associated Infrastructure.

8.3.7.3 Non-Jurisdictional Facilities

No planned development activities have been identified within 0.25 mile of the PBU MGS project or the PTU Expansion project and that planned developments within 0.25 mile of the relocation of the KSH would be provided when a preferred alternative has been selected.

8.4 ZONING

Zoning maps and zoning codes were reviewed to determine existing zoning designations applicable to the Project area including the following:

- NSB zoning documents;
- Yukon-Koyukuk Census Area (YKCA) zoning documents;
- Fairbanks North Star Borough (FNSB) zoning documents;
- DB zoning documents;
- Matanuska-Susitna Borough (MSB) zoning documents; and
- KPB zoning documents.

The Project routing and design were evaluated for compatibility with zoning regulations in these areas. Zoning regulations generally allow for utility (and pipeline) placement in most zones; however, close work would be done with local zoning authorities to avoid zoning conflicts for all aspects of the Project, from the facilities themselves to the associated infrastructure. Zoning has effects on development, as well as the management of those developments during operations.

8.4.1 Liquefaction Facilities

The Liquefaction Facility would be located in the KPB, but not within established local option zoning districts or any incorporated cities. While the KPB regulates developments within floodplains and near anadromous fish streams, the portion of the Liquefaction Facility that would be on locally managed land would be located outside of the designated 100-year floodplain and anadromous fish streams; therefore, those regulations do not apply to this facility.

Local governments that have zoning authority would not be intersected by the Project footprint.

8.4.2 Interdependent Project Facilities

8.4.2.1 Pipelines

8.4.2.1.1 Mainline

Zoning information along the proposed Mainline, from north to south, includes regulations from the following boroughs.

8.4.2.1.1.1 North Slope Borough (NSB)

Pursuant to North Slope Borough Land Management Regulations Sections 19.10.010 to 19.70.060, the NSB requires compliance with its zoning and permitting ordinances and issues permits for

development, uses, and activities on land within the NSB. Broad land use zone districts are defined, including Village Districts to govern the municipal limits of each incorporated Village. The proposed northern portion of the Mainline is zoned by NSB as the Resource Development District (see section on GTP), while most of the ROW within the NSB is zoned as the Transportation Corridor District. According to NSB Code (19.40.090), the Transportation Corridor District was established to provide a strip of land to accommodate linear transportation facilities (e.g., roads and pipelines). A development permit or administrative approval is required for development of new transportation facilities, including gas lines, oil lines, associated roads, pump stations, pipeline maintenance facilities, resource extraction, and other necessary supporting developments within the Transportation Corridor District. The proposed Project would not intersect any Village District.

8.4.2.1.1.2 Yukon-Koyukuk Census Area (YKCA)

The YKCA is part of an Unorganized Borough, that is, the lands of Alaska not within the boundaries of the state's organized boroughs. Zoning within the Unorganized Borough is overseen by the state legislature (Alaska Constitution, Article X, Sections 3 and 6, and AS 29.03.010). At this time, there is no YKCA zoning within the Project area.

8.4.2.1.1.3 Fairbanks North Star Borough (FNSB)

The FNSB provides for planning, platting, zoning, and land use regulations on an area-wide basis (both inside and outside of cities) within the FNSB in accordance with AS 29.40. The FNSB's Planning Commission was established by Chapter 2.40 of the FNSB's Code of Ordinances. The Planning Commission is charged with preparing and recommending to the legislative assembly appropriate policies, plans, and ordinances for the implementation of municipal planning, the official map, comprehensive plan, and zoning functions; acting as an appeals body for decisions of the Platting Board; and acting upon requests for exceptions to the FNSB Land Use Code (Title 18). The FNSB requires that an approved zoning permit be acquired prior to excavation, construction, relocation, or installation for a new land use. The Mainline would intersect the far northwest corner of the FNSB in an area that is subject to the General Use District (GU-1) use regulations. Pursuant to the FNSB Title 18 Zoning Code, the installation and maintenance of utility lines are permitted uses in all zoning districts.

8.4.2.1.1.4 Denali Borough (DB)

The DB communicates its powers and duties through its adopted charter ratified by the voters, and it can exercise powers not prohibited by state or federal law or by the charter (AS 29.10). Section 7.01 of the DB Charter established a planning commission to perform the functions of platting, planning, and zoning for the DB. Pursuant to Section 5.25 of the DB Charter, the commission holds public hearings and makes recommendations to the legislative assembly regarding planning, zoning, amendments to ordinances, and the enforcement of appropriate regulations.

According to the DB Comprehensive Plan, land in DB is zoned unrestricted unless otherwise provided for by ordinance (DB, 2009). No prohibitions exist on land zoned as unrestricted (Ordinance 96-04 § 2).

8.4.2.1.1.5 Matanuska-Susitna Borough (MSB)

The MSB Planning Commission was established to perform the area-wide functions of planning, platting, and zoning. The Commission's recommendations are transmitted to the MSB Assembly, a body of elected district representatives that sets policy and exercises legislative power within the MSB. According to MSB Code Chapter 15.24, Assembly, Zoning Functions, the Assembly has the authority, with the Planning Commission's recommendation, to establish building and land use regulations and create districts (MSB Code 15.24.015).

The MSB has zoning, land use, and building regulations. Land development in the MSB is subject to MSB Code Section 17.02, Mandatory Land Use Permit. The MSB has platting authority and a Code Compliance Division. The State Fire Marshal is the State Building Official. While the MSB does not have a Borough-wide zoning code, it regulates land use through special land use districts, residential land use districts, and other mechanisms (Surface Transportation Board, 2010). The Mainline would intersect the Denali State Park Special Land Use District. While minimum setbacks from lot lines, water courses and waterbodies, and ROWs are required for buildings constructed within the district, utility lines are specifically excluded from the definition of buildings in Sections 17.55 and 17.17 of the MSB Code. The Mainline is therefore not subject to these minimum setbacks.

8.4.2.1.1.6 Kenai Peninsula Borough (KPB)

The KPB is required to provide for planning, platting, and land use regulations on an area-wide basis (both inside and outside of cities) within the KPB in accordance with AS § 29.40. Land use within the KPB is guided by the KPB Comprehensive Plan (KPB, 2005). The Code of Ordinances dictates the KPB powers and operations. Zoning in the KPB is unrestricted outside of the KPB's cities and eight local option zone districts, none of which are located within the Project area. While the KPB regulates floodplain development, coastal zone development, and development near certain anadromous fish streams (including the Beluga River), the portions of the Mainline that would intersect the 100-year floodplain (see Section 2.5.3.1 in Resource Report No. 2) and the Beluga River would not be located on locally managed lands; therefore, these regulations would not apply.

8.4.2.1.1.7 Cities and Communities

Local governments that have zoning authority would not be intersected by the Project footprint.

8.4.2.1.2 PBTL

The PBTL is located entirely within the NSB and would cross lands within the NSB that are zoned for resource development.

8.4.2.1.3 PTTL

The PTTL would be located entirely within the NSB. The lands are zoned by the NSB for resource development.

8.4.2.2 Pipeline Aboveground Facilities

The Pipeline Aboveground Facilities (e.g., compressor stations, heater stations, meter stations, MLBVs) would be located within the NSB, YKCA, FNSB, DB, MSB, and KPB, and would be subject to the zoning requirements described previously for those jurisdictions.

8.4.2.3 Pipeline Associated Infrastructure

Pipeline Associated Infrastructure (e.g., access roads, ATWS, contractor yards, pipe yards, construction camps, rail spurs, temporary disposal sites, and material extraction sites) would be located within the NSB, YKCA, FNSB, DB, MSB, and KPB and would be subject to the zoning requirements described previously for those jurisdictions. In addition to the FNSB zoning district GU-1, the Pipeline Associated Infrastructure (access roads) would also cross FNSB lands zoned Rural Estate 2 (RE-2) and Rural Estate 4 (RE-4). Road improvement and construction are not specifically restricted within RE-2 and RE-4. Road improvements would require a permit from the State of Alaska.

8.4.2.4 GTP

The northern portion of the Project area, including the GTP, is zoned by the NSB as Resource Development. The Resource Development District, according to NSB Code (19.40.080), is intended to address the cumulative effects of large-scale development and to offer developers prompt, cost-effective, and predictable permit approvals. The purpose of the Resource Development District is to accommodate large-scale resource extraction and related activities that include the following features:

- Do not permanently and seriously impair the capacity of the surrounding ecosystem to support the plants and animals upon which Borough residents depend for subsistence;
- Are planned, phased, and developed as a unit or series of interrelated units under an approved master plan, with provisions made for necessary public and private facilities; and
- Meet Title 19 Borough policies and the conditions of approval and special policies imposed on each individual Resource Development District at the time of designation (NSB Code 19.40.080).

The Project would therefore be subject to comply with policies and conditions of approval as defined within the Resource Development District that consider effects from this and other projects. However, the purpose of the district is to accommodate this and other projects and would do so while applying the features listed.

8.4.2.5 GTP Associated Infrastructure

The GTP Associated Infrastructure would be subject to the same requirements as would the GTP.

8.4.3 Non-Jurisdictional Facilities

The PBU MGS Project would be subject to the same requirements as the GTP. The PTU Expansion would be located entirely within the NSB and are on lands zoned by the NSB for resource development. The relocation of the KSH would be subject to the same requirements as the Liquefaction Facility.

8.5 LAND OWNERSHIP AND SPECIAL MANAGEMENT AREAS

Land ownership and special management areas were identified for the Project. Title work was completed for all tracts that would be crossed or impacted by the Project to determine land ownership. A geospatial analysis overlaid agency planning boundaries with land ownership and Project footprint to determine the special management areas that would be affected by the Project. A summary of land ownership by Project Facility is provided in Table 8.5-1 and a breakdown by MP along the Mainline is provided in Table 8.5-2. Appendix B contains Project maps depicting land ownership.

Section 8.6 discusses the primary uses, peak use periods, and seasonal restrictions that apply to the public lands crossed by the Project. Site-specific Public Land Use and Recreational Use Coordination Plans would be developed in consultation with the land managing agency after their review of this Resource Report draft. These plans are expected to be finalized during the easement acquisition process to document the potential mitigation measures necessary to maintain use of these areas by the public while maintaining public safety.

TABLE 8.5-1

Acres of Land Ownership/Management Affected by Construction and Operations

Landowner / Manager	Project Facility															
	Liquefaction Facility		Mainline		PBTL		PTTL		Pipeline Aboveground Facilities & Associated Infrastructure		GTP		GTP Associated Infrastructure		Total	
	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations
Federal																
BLM	-	-	3,486.6	1,480.1	-	-	-	-	2,919.5	65.3	-	-	-	-	6,406.1	1,545.4
Federal Other	-	-	2.8	1.3	-		-	-	76.8	-	-	-	-	-	79.6	1.3
State																
ADOT&PF	29.4	29.4	377.8	86.2	-	-	-	-	643.5	196.7	-	-	-	-	1,050.7	312.3
Mental Health Trust Authority	-	-	161.0	65.4	-	-	-	-	109.9	-	-	-	-	-	270.9	65.4
ADNR	100.3	22.9	43,387.3	2,420.0	7.3	7.3	1,721.4	611.3	4,978.6	410.6	283.9	283.9	640.3	503.6	51,455.4	4,261.1
State Forest	-	-	492.4	189.9	-	-	-	-	750.1	103.1	-	-	-	-	1,242.5	293.0
State Game Refuge (SGR)	-	-	576.1	207.2	-	-	-	-	403.6	59.6	-	-	-	-	979.7	266.8
Other State of Alaska	-	-	7.2	3.1	-	-	-	-	25.1	-	-	-	-	-	32.3	3.1
State Park	-	-	565.2	238.4	-	-	-	-	449.8	0.4	-	-	-	-	1,014.9	238.8
State Rec. Area	-	-	70.5	26.9	-	-	-	-	17.6	-	-	-	-	-	88.1	26.9
University of Alaska	-	-	14.3	6.3	-	-	-	-	17.8	-	-	-	-	-	32.0	6.3
City/Borough																

TABLE 8.5-1

Acres of Land Ownership/Management Affected by Construction and Operations

Landowner / Manager	Project Facility															
	Liquefaction Facility		Mainline		PBTL		PTTL		Pipeline Aboveground Facilities & Associated Infrastructure		GTP		GTP Associated Infrastructure		Total	
	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations	Construction	Operations
Borough Land	62.9	60.8	678.1	286.7	-	-	-	-	612.2	50.1	-	-	-	-	1,353.2	397.7
City	-	-	6.5	2.9	-	-	-	-	5.6	-	-	-	-	-	12.1	2.9
Native																
Native Allotments	-	-	0.0	0.0	-	-	-	-	-	-			1.8	1.8	1.8	1.8
Native Regional Corporation	-	-	504.8	207.8	-	-	-	-	545.8	15.5	-	-	-	-	1,050.6	223.3
Native Village Corporation	79.9	-	98.1	39.9	-	-	-	-	117.6	-	-	-	-	-	295.4	39.9
Private																
Private	153.8	153.6	67.0	28.2	-	-	-	-	153.7	0.4	-	-	-	-	374.5	182.2
Private Corp.	655.8	653.7	123.9	52.7	-	-	5.2	2.3	521.7	-	-	-	-	-	1,320.1	708.7
Total	1,082.1	920.3	50,620.5	9,705.3	7.3	7.3	1,726.6	613.6	12,348.8	903.1	283.9	283.9	642.1	505.4	67,060.1	8,576.77

TABLE 8.5-2

Acres of Land Ownership/Management of Non-Jurisdictional Facilities

Land Owner / Manager	Relocation of the KSH								PBU MGS	PTU Expansion
	Alt 1 LNG	Alt 1 LNG S Variant	Alt 2 West	Alt 2 West N Variant	Alt 2 West S and N Variant	Alt 2 West S Variant	Alt 3 Miller Loop Rd	Alt 4 East		
BLM	-	-	-	-	-	-	-	-	-	-
Federal Other	-	-	-	-	-	-	-	-	-	-
ADOT&PF	15.0	15.9	14.8	5.4	6.3	15.7	57.7	6.5	-	-
Mental Health Trust Authority	-	-	-	-	-	-	-	-	-	-
ADNR	0.7	0.7	0.5	5.7	5.7	0.5	4.6	0.0	316.8	111.4
State Forest	-	-	-	-	-	-	-	-	-	-
SGR	-	-	-	-	-	-	-	-	-	-
Other State of Alaska	-	-	-	-	-	-	-	-	-	-
State Park	-	-	-	-	-	-	-	-	-	-
State Recreation Area	-	-	-	-	-	-	-	-	-	-
University of Alaska	-	-	-	-	-	-	-	-	-	-
Borough Land	1.7	4.2	1.5	8.8	10.8	3.5	2.9	12.9	-	-
City	-	-	-	-	-	-	-	-	-	-
Native Allotments	-	-	-	-	-	-	-	-	-	-
Native Regional Corporation	-	-	-	-	-	-	-	-	-	-
Native Village Corporation	9.5	9.5	9.6	7.2	7.2	9.6	3.7	0.0	-	-
Private	32.0	34.1	44.4	92.0	93.0	45.5	36.2	123.8	-	-
Private Corp.	26.7	32.0	19.2	12.0	17.3	24.5	32.5	26.2	2.2	-
NO DATA	-	-	-	-	-	-	-	-	194.5	104.1
Total	**85.6**	**96.3**	**90.0**	**131.0**	**140.2**	**99.3**	**137.6**	**169.4**	**513.6**	**215.5**

TABLE 8.5-3

Summary of Land Ownership/Management Intersected by Mainline Centerline [a]

Agency or Entity	Project Facility	Begin MP	End MP	Approximate Crossing Length (miles)	Percent of Total Project Length
Federal Land					
BLM	Mainline	Intermittently between 121.1 and 581.0		230.8	28.6%
State Land					
ADNR	Mainline	Intermittently between MP 0.0 and 804.5		352.5	43.7%
Mental Health Trust Authority	Mainline	Intermittently between 470.6 and 761.8		10.1	1.3%
ADF&G	Mainline	Intermittently between MP 430.9 and 752.4		32.3	4.0%
ADOT&PF	Mainline	Intermittently between MP 63.3 and 806.6		12.9	1.6%
Other State of Alaska	Mainline	Intermittently between MP 241.3 and 728.5		71.3	8.8%
University of Alaska	Mainline	514.3 514.7	514.7 515.3	1.0	0.1%
Municipal Land					
NSB	Mainline	83.3	85.5	2.2	0.3%
Unorganized Borough	Mainline	473.2 473.8	473.6 473.8	0.4	<0.1%
FNSB	No municipal land intersected	N/A	N/A	N/A	0%
DB	Mainline	Intermittently between MP 497.8 and 545.3		15.5	1.9%
MSB	Mainline	Intermittently between 647.4 and 734.5		21.1	3.0%
KPB	Mainline	Intermittently between 763.1 and 804.6		5.8	0.7%
Private Land					
Private	Mainline	MP 4.6 to 5.7, and intermittently between MP 470.5 and 806.6		12.38	1.5%
Native Land					
Native Regional Corporation	Mainline	Intermittently between 545.3 and 803.1		32.1	4.0%
Native Village Corporation	Mainline	Intermittently between 468.6 and 802.3		6.2	0.8%
Native Allotments	Mainline	None intersected		n/a	0%
	Mainline Total	0.0	806.6	806.6	100%

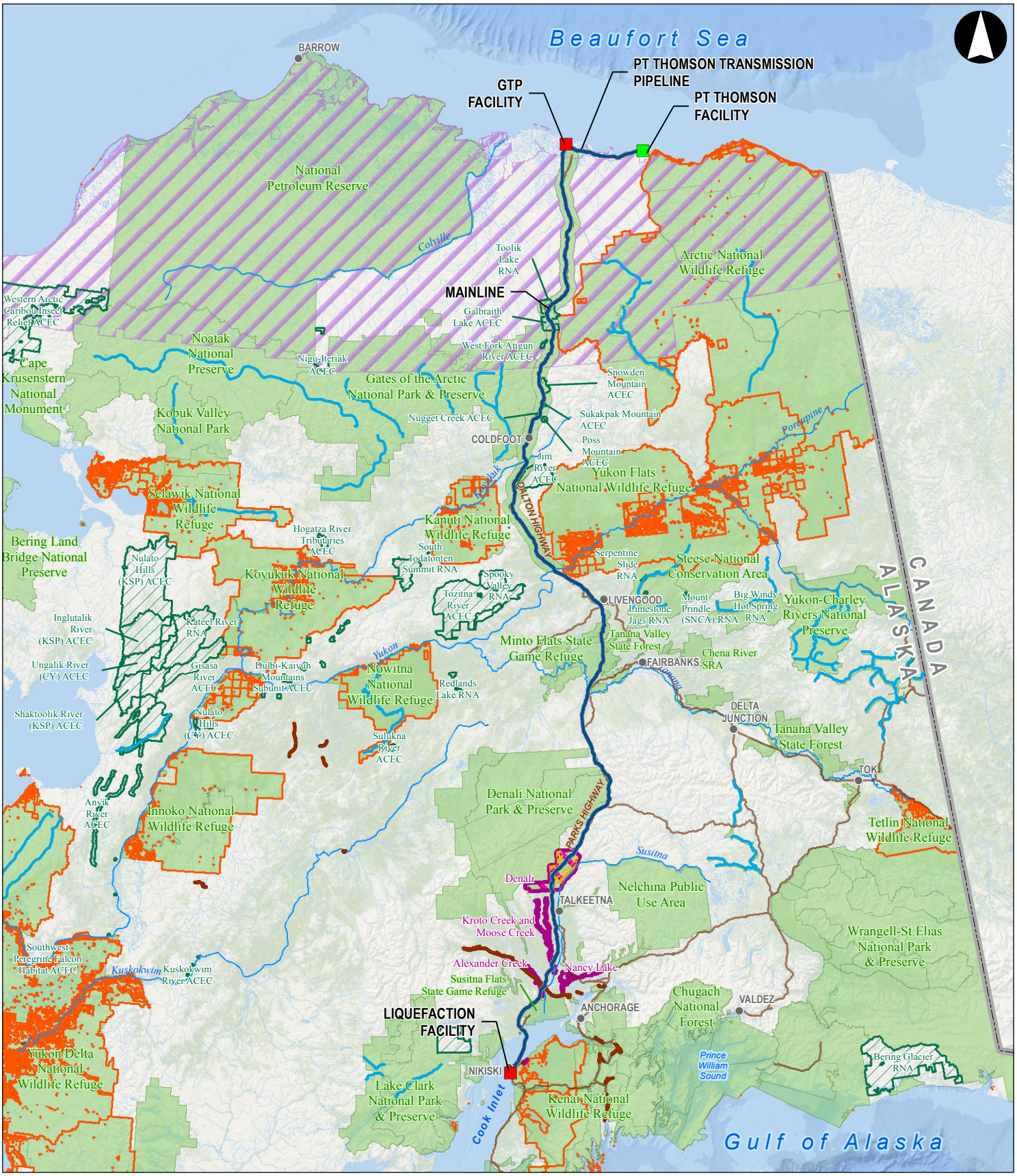
TABLE 8.5-3

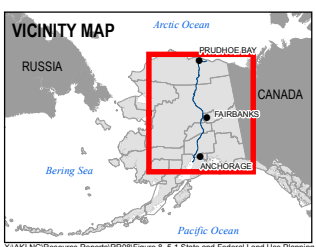
Summary of Land Ownership/Management Intersected by Mainline Centerline [a]

Agency or Entity	Project Facility	Begin MP	End MP	Approximate Crossing Length (miles)	Percent of Total Project Length

Notes:

[a] Does not include land ownership impacted by associated facilities or temporary workspace





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LEGEND

- Project Facility
- Existing Facility
- Alaska Place Names
- Alaska LNG Rev C2 Route
- Wild and Scenic Rivers
- Iditarod National Historic Trail
- Major Highways
- Major Rivers
- State Park Wilderness Areas
- Legislatively Designated Area
- Areas of Critical Environmental Concern
- National Wildlife Refuge Boundaries
- North Slope Borough Conservation Areas
- State and Federal Conservation Lands

0 35 70 140 Miles

DISCLAIMER

The information contained herein is for informational or planning purposes only, It does not nor should it be deemed to be an offer, request or proposals for rights or occupation of any kind. The Alaska LNG Project Participants and their respective officers, employees and agents, make no warranty, implied or otherwise, nor accept any liability, as to the accuracy or completeness of the information contained in these documents, drawings or electronic files. Do not remove or delete this note from document, drawing or electronic file.

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DATE:	2017-03-15	SHEET:	1 of 1

STATE & FEDERAL LAND USE PLANNING AREAS

FIGURE 8.5-1

ALASKA LNG

8.5.1 Federally Owned and Managed Land

The Project area would intersect federal lands managed by the BLM, as shown in Table 8.5-1. A depiction of the lands that would be crossed by the Project is provided in Appendix B. Figure 8.5-1 depicts the federal land use planning areas that would be crossed. The actual construction and operation of the Project would not occur on National Park Service (NPS) or U.S. Fish and Wildlife Service (USFWS) land.

8.5.1.1 BLM

The BLM administers the federal lands within the Project area. Under the Federal Land Policy and Management Act (FLPMA) of 1976 (43 USC § 1761 et seq.), the BLM manages approximately 75 million surface acres of federal public land within Alaska through its Fairbanks and Anchorage district offices. Section 503 of the FLPMA provides for the designation of ROW corridors. In designating ROW corridors under Section 503, the BLM considers national and state land use policies, environmental quality, economic efficiency, national security, and good engineering and technological practices. Pursuant to the Mineral Leasing Act (MLA) (30 USC § 185) and 43 C.F.R. 2881.11, an applicant must have a BLM grant under the MLA for an oil or gas pipeline, or related facility, to cross federal lands either under BLM's jurisdiction or the jurisdiction of two or more federal agencies. If the application involves two or more federal agencies, the BLM will not issue or renew a grant until the heads of the agencies administering the lands involved have concurred (BLM, 2015). The proposed Project footprint does not affect any other federal land.

A Plan of Development (POD) is being developed in support of the Project ROW Grant and Temporary Use Permit (TUP) application to cross BLM-managed lands to address specific construction or operation measures that would be implemented to promote conformance with the BLM land use plans. A draft POD is included in Appendix H of this Resource Report.

8.5.1.1.1 Central Yukon and Utility Corridor Planning Area

As prescribed by the FLPMA, land use plans would be developed for public land "to establish public land policy; to establish guidelines for its administration; to provide for the management, protection, development, and enhancement of the public lands; and for other purposes" (BLM, 2001). The Project would encompass an area subject to the BLM's Utility Corridor Resource Management Plan (RMP)/ EIS from 1991. As taken from the RMP's Record of Decision, the Utility Corridor RMP is a comprehensive land use plan developed to direct the BLM's management of a portion of the lands and minerals it administers in northern Alaska (BLM, 1991a). The Utility Corridor RMP, established by Public Land Order 5150, is an essential component of the national oil and gas transportation system. In recognition of this fact, the RMP provides that the primary management direction and use of BLM-administered lands in the Utility Corridor is for energy transportation.

It should be noted that the BLM published a Notice of Intent in the Federal Register on June 14, 2013, announcing the beginning of a scoping process to prepare an RMP with an associated EIS for the Central Yukon Planning Area. The BLM has determined that revisions are needed to the existing Utility Corridor RMP (BLM, 1991a), Central Yukon RMP (BLM, 1986a), and Southwest Management Framework Plan (1986, as cited in BLM, 2015). The revised Central Yukon RMP will replace both the Utility Corridor and Central Yukon RMPs in their entirety and a small part of the Southwest

Management Framework Plan if implemented. While a draft of the RMP/EIS is not yet available, key issues to be addressed by the RMP include the following:

- Management of land use and activities for recreational uses, vehicle access, minerals management, land ownership and assemblages, and easement access;

- Conservation of lands having special, critical, or unique features or resource values: Areas of Critical Environmental Concern (ACECs), Research Natural Areas (RNAs), Wild and Scenic Rivers (WSRs), and Wilderness Study Areas; and

- Management of natural resources, including effects to soil, air, and water; hazardous and solid waste; vegetation and forest products; and special-status species (Endangered Species Act).

Three federally designated corridors within the Utility Corridor's planning area accommodate ROWs:

- Alaska Utility Corridor – A corridor 6–24 miles wide that runs north-south through most of the planning area and consists of an inner and outer corridor, which is described subsequently;

- Section 201(4)(b) of the Alaska National Interest Lands Conservation Act (ANILCA) (ANILCA; Public Law 96-487) Corridor – Provides surface access for transportation purposes across public lands from the Ambler Mining District to the Dalton Highway; and

- Section 1431(j) of the ANILCA Corridor – A corridor 6–12 miles wide authorized by ANILCA across the Central Arctic Management Area to provide the Arctic Slope Regional Corporation (ASRC) an oil and gas pipeline ROW, including related facilities, across public lands from the Kurupa Lake and Killik River areas east to the TAPS corridor.

The Alaska Utility Corridor contains an inner and an outer corridor. The majority of the Mainline and associated infrastructure would be located within the inner utility corridor. Various non-energy transportation activities are restricted within the inner corridor (e.g., mineral resource development) and, with a few exceptions (e.g., ACEC), the area is devoted to the transportation of energy resources. It should be noted that the inner corridor generally corresponds to the Dalton Highway Recreation Management Area (RMA), which includes lands within the corridor adjacent to existing roadways, and the Dalton Corridor RMA, which includes the remainder of the utility corridor (BLM, 1991b).

8.5.1.1.1.1 Eastern Interior Planning Area

The BLM is currently preparing an RMP for the Eastern Interior Planning Area. The Final EIS for the RMP is due in 2016. The RMP would establish goals and objectives for managing resources, and would outline the measures needed to achieve those goals and objectives. The Project area would pass through the boundaries of the Eastern Interior Planning Area. However, the portion of the Project area that would occur within the Eastern Interior Planning Area would be located entirely on state, private, or municipal land; therefore, the Eastern Interior RMP would not apply to the Project. The Eastern Interior Planning Area encompasses the Yukon Flats National Wildlife Refuge (NWR) and the White Mountains National Recreation Area. The Project area would occur outside Yukon Flats NWR and the White Mountains National Recreation Area.

8.5.1.1.1.2 East Alaska Planning Area

The East Alaska Planning Area includes 6.8 million acres of BLM-administered public land in eastern Alaska and the Bering Glacier. The Project area is located in the western portion of the East Alaska Planning Area, where no special management areas are present.

8.5.1.1.1.3 Ring of Fire Planning Area

The Ring of Fire RMP was approved in July 2006 and spans a distance of 2,500 miles. The Project area is located within the boundaries of the southcentral region of the Ring of Fire Planning Area, which continues south to Anchorage and the surrounding area. However, the portion of the Project area that occurs within the Ring of Fire Planning Area is located entirely on state, private, or municipal land; therefore, the Ring of Fire RMP will not apply to the Project.

8.5.1.1.2 Special Designation Areas

Special designation areas are lands that are managed by federal agencies for the protection or enhancement of specific resource values (e.g., cultural, special-status species, visual, and/or wilderness). Lands categorized as special designation areas include ACECs, Extended RMAs, special management areas, Special RMAs, Wilderness Study Areas, WSRs, National Parks, and National Recreation Areas.

8.5.1.1.2.1 Areas of Critical Environmental Concern (ACECs)

Some areas under BLM management have been designated as ACECs. ACECs are areas within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards (43 C.F.R. § 1601.0-5). Generally, development activities and future energy transportation systems are allowed. The ACECs located within the Project area are described further in Section 8.6.4.

8.5.1.1.2.2 Iditarod National Historic Trail (INHT)

For matters involving the Iditarod National Historic Trail (INHT) over State land where conveyances from the United States do not include a reservation under the National Trails System Act of 1968, as amended (NTSA), for the INHT, the State of Alaska manages the INHT. This is the case at Mainline pipeline MP 720.8 and 724.3. (See U.S. Patent No. 50-66-0093 dated September 17, 1965, and U.S. Patent No. 50-66-0319 dated February 7, 1966.) The NTSA provides that the INHT shall be administered by the Secretary of the Interior in cooperation with affected land owners and managers. The NTSA required the Secretary of the Interior to prepare a Comprehensive Management Plan (CMP) for the INHT. The CMP was completed and signed in 1986:

> "The Secretary of the Interior is by law charged with the responsibility for the administration of the INHT. The responsibility is delegated to the Bureau of Land Management. Administration of the National Trail by the Department of the Interior involves coordinating trail management and historic preservation efforts on the Iditarod Trail system, but does not include management of non-Federal trail segments or sites. National Trail designation on any

non-Federal site or trail segment will not transfer management responsibility to any Federal agency."

In 1988 the State and the BLM entered into a Memorandum of Agreement (MOA) regarding management of the INHT on both State and BLM-managed lands [AK-974-MU8-INHT-03 (1988)]. In the MOA, and using the CMP as a guide, the State agreed to: "protect continued public use of INHT segments in a manner which recognizes the historic values of the INHT." However, "Nothing in (the MOA) shall affect or interfere with fulfillment of the obligations and rights of the parties to manage the lands and programs administered by them in accordance with their other land management responsibilities."

The Mainline would cross the INHT System at two locations: at MP 720.8 the Mainline crosses the Susitna Station to Old Skwentna (Yentna River) INHT System Connecting Trail; and, at MP 724.3 the Mainline crosses the Susitna Station to Finger Lake INHT System Primary Route. The Trail is further discussed in Section 8.6.2.

8.5.1.1.2.3 Dalton Highway

The Dalton Highway RMP addresses approximately 1.1 million acres of public land within the Utility Corridor. It does not cover all Utility Corridor lands and only covers those lands in proximity to existing roads. The plan was developed so that the BLM could identify appropriate management objectives, policies, actions, future staffing, and funding requirements to accommodate current and future recreation demands, ensure visitor safety, manage the resources, and protect the integrity of the energy transportation corridor (BLM, 1991b).

The Dalton Highway is further discussed in Section 8.6.5. The Mainline would include lands covered by the Dalton Highway RMP.

8.5.1.2 National Park Service

No NPS-administered lands would be used by the Project. The Mainline would pass outside the boundaries of the Gates of the Arctic National Park and Preserve (NPP) and Denali National Park and Preserve (DNPP). The Mainline would pass through the Brooks Range outside the eastern boundary of the Gates of the Arctic NPP. It would approach DNPP (within 0.02 mile at its closest point). Additional details concerning DNPP are provided in Section 8.6.4.

8.5.1.2.1 Section 6(f) of the Land and Water Conservation Fund

Section 6(f) of the Land and Water Conservation Fund (LWCF; 16 USC 4601 et seq.) applies to public areas that have received LWCF funding to acquire or develop public recreational facilities. Section 6(f) (3) requires these areas be maintained for public outdoor recreational use, unless the NPS approves substitute land determined to be of equivalent location, suitability for recreation, and greater or equal to the fair market value of the original property. This statute would apply to lands that have received LWCF funding. Based on GIS analysis, the Mainline would pass through Section 6(f) lands within Denali State Park (subject to requirements of LWCF) and the process with the NPS would be completed to determine if the effects to public outdoor recreational use in this area would need further consideration. This process is defined in Section 8.11.2.1.11 Recreational Sites and Special Use Areas.

8.5.1.3 U.S. Fish and Wildlife Service (USFWS)

The Mainline would approach a portion of the Arctic NWR, which is administered by the USFWS; however, construction and operational activities would not occur in the Refuge. Additional details concerning the Arctic NWR are provided in Section 8.6.4.

8.5.1.4 Summary of Applicable Federal Land Use Plans

8.5.1.4.1 Liquefaction Facility

The Liquefaction Facility would not affect federal lands. The Liquefaction Facility would be located on a mixture of KPB, State of Alaska, Alaska Native Corporation, and private land holdings. The Marine Terminal portion of the Liquefaction Facility is located on State of Alaska land within Cook Inlet.

8.5.1.4.2 Interdependent Project Facilities

8.5.1.4.2.1 Pipelines

Mainline

The Mainline would pass through 3,489.4 acres of federal land during construction and 1,481.4 acres during operations as detailed in Table 8.5-1. An overview of the potentially applicable stipulations for the areas crossed by the Pipelines and Related Aboveground Facilities is provided in Table 8.5.1-1.

TABLE 8.5.1-1

Summary of Potentially Applicable Federal Land Use Plans and Documents for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs	Relationship with the Proposed Action
BLM	Utility Corridor RMP/EIS Record of Decision (1991)	Mainline MPs: 121.1 to 356.3 Pipeline Aboveground Facilities 3 compressor stations; 2 MLBV pads Pipeline Associated Infrastructure 48 36 borrow sites; 9 camps; 15 pipe storage yards; 214 access roads; 189 ATWS; 55 disposal sites; 2 helipads;	The proposed RMP/Final EIS identifies the inner and outer portions of the Utility Corridor within its planning area. The Project would be located within the Utility Corridor. The primary management direction and use of BLM-administered lands in the Utility Corridor is for energy transportation. In addition to the management practices and allowable uses for the Galbraith Lake, and Sukakpak Mountain ACECs and Toolik Lake RNA, the protection measures and stipulations are detailed in Appendices K and L of the proposed RMP/Final EIS.
	Central Yukon Planning Area RMP and Record of Decision (1986)	Mainline MPs: 356.3 to 358; 364.1 to 365; 414.5 to 421.9; 424.2 to 545.3*	The following policies would apply for access to or across BLM lands managed under the RMP: Granting access to or across public lands would be considered on a case-by-case

TABLE 8.5.1-1

Summary of Potentially Applicable Federal Land Use Plans and Documents for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs	Relationship with the Proposed Action
		Pipeline Aboveground Facilities 2 compressor stations; 5 MLBV pads Pipeline Associated Infrastructure 4 railroad work pads and spurs; 33 borrow sites; 3 camps; 5 pipe storage yards; 75 access roads; 71 ATWS; 2 compressor stations; 19 disposal sites; 5 helipads; 5 MLBV pads; 4 railroad spurs; 4 railroad work pads.	basis. Under this RMP, the use of vehicles greater than 1,500 pounds' gross vehicle weight would be allowed by authorization only. Vehicle use may be authorized under a mining plan of operations (43 C.F.R. 3809), with a permit (43 C.F.R .2800 or 43 C.F.R. 2920), or by other appropriate means. Approval would be subject to conditions that reduce the impact on other land uses and/or prevent unnecessary damage to the environment.
	Central Yukon RMP and EIS (in development; Record of Decision and Approved RMP anticipated early 2019)	Encompasses the facilities shown for both the Utility Corridor Planning Area and the Central Yukon Planning Area	The BLM is revising the existing Utility Corridor RMP (BLM, 1991a), Central Yukon RMP (BLM, 1986a), and Southwest Management Framework Plan (1986). The revised Central Yukon RMP will replace both the Utility Corridor and Central Yukon RMPs in their entirety as well as a small part of the Southwest Management Framework Plan. A draft of the RMP/EIS will be available for public review in 2017.
	East Alaska RMP (2006)	Mainline MPs: 545.3 to 646.9 Pipeline Aboveground Facilities: 1 compressor station; 3 MLBV pads Pipeline Associated Infrastructure: 3 railroad work pads and spurs; 27 borrow sites; 3 camps; 5 pipe storage yards, 89 Access Roads; 74 ATWS;; 5 disposal sites; 3 helipads; 3 railroad spurs; 3 railroad work pads.	The required operating procedures and oil and gas leasing stipulations are described in Appendix B of the RMP/Final EIS.
	Iditarod National Historic Trail Comprehensive Management Plan (1986)	Mainline MPs (but on state lands): 720.7 and 724.3 Pipeline Associated Infrastructure (but on state lands): 1 pipe storage yard (PSY) 1 access road 1 ATWS	The plan outlines the trail network and impacted communities, but does not provide guidance related to utility corridors (BLM, 1986b).

TABLE 8.5.1-1

Summary of Potentially Applicable Federal Land Use Plans and Documents for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs	Relationship with the Proposed Action
	Dalton Highway Recreation Area Management Plan (DHRMA) (1991)	Mainline MPs: 121.4 – 236.1, 237 – 237.2, 243.8 – 356.9 Pipeline Aboveground Facilities: 2 compressor stations 12 MLBVs Pipeline Associated Infrastructure: 8 construction camps 14 PSYs 31 material sites 225 access roads 1,297 ATWS	The plan states, "the primary function of the lands within the Dalton Highway Recreation Area Management Area (DHRMA) is the transportation of energy resources; therefore, actions or activities potentially averse to existing and future energy transportation systems will be avoided. Mineral material extraction is allowed within the DHRMA for maintenance and construction of transportation systems. This planning decision may be in conflict with recreation management objectives in some areas" (BLM, 1991b).
	Ring of Fire RMP/EIS	Mainline MPs: 646.9 to 766.0; 766.0 to 766.3; 793.0 to 793.3; 793.3 to 806.6 Pipeline Aboveground Facilities: 2 compressor stations; 6 MLBV pads 1 meter station Pipeline Associated Infrastructure: 61 Access Roads; 51 ATWS; 23 Material Sites; 7 Camps; 1 10 pipe storage yards; 1 railroad spur; 1 railroad work pad; 11 disposal sites; 6 helipads.	There are potential increased levels of resource development, while providing site-specific and some area-wide protection of resources through future integrated implementation planning. Three SMAs are identified. All BLM managed lands would be designated as "limited" to existing roads and trails for OHV use (consistent with the Generally Allowed Uses on State Land), which would result in fewer areas of resource degradation. However, limitations within the three SMAs would be defined through the development of implementation plans, and may include instituting seasonal closures, closure of some portions of the SMAs to OHVs, the designation of, and/or limitations to designated trails, and/or the opening of some portions of the proposed Knik River SRMA to OHV use.

PBTL

Based on the Project's proposed design, federal lands would not be crossed by the PBTL.

PTTL

Based on the Project's proposed design, federal lands would not be crossed by the PTTL.

8.5.1.4.2.2 Pipeline Aboveground Facilities

The Pipeline Aboveground Facilities (e.g., compressor stations, heater stations, meter stations, MLBVs) would be located on BLM managed lands. An overview of the potentially applicable stipulations for the areas crossed is provided in Table 8.5.1-1.

8.5.1.4.2.3 Pipeline Associated Infrastructure

Pipeline Associated Infrastructure (e.g., access roads, ATWS, contractor yards, pipe yards, construction camps, rail spurs, temporary disposal sites, and material extraction sites) would be located on multiple federally managed lands. An overview of the potentially applicable stipulations for the areas crossed is provided in Table 8.5.1-1.

8.5.1.4.2.4 GTP

Federal lands would not be affected by the GTP. The GTP would be located on state-managed lands (Appendix B).

8.5.1.4.2.5 GTP Associated Infrastructure

Federal lands would not be affected by the GTP Associated Infrastructure. The GTP Associated Infrastructure would be located on state-managed lands (Appendix B).

8.5.1.4.3 Non-Jurisdictional Facilities

Federal lands would not be affected by Non-Jurisdictional Facilities.

8.5.2 State-Owned and -Managed Land

State-owned and managed lands were identified in the Project area. A summary of the state-owned and -managed lands crossed is provided in Table 8.5-1. A depiction of the lands crossed by the proposed Project is provided in Appendix B. Figure 8.5-1 depicts the state land use planning areas crossed.

8.5.2.1 Alaska Department of Natural Resources (ADNR)

AS 38.04.065, Land Use Planning and Classification, and 11 AAC 55.010-.030 require that the ADNR "shall, with local governmental and public involvement under AS 38.05.945, adopt, maintain, and, when appropriate, revise regional land use plans that provide for the use and management of State of Alaska-owned lands." The State Pipeline Coordinator's Section (SPCS) within ADNR has authority under AS 38.35, the Pipeline Right of Way Leasing Act and it is responsible for managing the process for ADNR to grant leases of state land for pipeline ROW purposes for the Project. Currently, more than a dozen state-owned areas of Alaska are covered by management plans intended to establish goals, policies, management intent, and guidelines for state lands; allocate the use of state land through plan designations; and include recommendations to retain or sell land, open or close areas to development, and establish special land use designations.

ADNR land management divisions include the Division of Mining, Land & Water (DMLW); Forestry; and Parks and Outdoor Recreation (DPOR). For those lands that are owned by the State of Alaska and managed by the ADNR, but not covered by an existing resource-specific land management plan, the ADNR-DMLW, in coordination with the public, identifies important land resources and how its lands could be used for the maximum public benefit. All resource and land uses, including recreation, are considered and evaluated. Whenever possible, multiple uses are allowed on these lands. All state lands must be classified prior to being included in a lease for pipeline ROW. Prior to issuing a ROW, ADNR conducts a site-specific classification of any land not already classified in a State Area Plan.

8.5.2.1.1 ADNR-DMLW

Within the DMLW, land use management plans are categorized as either area plans (covering large areas) or management plans (providing more detailed guidance for a specific resource or special area). Area plans applicable to the Project include the following:

- Kenai Area Plan;
- Susitna Area Plan;
- Southeast Susitna Area Plan;
- Susitna Matanuska Area Plan;
- Yukon Tanana Area Plan;
- Eastern Tanana Area Plan (not yet adopted), Tanana Basin Area Plan is still the active plan for these areas; and
- North Slope Management Plan (in development).

The state area plans designate primary uses on state land, provide general management guidelines for a variety of land uses and resources, and identify specific management intent for individual units of land. The management units that would be crossed by the Mainline are managed for a variety of purposes, including land disposals, coal development, continued use of material sites, and uses compatible with settlement, as well as protection of public recreation values, agricultural values, forest values, and habitat values. Prior to making an authorization decision, ADNR takes into account the management guidelines and statement of intent specific to each unit. The area plans emphasize minimizing land use conflicts through plan guidelines and intent rather than through prohibitions, although prohibitions are sometimes identified. Other uses are initially presumed compatible with the primary use. However, if ADNR determines that a use conflict exists and that the proposed use is incompatible with the primary use, the proposed use shall not be authorized or it shall be modified so that the incompatibility no longer exists (11 AAC 55.040 (c)).

Management plans applicable to the Project include the Susitna Basin Recreation Rivers Management Plan. There are three State Recreation Rivers (SRRs) within the Project area managed by the DMLW:

- Kroto Creek & Moose Creek SRR;
- Alexander Creek SRR; and
- Little Susitna SRR.

The DMLW comanages state game refuges (SGRs), sanctuaries, and critical habitat areas (CHAs) with ADF&G, as described in Section 8.5.2.3.

Much of the state land that would be crossed by the Project has been classified as Resource Management Land (RMG) by various classification orders—for example, Classification Order (CL) 618, CL 617, CL NC-02-002, and CL NC 88-004. A land classification establishes the apparent best use of an area, with the presumption that all other uses are compatible unless specifically prohibited (ADNR, 2012). According to 11 AAC 55.200, land classified as RMG is either land that might have a number of important resources, but for which a specific resource allocation decision is not possible at this time, or land that contains one or more resource values, none of which is of sufficiently high value to merit designation as a primary use. The RMG classification does not prohibit any specific uses for the lands in the Project area.

All state lands in the Umiat Meridian are classified as North Slope Area Special Use Lands (Alaska Division of Land [ADL] 50666). This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits are required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. The DMLW will issue permits for ice road and pad construction and off-road (tundra) travel. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.

8.5.2.1.2 ADNR, Division of Forestry

The ADNR Division of Forestry manages forests for multiple uses and the sustained yield of renewable resources on 20 million acres of state land (ADNR, 2013b). Alaska state forests include the Tanana Valley, Haines, and Southeast State Forests. Of these, the Project area would include portions of the 1.81 million-acre Tanana Valley State Forest. This forest is open to timber extraction, mining, granular material extraction, oil and gas leasing, and grazing. Timber production is the major commercial activity (ADNR, 2013c). The DMLW adjudicates material sales from State Forest land, in consultation with the Division of Forestry. This forest also offers many recreational opportunities, including hunting, fishing, trapping, camping, hiking, dog mushing, cross-country skiing, wildlife viewing, snowmachining, gold panning, boating, and berry picking. The Tanana Valley State Forest is managed under the Tanana Valley State Forest Management Plan. The forest is discussed further in Table 8.5.2-2 and Section 8.6.4.

8.5.2.1.3 ADNR Division of Parks and Outdoor Recreation (DPOR)

The ADNR DPOR provides outdoor recreation opportunities, and conserves and interprets natural, cultural, and historic resources for the use, enjoyment, and welfare of the people. The Alaska State Park System contains 3.2 million acres, making it the largest in the United States. Units in the system include parks, historic parks and sites, marine parks, wilderness parks, recreation areas and sites, trails, preserves, and special management areas. The system provides more than 2,500 campsites, 128 trailheads, 37 boat launches, 43 scenic overlooks, and 340 toilets (ADNR, 2007).

Within the Project area, one Alaska State Park unit (Denali State Park; see Section 8.6.4) is managed by the ADNR DPOR.

8.5.2.1.4 ADNR State Pipeline Coordinator's Section (SPCS)

The ADNR SPCS manages pipeline ROWs and the lands encompassed by the ROW in accordance with the lease for the purposes of construction, operation, maintenance, and termination of a pipeline and all pipeline-associated actions. AS 38.35.010, the Right-of-Way Leasing Act, grants the State of Alaska all rights, powers, privileges, and immunities not preempted by federal interstate commerce laws and regulations in the ROW leasing of any state land for pipeline construction, transmission, or operation within its boundaries.

8.5.2.1.5 Alaska Mental Health Trust Lands

Alaska Mental Health Trust (Trust) Lands exist in the Project area. The Trust Land Office is a unit within the ADNR that is contracted exclusively by the Trust to manage approximately 1 million acres of land and other non-cash assets to generate income (ADNR, 2013d). Revenue-generating uses of Trust lands include land leasing and sales; real estate investment and development; commercial timber sales; mineral exploration and production; coal, oil, and gas exploration and development; sand, granular material, and rock sales; and other general land uses. Income derived from Trust lands is used to fund a comprehensive integrated mental health program for the citizens of Alaska.

8.5.2.2 University of Alaska

The University of Alaska currently owns and manages approximately 150,000 acres in Alaska. Some of this land would be crossed by the Project. University "trust lands" are managed for the use and benefit of the university and are not considered state public domain land. The university develops, leases, and sells land and resources to generate funds for its Land Grant Trust Fund (University of Alaska, 2006).

8.5.2.3 Alaska Department of Fish & Game (ADF&G)

The ADF&G's mission statement is "to protect, maintain, and improve the fish, game, and aquatic plant resources of the State, and manage their use and development in the best interest of the economy and the well-being of the people of the State, consistent with the sustained yield principle." Pursuant to 5 AAC 95.420 and .990, activities except for lawful hunting, trapping, fishing, viewing, and photography occurring in special areas including state parks, SGRs, and state fish and game CHAs require a special area permit. In addition, the use of helicopters or motorized vehicles requires a permit.

The ADF&G and ADNR-DMLW comanage the Minto Flats SGR, which is located adjacent to the Project area. The Minto Flats SGR encompasses approximately 500,000 acres and is located about 35 miles west of Fairbanks between the communities of Minto and Nenana (ADF&G, 2012). It was established by the Alaska Legislature in 1988 to ensure the protection and enhancement of habitat and the conservation of fish and wildlife, and to guarantee the continuation of hunting, fishing, trapping, and other compatible public uses within the Minto Flats area (ADF&G, 1992). According to the Minto Flats State Game Refuge Management Plan issued in 1992, utility corridors and pipelines may be sited on refuge lands if they are determined to be compatible with the purposes for which the refuge was established (ADF&G, 1992). Proposals will be evaluated for compatibility with the refuge purposes listed in legislation and reflected in the goals of the management plan. The Minto Flats SGR is also described in Section 8.6.4.

ADF&G and ADNR-DMLW also comanage the Susitna Flats SGR (Susitna Flats), which encompasses approximately 300,800 acres (ADF&G, 1988) and would be crossed by the Mainline. Susitna Flats, located between Beluga River and Point MacKenzie on the western side of Cook Inlet, was established by the Alaska Legislature in 1976. It was created to ensure the protection of fish and wildlife populations, particularly waterfowl nesting, feeding, and migration; moose calving areas; spring and fall bear feeding areas; and salmon spawning and rearing habitats. It was also established for public use of fish and wildlife and their habitat, particularly waterfowl, moose, and bear hunting; viewing; photography; and general public recreation in a high-quality environment. Each year, approximately 10 percent of the waterfowl harvested in the state occurs in Susitna Flats. New utilities may be allowed to cross the refuge where no feasible off-refuge alternative exists, using existing corridors wherever possible, consistent with refuge goals and objectives. Two major utility lines cross Susitna Flats—the Chugach Electric Association, Inc., electric transmission line and the ENSTAR natural gas pipeline (ADF&G, 1988).

8.5.2.3.1 ADF&G Game Management Units

The State of Alaska is divided into 26 Game Management Units (GMUs) that dictate hunting seasons and other hunting regulations, such as bag limits. The Project area is located within GMUs 26B, 25A, 25D, 24A, 20A, 20B, 20C, 20F, 16A, 16B, 15A, and 13E (ADF&G, 2014).

8.5.2.4 Alaska Railroad Corporation

The Alaska Railroad Corporation (ARRC) is an independent corporation owned by the State of Alaska. The State of Alaska prohibits the ARRC from selling, exchanging, or otherwise conveying a complete interest in its land. However, the ARRC leases non-operating lands to sustain its transportation assets. The Project representatives would coordinate with ARRC for crossing ARRC lands.

8.5.2.5 Alaska Department of Transportation and Public Facilities (ADOT&PF)

The ADOT&PF designs, constructs, operates, and maintains the state's transportation infrastructure systems, buildings, and other facilities used by Alaskans and visitors. This includes more than 5,000 miles of paved and granular highways; more than 300 aviation facilities, including 260 airports; 43 small harbors; and a ferry system covering 3,500 nautical miles and serving 33 coastal communities (ADOT&PF, 2011). Pursuant to 17 AAC 15.011, the ADOT&PF has the authority to grant a permit authorizing an applicant to construct or install utility facilities within an ADOT&PF ROW on lands owned by the State of Alaska. However, under AS 38.35, a state ROW lease will apply to ADOT&PF managed lands. The Project representatives would coordinate with ADOT&PF in the state's role regarding application of the following plans:

- James Dalton Highway Master Plan; and
- George Parks Highway – Inventory and Management Recommendations.

8.5.2.6 Summary of Applicable State Land Use Plans

8.5.2.6.1 Liquefaction Facility

Components of the Liquefaction Facility would be located on state-owned lands, such as the Marine Terminal, which is located on state-owned submerged lands (Appendix B). An overview of potentially applicable stipulations for the areas crossed is provided in Table 8.5.2-1.

TABLE 8.5.2-1

Summary of Potentially Applicable State Land Use Plans and Documents for the Permanent Footprint of the Liquefaction Facility

Author/Agency	Land Use Plan/Document	Acres	Potential Applicable Stipulations
ADF&G	Game Management Unit (GMU) 15A	181.7 acres (Marine Terminal)	Within GMU 15A, the Kenai Controlled Use Area encompasses the Liquefaction Facility site. This area is closed to the use of aircraft (for hunting moose, including transportation of moose hunters) before 12:01 a.m. on September 11.
ADNR DMLW	Kenai Area Plan (2001)	181.7 acres (Marine Terminal)	The Kenai Area Plan directs how ADNR will manage state uplands, tidelands, and submerged lands within the planning boundary. ADNR has classified state lands to reflect the intent of land use designations. Land classified as transportation corridor (11 AAC 55.205) is land identified for the location of easements and ROW under AS 38.04.065(f), including transportation, pipeline, or utility purposes.

8.5.2.6.2 Interdependent Project Facilities

8.5.2.6.2.1 Pipelines

Mainline

The Mainline would pass through multiple state-managed lands (Appendix B). An overview of potentially applicable stipulations for the areas crossed is provided in Table 8.5.2-2.

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
ADF&G	GMU 26B	Mainline MPs: Intermittently between 0.0 and 169.9 Pipeline Aboveground Facilities: 2 compressor station 2 MLBVs 1 meter station Pipeline Associated Infrastructure: 4 construction camps 10 PSYs 28 material sites 126 access roads 210 ATWS PBTL PTTL PTTL Aboveground Facilities: 1 meter station 2 MLBVs PTTL Associated Infrastructure: 3 construction camps 1 helipad 2 PSYs 2 access roads 54 access roads	Within Prudhoe Bay, closed to hunting of big game Within Dalton Highway Corridor Management Area, closed to hunting, unless taken in the area by bow and arrow only
	GMU 24A	Mainline MPs: 177.4–315.1 Pipeline Aboveground Facilities: 1 compressor station 1 MLBV Pipeline Associated Infrastructure: 4 construction camps 8 PSY 21 material sites 145 access roads 138 ATWS	The area is closed to the use of aircraft for hunting moose. A. The area within the Prudhoe Bay Closed Area is closed to the taking of big game; the remainder of the Dalton Highway Corridor Management Area is closed to hunting; however, big game, small game, and fur animals may be taken in the area by bow and arrow only; B. no motorized vehicle may be used to transport hunters, hunting gear, or parts of game, within the Dalton Highway Corridor Management Area, except that 1. licensed highway vehicles may be used on the following designated roads: (1) Dalton Highway,

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
			(2) Bettles Winter Trail during periods when the Bureau of Land Management and the City of Bettles announce that the trail is open for winter travel, (3) Galbraith Lake Road from the Dalton Highway to the BLM campground at Galbraith Lake, including the gravel pit access road when the gate is open, (4) Toolik Lake Road, excluding the driveway to the Toolik Lake Research Facility, (5) the Sagavanirktok River access road two miles north of Pump Station 2, and (6) any constructed roadway or gravel pit within one-quarter mile of the Dalton Highway; 2. aircraft and boats may be used; 3. a snowmachine may be used to cross the management area from land outside the management area to access land on the other side of the management area; C. any hunter traveling on the Dalton Highway must stop at any check station operated by the department within the Dalton Highway Corridor Management Area
	Game Management Unit GMU 20F	Mainline MPs: 324.7–356.3 Pipeline Aboveground Facilities: 1 MLBV Pipeline Associated Infrastructure: 6 PSYs 9 material sites 67 access roads 77 ATWS	Closed to use of motorcraft for hunting of big game Closed for hunting of big game Within Dalton Highway Corridor Management Area, closed to hunting, unless taken in the area by bow and arrow only
	GMU 20B	Mainline MPs: 356.3–472.8 Pipeline Aboveground Facilities: 1 compressor station 2 MLBVs Pipeline Associated Infrastructure: 3 construction camps 3 PSYs 2 railroad work pads 11 material sites 20 access roads 271 ATWS	
	GMU 20C	Mainline MPs: 472.8–476.1, 489.1-532.1	

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
		Pipeline Aboveground Facilities: 1 compressor station 2 MLBVs Pipeline Associated Infrastructure: 2 construction camps 4 PSY 18 material sites 46 access roads 183 ATWS	
	GMU 20A	Mainline MPs: 476.1–489.1, 532.1–559.2 Pipeline Aboveground Facilities: 3 MLBV Pipeline Associated Infrastructure: 1 railroad spur 1 railroad work pad 6 material sites 11 access roads 93 ATWS	
	Minto Flats State Game Refuge Management Plan (1992)	Mainline MPs: 431–441.2, 441.6–442.6, 446.5–446.7, 447.9–448.2, 453.7–454, 455–455.6, 455.9–458.1, 459.5–460.5, 461–461.2, 461.8–463.3, 463.8–468.7 Pipeline Aboveground Facilities: 1 MLBV Pipeline Associated Infrastructure: 1 construction camp 2 material sites 7 access roads 82 ATWS 3 disposal sites 1 helipad	The Minto Flats State Game Refuge Management Plan contains policies related to transportation/utility corridors through the refuge: Transportation and utility corridors, including railroads, roads, power lines, and pipelines may be sited on refuge lands if they are determined to be compatible with the purposes for which the refuge was established. Proposals will be evaluated for compatibility with the refuge purposes listed in legislation and reflected in the goals of this plan: (1) protection and enhancement of habitat resources; (2) conservation of fish and wildlife populations; and (3) the continuation of fishing, hunting, trapping, and other public uses compatible with habitat protection and enhancement and fish and wildlife conservation. Additionally, corridor proposals must demonstrate a significant public need for the corridor that cannot be reasonably met off-refuge, that the use of refuge lands and effects to refuge resources are avoided or reduced to the maximum extent feasible, that public access to the refuge is maintained, and that effects to refuge resources are fully mitigated. Given the distribution of habitats and public uses within the refuge, the potential for incompatibility between corridor development and resource values appears to be greater within the portion of the refuge north of the Tanana River. Therefore, the highest priority should be given to avoiding the future siting of transportation and utility corridors in the most valuable refuge habitats north of the Tanana River. The routing of the pipeline crosses a small portion of Minto Flats.

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
	GMU 13E	Mainline MPs: 559.2–641.6 Pipeline Aboveground Facilities: 1 compressor station 2 MLBVs Pipeline Associated Infrastructure: 1 construction camp 4 PSY 24 material sites 84 access roads 513 ATWS	The area is closed to use of any motorized vehicle or pack animal for hunting, including transportation of hunters, their hunting gear, or parts of game, from July 26 through September 30.
	GMU 16A	Mainline MPs: 641.6–720.9 Pipeline Aboveground Facilities: 1 compressor station 3 MLBVs Pipeline Associated Infrastructure: 2 construction camps 5 PSYs 16 material sites 29 access roads 374 ATWS	The area is open to hunting with restrictions on motorized access during certain times of the year.
	Susitna Flats Management Plan (1988) Includes Game Management Unit 16B	Mainline MPs: Intermittently between 575.4 and 752.4 Pipeline Aboveground Facilities: 21 compressor station Pipeline Associated Infrastructure: 2 construction camps 1 PSY 2 material sites 11 access roads 180 ATWS 3 disposal sites	New utilities may be allowed to cross the refuge where no feasible off-refuge alternative exists, using existing corridors wherever possible, consistent with refuge goals and objectives. A special use permit is required for any construction work in Susitna Flats SGR.
	GMU 15A	Mainline MPs: 777.6–806.6 Pipeline Associated Infrastructure: 125 ATWS	Within 15A, the Kenai Controlled Use Area (encompasses the Liquefaction Facility) the area is closed to use of aircraft for hunting moose, including transportation of moose hunters before 12:01 a.m. on September 11.

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
	GMU 16B	Mainline MPs: 720.9–777.6 Pipeline Aboveground Facilities: 2 MLBV Pipeline Associated Infrastructure: 2 construction camp 4 PSYs 7 material sites 23 access roads 301 ATWS	
ADNR Division of Forestry	Tanana Valley State Forest Management Plan (2001 update) Includes GMU 20B	Mainline MPs: Intermittently between 407.7 and 454.7 Pipeline Aboveground Facilities: 1 compressor station Pipeline Associated Infrastructure: 1 construction camp 1 PSY 7 material sites 11 access roads 259 ATWS 3 disposal sites	The plan contains the following policies: Other land management proposals may be initiated by other agencies or private individuals and may include requests for ROW, commercial leases, timber or material sales, or permits for mineral activity, trapping cabins, or grazing. The following process will be used to review these permit or conveyance requests. Applications for use of State Forest land, including mining or prospecting, will be forwarded to the Northern Regional Office of the Division of Mining, Land & Water. The Division of Mining, Land & Water will distribute the applications for review by agencies, including the Northern Regional Office of the Division of Forestry. The Division of Forestry will review applications for consistency with this plan and other existing laws and policies. The Division of Forestry will then return applications to the Division of Mining, Land & Water with stipulations for processing. The Division of Forestry may also require additional review of applications after interagency or public comment. Although preliminary decisions or final findings will continue to be made by the Division of Mining, Land & Water, applications must be consistent with the stipulations given by the Division of Forestry. No permits, leases, disposals, or ROW will be authorized for use of State Forest land that are not consistent with stipulations from the Division of Forestry. TIMBER MANAGEMENT II. MANAGEMENT GUIDELINES H. Salvage of Timber from Land Clearing Timber with commercial or personal use values should be salvaged from lands that are to be cleared for other uses such as mining, transportation or utility corridors, and habitat enhancement projects, where feasible and prudent. See Chapter 1 for statutory direction for the Tanana Valley State Forest. TRAILS G. Trail Crossings II. MANAGEMENT GUIDELINES When it is necessary for power lines, pipelines, or roads to cross trail corridors, crossings should be at 90-degree angles

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
			when feasible. An exception is when a trail corridor is deliberately combined with a public utility or transportation corridor. Where feasible, vegetative screening should be preserved when a utility crosses a trail corridor. PUBLIC ACCESS I. GOALS Maintain, enhance, or provide adequate access to publicly owned land and resources. II. MANAGEMENT GUIDELINES J. Pipeline Crossings The ADNR should work with Alyeska Pipeline Service Company to identify options to develop new pipeline crossings. Future pipelines (such as the Trans-Alaska Gas Line) should provide more places for public crossings to state land for hunting, fishing, recreation, timber harvest, settlement, and other uses or provide a mechanism to improve or develop future public crossings as the need arises.
ADNR Division of Parks and Outdoor Recreation (DPOR)	Denali State Park Management Plan (2006)	Mainline MPs: 609.1–646.9 Pipeline Aboveground Facilities: 1 MLBV Pipeline Associated Infrastructure: 1 PSY 12 material sites 37 access roads 176 ATWS 3 material sites	The plan designates land use within park boundaries (ADNR, 2006). Land use designations adjacent to the Parks Highway consist of Natural Area and Recreation Development. Areas designated Natural Area are intended to be relatively undeveloped and provide users opportunities for a high-value, natural experience. Figure 11 within the plan provides guidelines for activities and facilities within the various land-use designations in the park. For both the Natural Area and Recreation Development designations, utilities, transmission lines, and pipelines are allowable by permit only when no viable alternative exists. Tower heights are limited to 85 feet. Best practices must be employed to reduce effects to viewsheds, especially within the viewsheds of areas with high public use.
ADNR DMLW	North Slope Management Plan (in development) Includes GMUs 26B, 25A, and 24A	Mainline MPs: 0-183.6 Pipeline Aboveground Facilities: 1 compressor station 4 MLBVs 1 meter station Pipeline Associated Infrastructure: 10 construction camps 19 PSYs 50 material sites 306 access roads 738 ATWS PBTL PTTL	ADNR is developing a land use plan for the approximately 12 million acres of state lands north of Atigun Pass.

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
		PTTL Aboveground Facilities: 1 meter station 2 MLBVs PTTL-Associated Infrastructure: 3 construction camps 1 helipad 2 PSYs 1 access road 19 road ATWS 10 stream ATWS	
	North Slope Special Use Area (ADL 50666)	Mainline MPs: 0–4.8, 5.9–83.4, 86.2–121.5 Pipeline Aboveground Facilities: 2 compressor station 2 MLBVs 1 meter station Pipeline Associated Infrastructure: 3 construction camps 6 PSYs 17 material sites 89 access roads 321 ATWS PBTL PTTL PTTL Aboveground Facilities: 1 meter station 2 MLBVs PTTL-Associated Infrastructure: 3 construction camps 1 helipad 2 PSYs 2 access roads 52 icepad access roads 1 bypass lane 1 road ATWS 1 snow storage area 1 stream ATWS 1 travel lane	All state lands in the Umiat Meridian are classified as North Slope Area Special Use Lands (ADL 50666). This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits are required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
	CL 618	Mainline MPs: 0–1.7, 4.2–4.8, 5.9–6.5	This classification order has designated land within the Project area as Resource Management Land (RMG). Land classified as RMG is either land that might have a number of important resources, but for which a specific resource allocation decision is not possible at this time, or land that contains one or more resource values, none of which is of sufficiently high value to merit designation as a primary use. The RMG classification does not prohibit any specific uses for the lands in the Project area.
	Dalton Highway Master Plan (1998)	Mainline MPs: Intermittently between 13.2 and 405.2	The plan specifies development nodes along the Dalton Highway Corridor at the following locations: Yukon River Crossing, Coldfoot, Chandalar Shelf, Happy Valley, and Deadhorse (ADNR, 1998). Each node is a distinct and compact cluster of development. Oil and gas development activities, transportation, and incidental or minor governmental activities are allowed to locate outside of nodes if the needs of the activity are demonstrably better met outside the nodes.
	CL 617	Mainline MPs: 26.1–27.9	This classification order has designated land within the Project area as RMG. Land classified as RMG is either land that might have a number of important resources, but for which a specific resource allocation decision is not possible at this time, or land that contains one or more resource values, none of which is of sufficiently high value to merit designation as a primary use. The RMG classification does not prohibit any specific uses for the lands in the Project area.
	CL NC-02-002	Intermittently between 27.9 and 178.9	This classification order has designated land within the Project area as Resource Management Land (RMG). Land classified as RMG is either land that might have a number of important resources, but for which a specific resource allocation decision is not possible at this time, or land that contains one or more resource values, none of which is of sufficiently high value to merit designation as a primary use. The RMG classification does not prohibit any specific uses for the lands in the Project area.
	Yukon Tanana Area Plan (2014) Includes GMUs 13E, 20A, 20B, 20C, 20F	Mainline MPs: Intermittently between 345.4 and 575.4 Pipeline Aboveground Facilities: 2 compressor stations 8 MLBVs Pipeline Associated Infrastructure: 6 construction camps 13 PSYs 5 railroad spur 5 railroad work pads 55 material sites	The Area-wide Land Management Policies include management guidelines relevant to pipeline development. These guidelines are identical to those found in the Susitna Matanuska Area Plan.

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
		170 access roads 705 ATWS 8 helipads 34 disposal sites	
	Eastern Tanana Area Plan (2015) (not yet adopted), Tanana Basin Area Plan is still the active plan for these areas Includes GMU 20B	Mainline MPs: 421.8–424.3 Pipeline Aboveground Facilities: 1 compressor station Pipeline Associated Infrastructure: 7 access roads 16 ATWS 1 djyard 4 material sites	The Eastern Tanana Area Plan replaces the regions of the Tanana Basin Area Plan that are not covered in the Yukon Tanana Area Plan. The portion of the Project that would be located within the Eastern Tanana Area Plan planning area is designated as a legislatively designated area (LDA). Management of LDAs under the Eastern Tanana Area Plan follows the requirements of the legislation authorizing each LDA as well as with specific management plans that have been adopted subsequent to the creation of the LDA. The LDA that would be crossed by the Project within the Eastern Tanana Area Plan planning area is the Tanana Valley State Forest. Therefore, compliance with the Tanana Valley State Forest Management Plan would also ensure compliance with the Eastern Tanana Area Plan.
	Nenana River Gorge & McKinley Village Subdivision Special Use Area	Mainline MPs: 532.8–533.6, 535.0–535.1, 535.4–535.8 Pipeline Associated Infrastructure: 2 access roads 21 ATWS	A permit is required for setting up and using a camp for personal or commercial purposes.
	Susitna Matanuska Area Plan (2011) Includes GMUS 13E, 14B, 16A, 16B	Mainline MPs: Intermittently between 575.4 and 755.3 Pipeline Aboveground Facilities: 3 compressor stations 4 MLBVs Pipeline Associated Infrastructure: 3 construction camp 9 PSYs 40 material sites 106 access roads 2197 ATWS 14 disposal sites 4 helipads 3 railroad spurs 3 railroad work pads	Prior to making an authorization decision, the ADNR takes into account the management guidelines and statement of intent specific to each unit within a region. The Susitna Matanuska Area Plan emphasizes minimizing land use conflicts through plan guidelines and intent rather than through prohibitions, although prohibitions are sometimes identified (ADNR, 2011). Other uses are initially presumed compatible with the primary use. However, if the ADNR determines that a use conflict exists and that the proposed use is incompatible with the primary use, the proposed use shall not be authorized or it shall be modified so that the incompatibility no longer exists (11 AAC 55.040 (c)). The Area-wide Land Management Policies include management guidelines relevant to pipeline development: Shorelands and Stream Corridors C. Public Access Adjacent to Waterbodies. Pursuant to AS 38.05.127, legal public access will be reserved to protect the public's right to travel to and along the ordinary high water of a waterbody without encouraging trespass. Permits, leases, and plans of operation for commercial and industrial uses, transportation facilities, pipelines and other water dependent uses may be authorized on state uplands adjacent to waterbodies if their activities are consistent with the management intent for the area and if they maintain tideland and stream bank access, and protect important fish and wildlife

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
			habitat, public water supplies, and public recreation. Trails and other forms of non-motorized public access are generally considered to be appropriate within these areas, if they meet the conditions listed in 11 AAC 96.025. H. Buffer, Easement, and Building Setback Widths. d) Public access easements, including 'to and along' easements required under AS 38.05.127, or utility easements adjacent to tidelands, lakes, and streams: 50 feet. Other types of utility easements may be less than this width, depending on the purposes of the easement. Alignment with Crossings. When it is necessary for power lines, pipelines or roads to cross trails, crossings should be at a 90-degree angle. Vegetative screening should be preserved at trail crossings.
	Southeast Susitna Area Plan (2008)	Mainline MPs: Intermittently between MP 737.3 and 752.4 Pipeline Aboveground Facilities: 1 compressor station Pipeline Associated Infrastructure: 12 access roads 180 ATWS 2 material sites 2 construction camps 3 disposal sites 1 dj yard 1 construction camp	The Area-wide Land Management Policies include management guidelines relevant to pipeline development. These guidelines are identical to those found in the Susitna Matanuska Area Plan.
	Susitna Area Plan (1985, as amended)	Mainline MPs: 600.1–603.5 Pipeline Aboveground Facilities: 1 compressor station 1 MLBV Pipeline Associated Infrastructure: 117 access roads 2381 ATWS 41 material sites 7 construction camps 15 disposal sites 1 dj yard 10 PSY 4 helipads 3 railroad spurs 3 railroad work pads	The Area-wide Land Management Policies listed in the plan include management guidelines relevant to pipeline development: Forestry 2. Management Guidelines B. Timber Salvage. Timber with commercial or personal use value should be salvaged from lands that are to be cleared for other uses, such as farms and transportation or utility corridors. Trail Management G. Trail Crossings. When it is necessary for powerlines, pipelines, or roads to cross trail corridors, crossings should be at 90-degree angles when feasible. An exception is when a trail corridor is deliberately combined with a public utility or transportation corridor. Where feasible, vegetative screening should be preserved when a utility crosses a trail corridor.

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
	Susitna Basin Recreation Rivers Management Plan	Mainline MPs: 703.6–704.3, 704.8–705.3, 726.7–728 Pipeline Associated Infrastructure: 2 access roads 25 ATWS	The plan includes goals and management practices for recreation, fish and wildlife habitat, and public access, among others. There is no specific mention of management guidelines relevant to pipeline development (ADNR, 1991).
	Kroto Creek & Moose Creek State Recreation River (SRR)	Mainline MPs: 704.0–705.8, 707.1–707.5 Pipeline Associated Infrastructure: 1 access road 33 ATWS	Managed in accordance with the Susitna Basin Recreation Rivers Management Plan.
	Alexander Creek SRR	Mainline MPs: 726.3–728.5 Pipeline Associated Infrastructure: 2 access road 26 ATWS	Managed in accordance with the Susitna Basin Recreation Rivers Management Plan.
	Kenai Area Plan (2001) Includes Game Management Unit 16B	Mainline MPs: 754.2–806.6 Pipeline-Associated Infrastructure: 16 access roads 505 ATWS 1 material site 2 camps 1 disposal site 3 helipads 3 MLBVs 1 meter station 3 PSY	The Kenai Area Plan directs how ADNR will manage state uplands, tidelands, and submerged lands within the planning boundary. While this plan provides general management intent for state lands, the plan does not make decisions about specific land-use authorizations. These decisions are made through the application review process. Land-use authorizations must, however, be consistent with the plan, and existing laws and regulations.
ADOT&PF	James Dalton Highway (AS 19.40.010) Also includes GMU 20F, 24A, 25D	Intermittently between 85.0 and 347.9 Pipeline Aboveground Facilities: 2 compressor stations 4 MLBVs Pipeline Associated Infrastructure: 4 construction camps 21 PSYs 54 material sites 356 access roads 2066 ATWS	Pursuant to 19.40.100, the department shall maintain the highway and keep it open to industrial traffic throughout the year, including travel necessary and related to resource exploration and development or to support of those activities, if the individual engaged in those activities has all necessary permits.

TABLE 8.5.2-2

Summary of Potentially Applicable State Land Use Plans, Documents, and Special Use Areas for the Pipelines and Related Aboveground Facilities

Author/Agency	Land Use Plan/Document	MPs/Facility Count	Potential Applicable Stipulations
		PTTL Mainline PTTL Associated Infrastructure: 1 construction camps 1 PSY 8 road ATWS	

PBTL

The PBTL would be located on state-managed lands under lease to the PBU. This pipeline is subject to CL 618, and would be subject to the North Slope Management Plan, once that plan is developed and adopted.

PTTL

The PTTL would be located almost entirely on state-managed lands. The PTTL corridor would cross GMU 26B III (Table 8.5.2-2). This pipeline is subject to CL 618, and would be subject to the North Slope Management Plan, once that plan is developed and adopted.

8.5.2.6.2.2 Pipeline Aboveground Facilities

The locations of the aboveground facilities would cross state-managed lands. An overview of the applicable stipulations for the areas crossed is provided in Table 8.5.2-2.

8.5.2.6.2.3 Pipeline Associated Infrastructure

The locations of the associated facilities would cross state-managed lands. An overview of the applicable stipulations for the areas crossed is provided in Table 8.5.2-2.

8.5.2.6.2.4 GTP

The GTP would be located on state-managed lands (Appendix B). An overview of the potentially applicable stipulations for the areas crossed is provided in Table 8.5.2-3.

8.5.2.6.2.5 GTP Associated Infrastructure

The GTP Associated Infrastructure would be located on state-managed lands (Appendix B). An overview of the potentially applicable stipulations for the areas crossed is provided in Table 8.5.2-3.

TABLE 8.5.2-3

Summary of Applicable State Land Use Plans and Documents for the GTP and GTP Associated Infrastructure

Author/Agency	Land Use Plan/Document	MPs/Facility Count/ Acres	Potential Applicable Stipulations
ADF&G	GMU 26B	GTP: 179.6 GTP Associated Infrastructure: 363.4	Within Prudhoe Bay, closed to hunting of big game. Within the Dalton Highway Corridor Management Area, closed to hunting, unless taken in the area by bow and arrow only.
ADNR-DMLW	North Slope Management Plan (in development)	GTP: 179.6 GTP Associated Infrastructure: 363.4	ADNR is developing a land use plan for the approximately 12 million acres of state lands north of Atigun Pass.
	CL 618	GTP Associated Infrastructure: 19.1	This classification order has designated land within the project area as RMG. Land classified as RMG is either land that might have a number of important resources, but for which a specific resource allocation decision is not possible at this time, or land that contains one or more resource values, none of which is of sufficiently high value to merit designation as a primary use. The RMG classification does not prohibit any specific uses for the lands in the Project area.
	North Slope Special Use Area (ADL 50666)	GTP: 179.6 GTP Associated Infrastructure: 363.4	All state lands in the Umiat Meridian are classified as North Slope Area Special Use Lands (ADL 50666). This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits are required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.

8.5.2.6.3 Non-Jurisdictional Facilities

The footprint of the PBU MGS project would include lands managed primarily by the state (98 percent; 504 acres) and the remaining on private property. The PTU Expansion project would be located entirely on state land. The KSH relocation project footprint land ownership will be provided when a proposed route has been selected.

8.5.3 Local and Other Management Areas

Lands managed by boroughs and municipalities were identified in the Project area. The information in the following sections provides a brief overview of applicable locally managed areas.

8.5.3.1 Alaska Native Regional and Village Corporations

In 1971, President Richard Nixon signed into law the Alaska Native Claims Settlement Act (ANCSA) (43 USC § 1601 et seq.). Under ANCSA, aboriginal financial and land claims were settled in exchange for $962.5 million in compensation, as well as approximately 40 million acres (Norris, 2002). ANCSA established 12 for-profit Alaska Native Regional Corporations (a 13th corporation was later added for Alaska Natives living outside the state). In addition, more than 200 Alaska Native Corporations were created. Both the Regional and Village Corporations own land in and around Native Villages, with ownership proportionate to the enrolled populations of these corporations during the 1970s. Surface rights to the land are owned by the Village Corporations, with subsurface rights controlled by Regional Corporations. The statute includes sand and gravel in the definition of surface rights, while these are included in the subsurface estate under ANCSA and are therefore owned by the Regional Corporations. The Village and Regional Corporations are owned by enrolled Alaska Natives. Approximately 80,000 Alaska Natives are enrolled under ANCSA, and receive 100 shares each for the Village Corporation and Regional Corporation in which they are enrolled.

Native Corporation land is often held in large tracts and used for subsistence purposes or developed to generate revenue for the corporation. The Toghotthele Corporation (a Native Village Corporation representing the Native Village of Nenana) and both Tyonek Corporation (A Native Village Corporation representing the Native Village of Tyonek) and the Salamatof Corporation (a Native Village Corporation representing the Native Village of Salamatof) own surface rights to parcels within the Project area, with Doyon, Limited and the Cook Inlet Region Inc. (CIRI) owning the subsurface rights, respectively. In addition, the Project area includes parcels with surface and subsurface rights held by Ahtna, Inc., and CIRI. As private land, uses on land owned by Native Corporations are subject to an easement with the surface landowners.

8.5.3.2 Native Allotments

Under the Alaska Native Allotment Act of 1906 (34 Stat 197), qualifying Alaska Natives were allotted up to 160 acres of non-mineral land. The Tanana Chiefs Conference manages a trust service with the Bureau of Indian Affairs (BIA) and acts as trustee for Native allotment property owners on behalf of the 42 Villages of Interior Alaska. The Inupiat Community of the Arctic Slope also manages a trust service with BIA to act as trustee for the Native allotment owners on the North Slope. The Mainline route does not intersect with Alaska Native allotments awarded under this Act (see Table 8.5-1).

8.5.3.3 Private Landowners

Private lands in the Project area are used for residential, agricultural, and commercial purposes. As private land, land uses are subject to approvals of the landowner. Section 2.0-Landowner Notification of the FERC Guidance Manual for Environmental Report Preparation (FERC, 2002) requires that the applicant notify all affected landowners about the Project whose land: would be crossed or used by the Project facilities; contains a residence within 50 feet of the proposed construction work area; abuts on

either side of an existing or proposed facility site or ROW; and/or contains a residence within one-half mile of proposed compressors (or their enclosures) or liquefaction facilities. In accordance with the requirements of 18 C.F.R. Section 157.6(d), the Project has identified all affected landowners and Project representatives have provided correspondence to all affected landowners. Filed under separate cover is an updated list of affected landowners and adjacent landowners in Appendix K of Resource Report No. 1 as "Privileged and Confidential."

8.5.3.4 Summary of Applicable Local Land Use Plans

8.5.3.4.1 Liquefaction Facility

The footprint of the Liquefaction Facility, including associated facilities, would include lands managed by the KPB and within the unincorporated areas of Nikiski. Table 8.5.3-1 shows the potentially applicable stipulations for the Liquefaction Facility.

TABLE 8.5.3-1

Summary of Potentially Applicable Local Land Use Plans and Documents for the Liquefaction Facility

Document Name	Acres	Potential Applicable Stipulations
Kenai Peninsula Borough Comprehensive Plan (2005)	261.4	The KPB Comprehensive Plan's Goal 5.7, Objective 1, recognizes and encourages port and harbor expansion plans by others to promote economic development. Goal 6.5 calls for maintaining the freedom of property owners in rural areas of the KPB to make decisions and control use of their private land consistent with other goals and objectives of the comprehensive plan (KPB, 2005). The KPB regulates floodplain development, coastal zone development, and development near certain anadromous fish streams through the Borough. The KPB Code of Ordinances requires that property owners within the designated 100-year floodplain obtain a permit from the KPB prior to development on those lands, pursuant to Chapter 21.06, Floodplain Management. Because the portion of the Liquefaction Facility that would be on locally managed land would be located outside of the 100-year floodplain, this permit does not apply to this facility.
Community Action Plan: Nikiski, Alaska (2012)	261.4	The Nikiski Community Council's (NCC) Action Plan Goal C is to promote the maintenance, improvement, and expansion of the North Peninsula Area Transportation Network. Objective 1 for this goal is to develop a long-term plan for residential and industrial traffic patterns, highway improvements, and identification of new highway corridors (NCC, 2012). The NCC Action Plan Goal D is to support and promote community development related projects that provide economic benefits to residents of the North Peninsula Area. Objective 1 for this goal is to promote the North Peninsula Area as the terminus for the proposed natural gas pipeline project (NCC, 2012). The NCC Action Plan Goal E is to promote the safety and health of the area's residents. Objective 2 is to develop long-term options for promoting safety and health and includes action item 2 to develop a land use plan that identifies heavy industrial land use corridors (NCC, 2012).

8.5.3.4.2 Interdependent Project Facilities

8.5.3.4.2.1 Pipelines

Mainline

The Mainline would cross lands that are locally managed. An overview of the potentially applicable stipulations for the areas crossed is provided in Table 8.5.3-2.

TABLE 8.5.3-2

Summary of Potentially Applicable Local Land Use Plans and Documents for the Pipelines and Related Aboveground Facilities

Document Name	Project Facilities	Potential Applicable Stipulations
North Slope Borough Comprehensive Plan (2005)	Mainline MPs: Intermittently between MP 0.0 and 182.4 Aboveground Facilities Pipeline Associated Infrastructure	The NSB Comprehensive Plan contains policies related to the development of oil and gas resources: **Issue #32:** Drill pads and pipelines encroach upon subsistence areas. Goal: Reduce effects to subsistence from development, sport hunting, and other outside influences. *Objective/Policy:* Coordinate with Village residents to reduce the footprint of development and encourage common use of facilities. *Objective/Policy:* Mitigate effects to subsistence from development. *Objective/Policy:* Develop a program to compensate Village residents for effects to subsistence. **Issue #118:** Resource development changes the character of the landscape and alters the way local people use the land. Goal: Reduce visual and other effects on community character. *Objective/Policy:* Locate and design oil and gas facilities to reduce visual and other effects on community character. **Issue #156:** Oil field infrastructure, including roads, pads, and pipelines cause physical changes in the environment. Goal: Reduce physical changes in the environment from oil field infrastructure. *Objective/Policy:* Work with industry in the permitting process to incorporate mitigation measures that reduce effects (Section 5.23). *Objective/Policy:* Develop incentives for industry to develop alternative designs to reduce development footprint and consolidate facilities. **Issue #42:** The resource industry does not adequately coordinate with local subsistence users prior to development or dismantlement of oil and gas facilities. Goal: Improve coordination with local subsistence users prior to development and dismantlement activities. *Objective/Policy:* Use the Kuukpik Subsistence Oversight Panel (KSOP) as a model for improving coordination and local participation in planning for and monitoring resource exploration and development activities. *Objective/Policy:* Investigate other models for coordinating subsistence and resource development, including Canadian hunting and trapping associations.

TABLE 8.5.3-2

Summary of Potentially Applicable Local Land Use Plans and Documents for the Pipelines and Related Aboveground Facilities

Document Name	Project Facilities	Potential Applicable Stipulations
FNSB Regional Comprehensive Plan (2005)	Mainline MPs: Intermittently between MP 421.9 and 424.4	The FNSB Zoning Map and Zoning Code are extensions of the Comprehensive Plan land use categories, and are the administrative tools for implementing land use policies and regulations. Pursuant to the Zoning Code, the installation and maintenance of utility lines are permitted uses in all zoning districts.
Denali Borough Comprehensive Plan (2009; amended 2011)	Mainline MPs: Intermittently between MP 488.7 and 575.4 Pipeline Aboveground Facilities Pipeline-Associated Infrastructure	According to the DB Comprehensive Plan, land in the Borough is zoned unrestricted unless otherwise provided for by ordinance (DB, 2009). There are no prohibitions on land zoned unrestricted. [Ord. 96-04 § 2.]
YCC Area Comprehensive Plan (2007)	Pipeline Associated Infrastructure	The community-wide Development Standards would apply to development of the proposed access road, railroad work pad, and railroad spur within the community. The standards include required buffers and setbacks. Development of the proposed facilities is not prohibited by the plan.
Matanuska-Susitna Borough Wide Comprehensive Plan (2005 update)	Mainline MPs: Intermittently between 575.4 and 755.4 Pipeline Aboveground Facilities Pipeline Associated Infrastructure	The plan states that "[i]n order for the Borough to keep pace with new technologies and globalization of the economy, recommendations should be considered for other modes of transportation such as electrical, communications, and pipelines" (p. 8). The plan includes the following policy for orderly development of multimodal transportation, including pipelines: Policy T1-4: Develop an effective multimodal transportation plan that provides recommendations for modes of transportation including surface, air, waterborne, rail, public transit and trails, pipeline, electrical, and communications. Such a plan should strive to better connect the Borough's various communities and neighborhoods.
Kenai Borough Comprehensive Plan (2005)	Mainline MPs: Intermittently between MP 755.4 and 806.6 Pipeline-Associated Infrastructure	The KPB Comprehensive Plan does not contain goals, objectives, or implementation actions specific to development of a utility crossing on lands within the KPB. However, Goal 6.5 calls for maintaining the freedom of property owners in rural areas of the KPB to make decisions and control use of their private land consistent with other goals and objectives of the comprehensive plan. Zoning in the KPB is unrestricted outside of the KPB's cities and eight Local Option Zone Districts, none of which are located within the Project area. While the KPB regulates floodplain development, coastal zone development, and development near certain anadromous fish streams (including the Beluga River), the portions of the Mainline that would intersect the 100-year floodplain and the Beluga River would not be located on locally managed lands; therefore, these regulations would not apply.
Community Action Plan: Nikiski, Alaska (2012)	Mainline MPs: MP 792.3 to 806.6 Pipeline Aboveground Facilities Pipeline Associated Infrastructure	The NCC's Action Plan Goal C is to promote the maintenance, improvement, and expansion of the North Peninsula Area Transportation Network. Objective 1 for this goal is to develop of a long-term plan for residential and industrial traffic patterns, highway improvements, and identification of new highway corridors (NCC, 2012). The NCC Action Plan Goal D is to support and promote community development related projects that provide economic benefits to residents of the North Peninsula Area. Objective 1 for this goal is to promote the

TABLE 8.5.3-2

Summary of Potentially Applicable Local Land Use Plans and Documents for the Pipelines and Related Aboveground Facilities

Document Name	Project Facilities	Potential Applicable Stipulations
		North Peninsula Area as the terminus for the proposed natural gas pipeline project (NCC, 2012). The NCC Action Plan Goal E is to promote the safety and health of the area's residents. Objective 2 is to develop long-term options for promoting safety and health within includes action item 2 to develop a land use plan that identifies heavy industrial land use corridors (NCC, 2012).

PBTL

The PBTL would not occupy private land or land owned by a municipality.

PTTL

The PTTL would cross locally managed lands near the GTP and would be subject to the policies of the NSB Comprehensive Plan (see Table 8.5.3-2).

8.5.3.4.2.2 Pipeline Aboveground Facilities

The locations of the aboveground facilities would cross locally managed lands. An overview of the potentially applicable stipulations for the areas crossed is provided in Table 8.5.3-2.

8.5.3.4.2.3 Pipeline Associated Infrastructure

The locations of Pipeline Associated Infrastructure would cross locally managed lands. An overview of the potentially applicable stipulations for the areas crossed is provided in Table 8.5.3-2.

8.5.3.4.2.4 GTP

The GTP would not occupy private land or land owned by a municipality.

8.5.3.4.2.5 GTP Associated Infrastructure

GTP Associated Infrastructure would not occupy private land or land owned by a municipality.

8.5.3.4.3 Non-Jurisdictional Facilities

The PBU MGS project would occupy some private property. The PTU Expansion project would be located entirely on state land. The KSH relocation project footprint will be provided once a proposed route has been selected.

8.6 RECREATION AND SPECIAL USE AREAS

Recreation and special use areas are identified and discussed in this section. Recreation and special use areas are described as state or nationally managed land having scenic, historic, archaeological, scientific, biological, recreational, or other special resource values that warrant additional protections and special requirements (e.g. trail systems, parks, wildlife refuges, etc.).

The Applicant will coordinate with local government planning departments, recreational service areas, and volunteer trail groups who maintain recreational trails traversed by the Project in order to avoid or reduce impacts to recreational use and access.

Recreation and special use areas were identified within 1 mile of the Project facilities and Project components as requested by FERC on May 15, 2015. A geospatial analysis overlaid planning boundaries with land ownership and Project features to determine the recreation and special use areas that would be affected by the Project. A summary of these recreation and special use areas is provided in Appendix D; acreage within the Project construction footprint is included in Table 8.6-1. The acreage of the recreation and special use areas within the footprint of Non-Jurisdictional Facilities is included in Table 8.6-2. The identified areas are also depicted on Figures 8.6-1A, 8.6-1B, 8.6-1C, 8.8-1D, and 8.6-1E. Site-specific Public Land Use and Recreational Use Coordination Plans would be developed.

TABLE 8.6-1

Recreational and Special Use Land Within the Construction Footprint of the Project (acres)

Liquefaction Facility	**15.6**
LNG Plant	3.5
LNG Construction Camp	12.1
Terminal MOF	0.0
Terminal MOF Dredging Area	0.0
Terminal PLF	0.0
Dredge Disposal	0.0
Pipeline	**8,601.9**
Onshore ROW	7,391.3
Offshore ROW	0.2
PBTL ROW	7.3
PTTL ROW	1,726.6
Pipeline Aboveground Facilities	**172.7**
Mainline Compressor Stations	165.1
MLBVs	4.1
Meter Stations	2.73
PTTL MLBVs	0.4
PTTL Meter Stations	0.4
Pipeline Associated Infrastructure	**7,110.4**

TABLE 8.6-1

Recreational and Special Use Land Within the Construction Footprint of the Project (acres)

Mainline ATWS	802.4
Mainline Access Roads	1,807.5
Mainline Material Sites	3,329.0
Mainline Construction Camps (Excluding Compressor Station Camps)	363.3
Mainline Construction Compressor Station Camps	14.8
Mainline Pipe Storage Yards	274.0
Mainline Railroad Spur	1.5
Mainline Railroad Workpad	6.1
Mainline Disposal Sites	161.2
Mainline Double Joining Yards	0.0
Mainline Helipads	1.6
PTTL ATWS	21.0
PTTL Access Roads	202.2
PTTL Construction Camps	97.2
PTTL Helipad	0.6
PTTL Pipe Storage Yards	28.0
GTP	**283.8**
GTP Pad	227.8
GTP Operations Center Pad	56.0
GTP Associated Infrastructure	**642.2**
GTP Access Roads	258.8
GTP Dock Expansion	31.1
GTP Temporary Barge Bridge	2.6
GTP Material Site	141.2
GTP Module Staging Area	86.6
GTP Pipeline ROW	70.3
GTP Reservoir	35.1
GTP Berthing Basin	13.7
GTP Ice Pad	2.8
Footprint Total	**16,811.0**

TABLE 8.6-2

Recreational and Special Use Land Within Construction Footprint of Non-Jurisdictional Facilities (acres)

PBU MGS Project	513.6
PTU Expansion	135.9
Relocation of the KSH	1.4
Total	**650.9**

8.6.1 National Wild and Scenic Rivers (WSRs) System

The U.S. Congress established the National and WSRs System in 1968 (Public Law 90-542; 16 USC Chapter § 1271 et seq.) for the purpose of preserving rivers that "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or similar values." Rivers that qualify for preservation under this legislation can be designated by the U.S. Congress or by the Secretary of the Interior (USFWS, 2014). Within Alaska, 3,210 river miles are designated as Wild and Scenic, constituting approximately 1 percent of the total river miles within the state. NWR streams in the Atigun River Gorge have been assessed and evaluated through a formal WSR review process. These streams were found to be eligible and suitable for inclusion in the National WSR System. The streams have a classification of wild and outstandingly remarkable recreation and geologic values (USFWS, 2015). The Mainline is within an established utility corridor in this area and streams in the Atigun River Gorge are not within the Project area. There are no additional known river segments currently being studied for eligibility determination in Alaska. Of the existing WSRs in Alaska, none occur within the Project area. The nearest WSR to the Project is the North Fork of the Koyukuk River, which is located in the Gates of the Arctic NPP, approximately 12 miles west of the proposed Mainline, at a point approximately 7 miles north of the southern limits of the national park (USFWS, 2014).

8.6.2 National Trails System

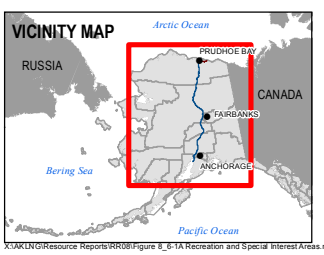
The federal National Trails System Act of 1968 (16 USC § 1241) instituted a national system of scenic, historic, and recreational trails throughout the United States. The purpose of the National Trails System Act was to provide federal assistance to volunteer citizen groups in the planning, development, maintenance, and management of designated trails (NPS, 2012). The only trail in Alaska within the National Trails System is the INHT, an approximately 2,000-mile trail that spans between Seward and Nome, Alaska.

8.6.2.1 Iditarod National Historic Trail

The INHT extends approximately 2,000 miles within a corridor between Seward and Nome. The INHT Comprehensive Management Plan is a congressionally mandated management plan for the collection of INHT resources. The INHT Comprehensive Management Plan, recognizing that no single agency manages the entire trail, calls for cooperative management by federal, state, and local agencies. For matters involving the INHT over State land (MP 724.3) that is not subject to an exception, exclusion, or reservation for the INHT in conveyances from the United States, the State of Alaska as a signatory and participant in the 1986 INHT Cooperative Management Plan (CMP), is the primary contact and land manager and manages the Trail consistent with the CMP.

The Mainline ROW would intersect the INHT approximately 35 miles northwest of Anchorage at two separate locations, both of which are managed by the ADNR-DMLW. At MP 720.8 the Mainline crosses the Susitna Station to Old Skwentna (Yentna River) INHT System Connecting Trail. At MP 724.3 the Mainline crosses the Susitna Station to Finger Lake INHT System Primary Route.

When considering whether to grant a ROW for the proposed pipeline, ADNR would consider the historic values of the INHT and make a decision in the context of state laws, regulations, and policies. A state lands ROW permit would be required for the Project.



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LEGEND

- Project Facility
- Existing Facility
- Alaska Place Names
- Major Highways
- Major Rivers
- Recreation & Public Use Areas
- State and Federal Conservation Lands

0 40 80 160 Miles

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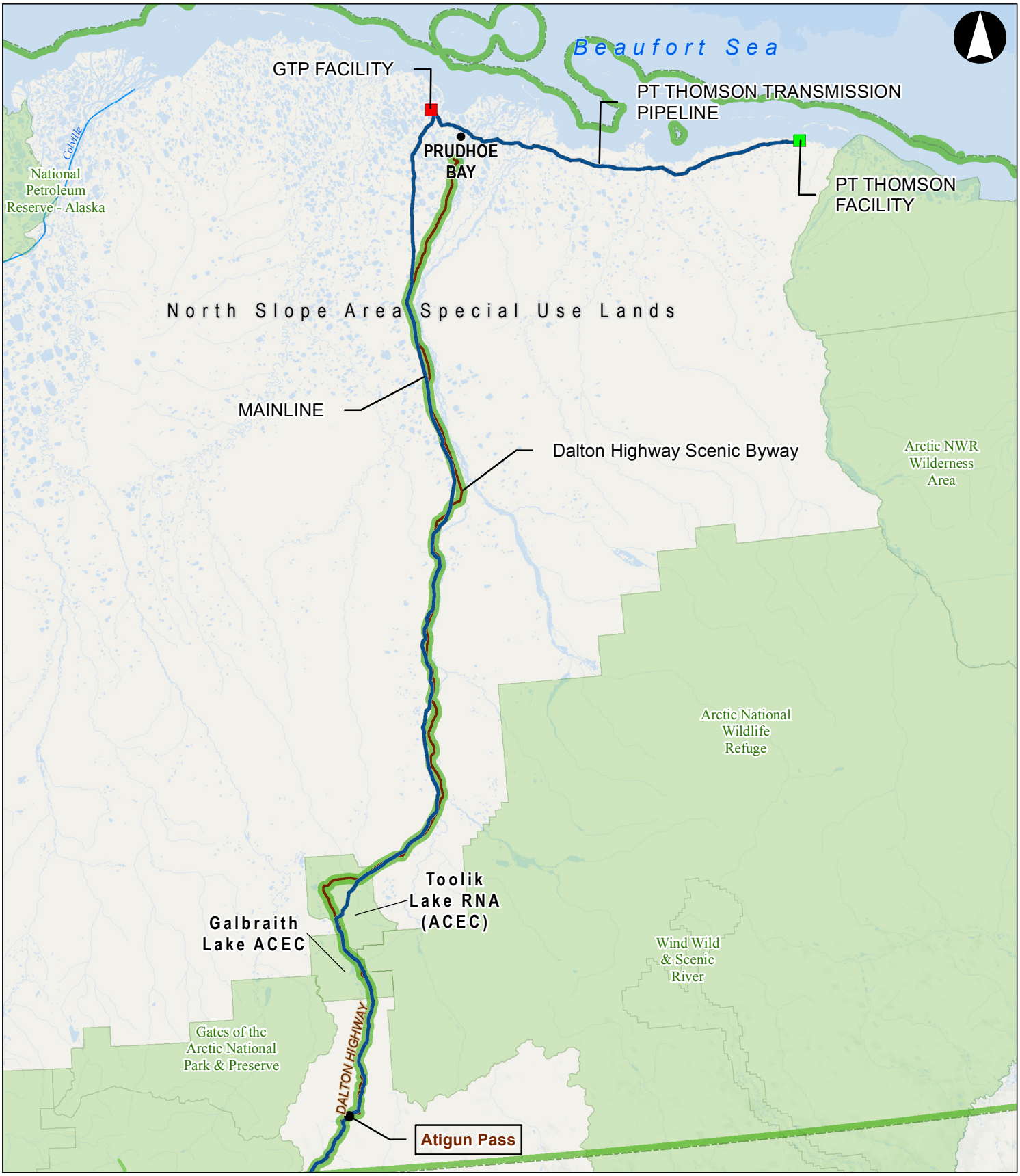
RECREATION AND SPECIAL INTEREST AREAS

FIGURE 8.6-1A

ALASKA LNG



LEGEND

- Project
- Existing
- Alaska Place
- Major
- Major Rivers
- Railroad
- Recreation & Public Use
- State and Federal Conservation Lands
- Iditarod National Historic Trail System

0 5 10 20 Miles

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RECREATION AND SPECIAL INTEREST AREAS

FIGURE 8.6-1B

ALASKA LNG

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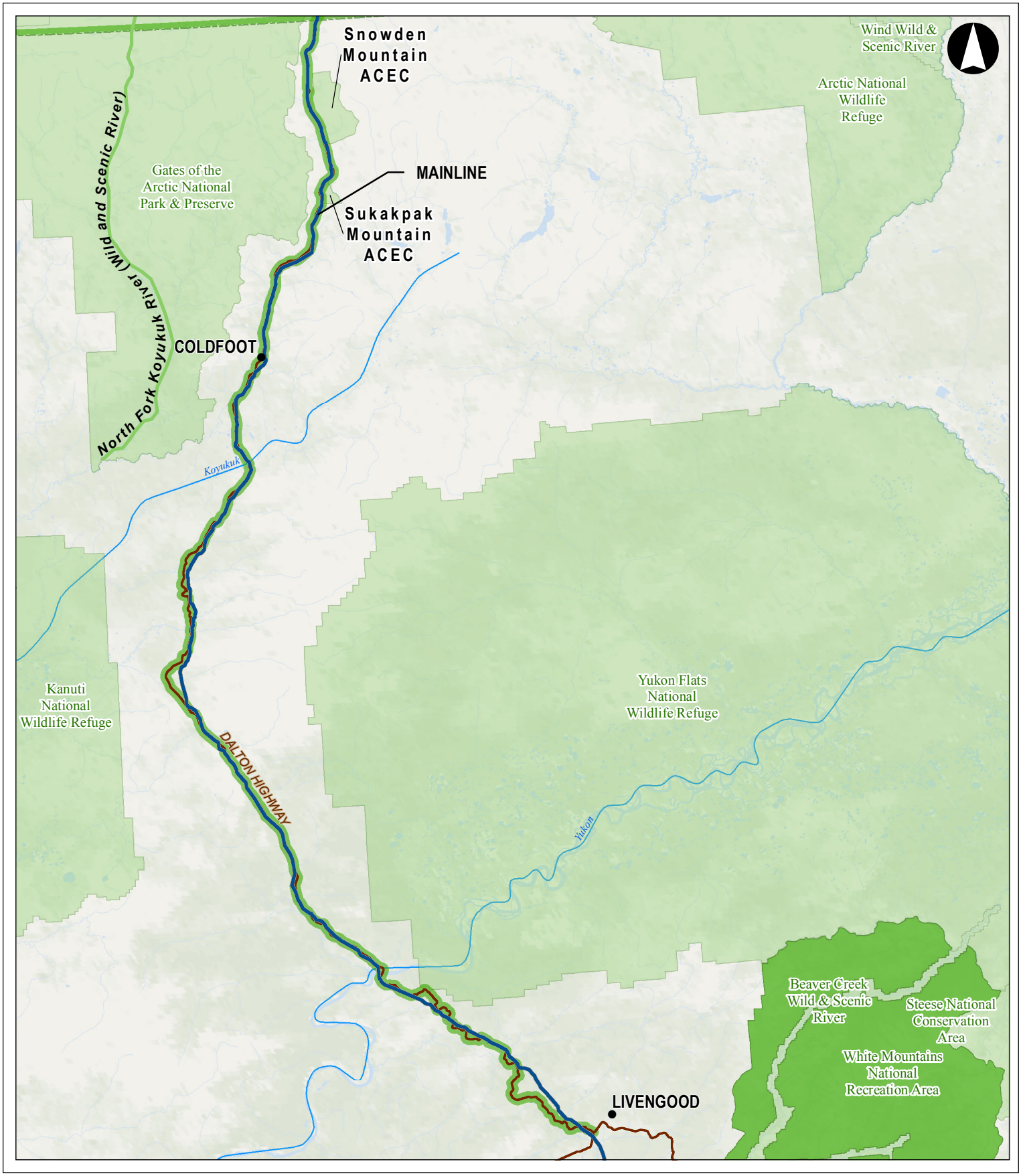

LEGEND

- Project
- Existing
- Alaska Place
- Major
- Major Rivers
- Railroad
- Recreation & Public Use
- State and Federal Conservation Lands
- Iditarod National Historic Trail System

0 5 10 20 Miles

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RECREATION AND SPECIAL INTEREST AREAS

FIGURE 8.6-1C

ALASKA LNG

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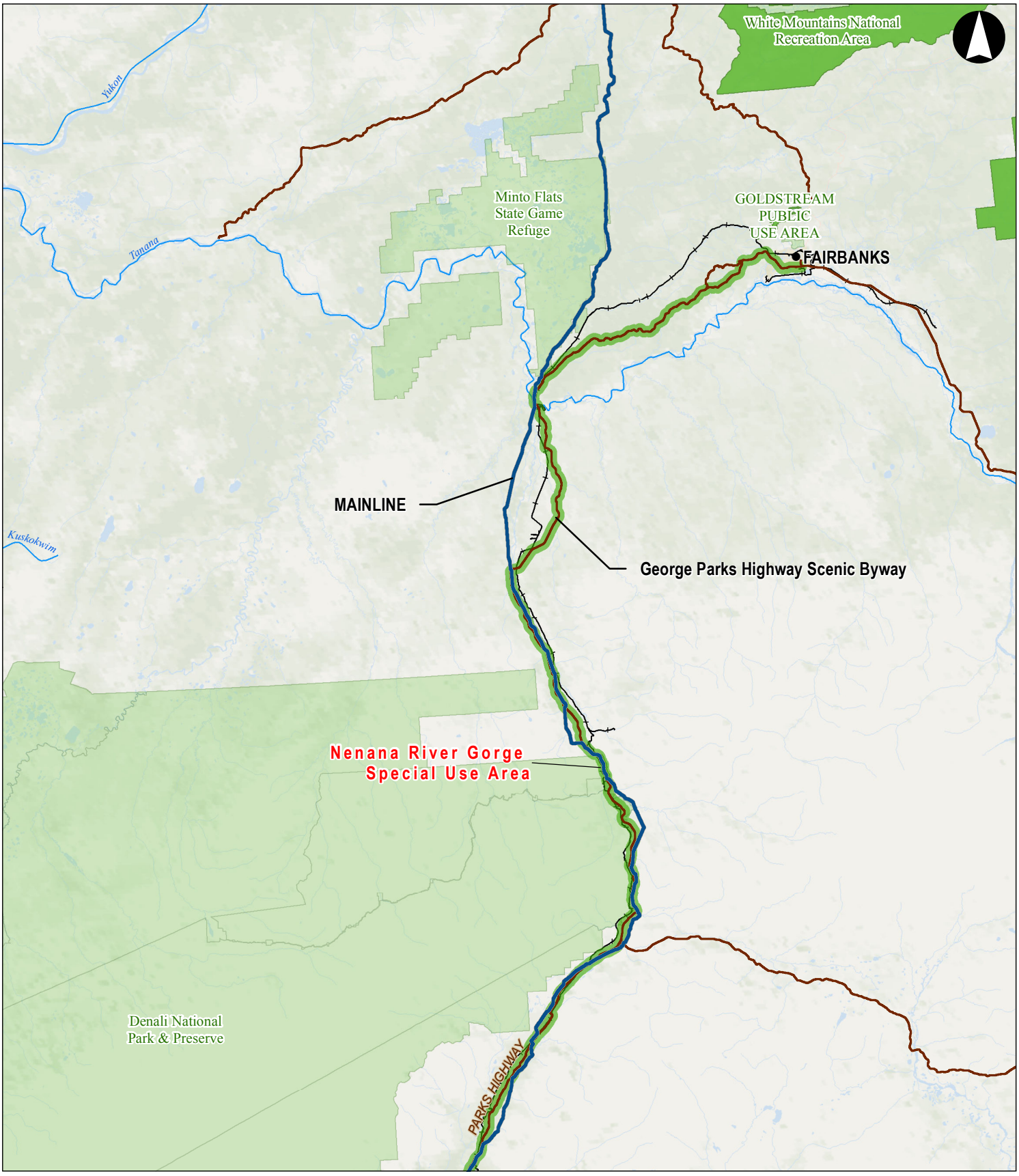

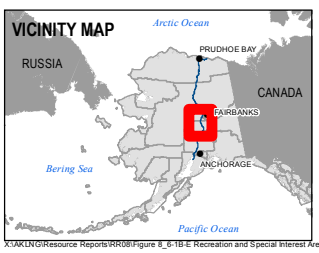

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LEGEND

- Project
- Existing
- Alaska Place
- Major
- Major Rivers
- Railroad
- Recreation & Public Use
- State and Federal Conservation Lands
- Iditarod National Historic Trail System

0 5 10 20 Miles

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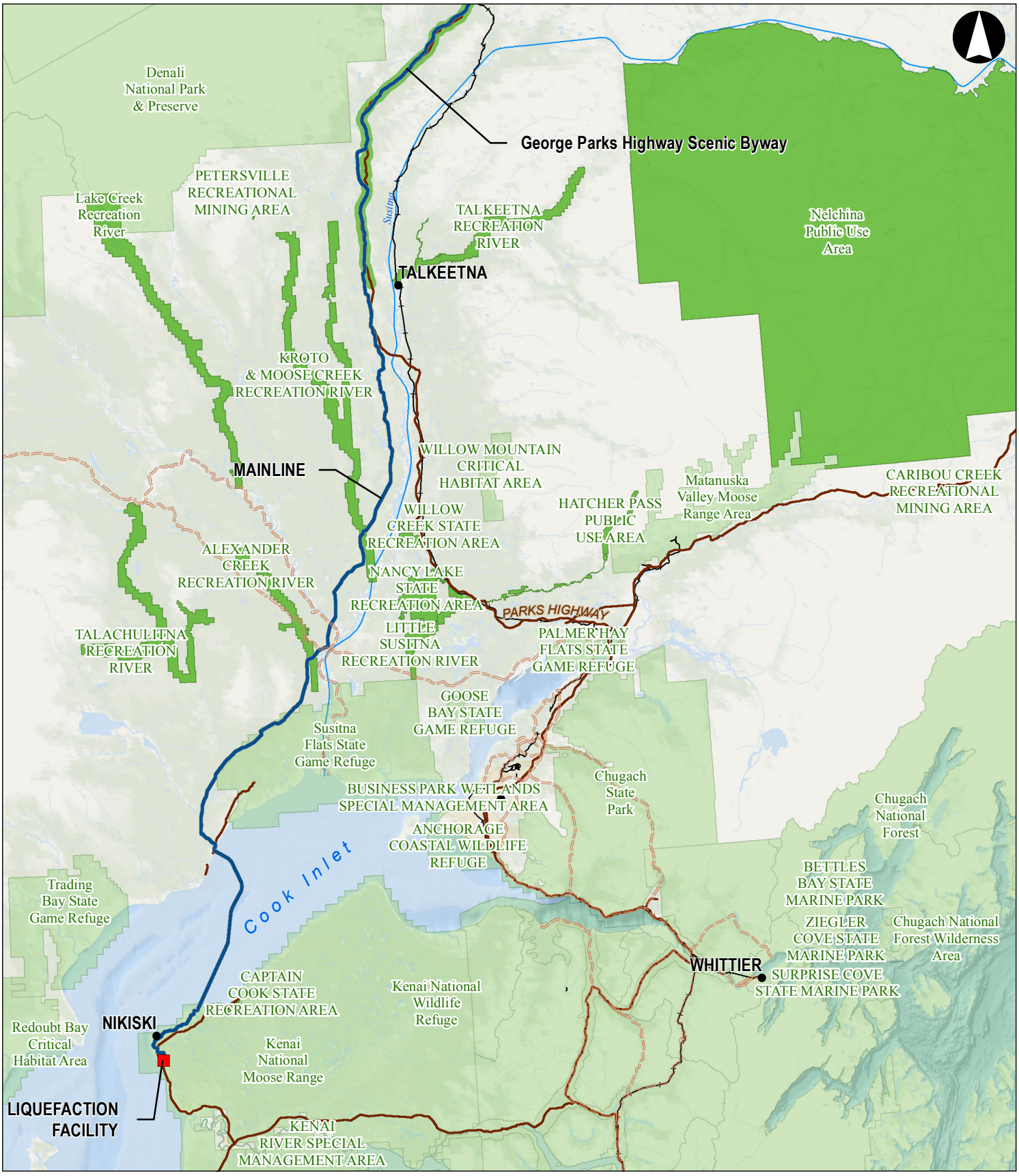
RECREATION AND SPECIAL INTEREST AREAS

FIGURE 8.6-1D

ALASKA LNG



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LEGEND

- Project
- Existing
- Alaska Place
- Major
- Major Rivers
- Railroad
- Recreation & Public Use
- State and Federal Conservation Lands
- Iditarod National Historic Trail System

0 5 10 20 Miles

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RECREATION AND SPECIAL INTEREST AREAS

FIGURE 8.6-1E

ALASKA LNG

8.6.3 Areas of Historical or Cultural Significance

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

8.6.4 Recreational Sites and Special Use Areas

8.6.4.1 Federally Managed Areas

8.6.4.1.1 Arctic National Wildlife Refuge (NWR)

The Arctic NWR consists of approximately 19.6 million acres of land and water in northeastern Alaska. It is administered by the USFWS as a unit of the NWR System. The Arctic NWR has no roads, so primary access is by air. However, the Dalton Highway, located west of the Arctic NWR boundary, provides access to the Refuge's perimeter in certain locations. Recreational opportunities in the Arctic NWR include hiking, hunting, camping, floating, and climbing. The proposed Mainline is located approximately 0.2 mile west of the western limits of Arctic NWR, just east of Galbraith Lake. The PTU, from which natural gas would be transported through the PTTL, is located to the west of Section 1002 of the Arctic NWR in the Beaufort Coastal Plain Ecoregion. Lands within the Arctic NWR would not be used by the Project.

8.6.4.1.2 Denali National Park and Preserve (DNPP)

The Mainline route would not be inside or cross the boundaries of the DNPP. The Mainline route would be located outside the eastern boundary of the DNPP. The DNPP encompasses approximately 6 million acres of land in and around the Alaska Range and includes North America's highest peak, Denali. The DNPP provides a variety of outdoor recreational opportunities, including backpacking, hiking, camping, and mountain climbing. The DNPP is managed by the NPS. Section 8.5.1.2 includes further information regarding DNPP.

A route variation through the DNPP was evaluated. An approximately 8-mile route option was developed that extends from approximately MP 536.10 to MP 544.31 of the Mainline Route Revision C2 (Figure 10.4.4-1, Resource Report No. 10). The DNPP variation passes through the Park entrance area, generally following the Parks Highway corridor. A comparison of the DNPP route variation and Mainline Route Revision B is provided in Table 10.4.4-1 (Resource Report No. 10).

8.6.4.1.3 ACECs

No ACECs would be intersected by the Liquefaction Facility, GTP, PBTL, or PTTL. The Mainline would cross two ACECs—Toolik Lake RNA ACEC, and Galbraith Lake Outstanding Natural Area (ONA) ACEC. In addition, Project-associated infrastructure would be located within 1 mile of Sukakpak Mountain ACEC and Snowden Mountain ACEC, and would intersect Galbraith Lake ACEC. Section 8.5.1.1 includes further information on BLM special designation areas.

- Toolik Lake RNA – The Toolik Lake RNA ACEC has been designated an ACEC to protect a natural land and tundra biome used for Arctic natural resources research, primarily associated with the Toolik Field Station through the University of Alaska Fairbanks. Although the BLM's RMP/EIS (1991a) acknowledges that energy transportation is the primary function of the utility

corridor across this ACEC, protection of the area is to occur to the extent practical to protect data and research projects. This ACEC would be crossed by the Mainline. A ROW permit from BLM would be required;

- Galbraith Lake ONA – The Galbraith Lake ONA ACEC is the largest of the five ACECs within the BLM's Central Yukon Field Office region. It encompasses the Atigun River Valley and portions of the mountains on both sides of the valley. The Galbraith Lake ONA ACEC also includes Galbraith Lake and several drainages that feed the lake. The area is managed to protect historical and archaeological sites, critical wildlife habitat, paleontological and geological sites, scenic values, and any rare and sensitive plants that may be present. This ACEC would be crossed by the Mainline. A ROW permit from BLM would be required;

- Sukakpak Mountain ACEC – The Sukakpak Mountain ACEC has been designated to protect unique geologic buildings, folds, and faults, as well as views of the geologic processes of mountain building and erosional forces. Rare plant species are also present, and the area is accessible to the public via the Dalton Highway. The area is an available source of mineral materials with access via a material source access road. However, material sales on Sukakpak Mountain slopes are now discouraged to ensure the scenic qualities of the area (BLM, 1991b). This ACEC would be crossed by the Mainline. A ROW permit from BLM would be required; and

- Snowden Mountain ACEC – The Snowden Mountain ACEC is located on the southern slopes of the Brooks Range within the Dietrich River drainage, immediately east of the Dalton Highway, the Trans-Alaska Pipeline, and Gates of the Arctic NPP. This rugged area was designated as an ACEC for the protection of sheep habitat. It contains a variety of undisturbed habitats supporting healthy populations of wildlife, including for Dall sheep. The Snowden Mountain ACEC contains the most critical habitats for this species compared with other ACECs in the region (USDOI, 2009). The Mainline ROW would intersect the western boundary of the ACEC and would require a ROW permit from the BLM.

8.6.4.2 State-Managed Areas

The 2015 Alaska Legislature approved a corridor through state lands, however a ROW lease will still be required.

8.6.4.2.1 Denali State Park

Portions of the Mainline, Pipeline Aboveground Facilities (e.g., MLBVs), and the Pipeline Associated Infrastructure (e.g., access roads, ATWS, material sites, and pipe storage yards) would be located within Denali State Park. The Park includes a 325,240-acre area located along the George Parks Highway Scenic Byway at the southeastern base of Denali. Denali State Park is managed by the ADNR DPOR. It occurs within 1 mile of the Project area. The Park provides a variety of formal and informal camping, fishing, hiking, and other recreational opportunities (ADNR, 2014b). The Mainline would cross an approximately 33-mile-long segment of the Park along the George Parks Highway Scenic Byway. This highway corridor bisects the Park into two tracts of land located east and west of the highway. Denali State Park is considered a 6(f) property under the LWCF Act (16 USC § 4601). Section 6(f) of the LWCF Act requires that no property acquired or developed with LWCF assistance should be converted

to a use other than public outdoor recreational uses without the prior approval of the Secretary of the Interior. However, Alaska Senate Bill 70 (AK SB70) (Alaska State Legislature, 2015) passed on May 15, 2015, provides exceptions from designation as a special purpose site for portions of Denali State Park to allow for ROW leasing associated with natural gas pipelines. A ROW permit from ADNR would also be required for the Mainline crossing.

8.6.4.2.2 Nenana River Gorge Special Use Area

Portions of the Mainline and the Pipeline Associated Infrastructure (e.g., access roads and ATWS) would be located within the Nenana River Gorge Special Use Area. The ADNR-DMLW manages "special use lands" to protect areas that have been designated pursuant to 11 AAC 96.014 as having scenic, historic, archaeological, scientific, biological, recreational, or other special resource values that warrant additional protections and special requirements. The Nenana River Gorge Special Use Area, which forms the eastern boundary of DNPP, is an approximately 5-mile-long and 0.5-mile-wide area located on the eastern banks of the Nenana River, approximately 3,800 feet north of the intersection of Park Road and the George Parks Highway Scenic Byway.

8.6.4.2.3 North Slope Area Special Use Lands

The Mainline, Pipeline Aboveground Facilities (compressor station, meter station, and four MLBVs), and Pipeline Associated Infrastructure (access roads, ATWS, camps, pipe storage yards and material sites), PBTL, PTTL, GTP, and GTP Associated Infrastructure would be located within ADL 50666, North Slope Area Special Use Area. ADL 50666 designates all lands in the Umiat Meridian as special use lands. This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits are required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.

8.6.4.2.4 Alexander Creek State Recreation River (SRR)

Portions of the Mainline and the Pipeline Associated Infrastructure (e.g., access roads and ATWS) would be located within Alexander Creek SRR. The unit includes 40.2 miles of Alexander Creek from River Mile 3.8 to River Mile 44.0. The unit also includes the lower 5.5 miles of Sucker Creek. Alexander Creek is a slow, meandering stream that originates in Alexander Lake and flows south to the Susitna River. The terrain is generally flat to occasionally rolling. The SRR begins 3.5 miles above the confluence with the Susitna River, and extends up to Alexander Lake and the surrounding uplands. Alexander Creek SRR includes 19,995 acres of state land, 2,260 acres of MSB land, and 74 private parcels accounting for 381 acres.

Alexander Creek is popular for fishing, hunting, and trapping. There is extensive winter travel along Alexander Creek below Sucker Creek. Snowmachine use is by both recreational users and private property owners (ADNR, 1991).

8.6.4.2.5 Kroto Creek and Moose Creek SRRs

Portions of the Mainline and the Pipeline Associated Infrastructure (e.g., access roads and ATWS) would be located within the Kroto Creek and Moose Creek SRRs. The Kroto Creek SRR extends from the junction with Moose Creek to Kroto Lake. Kroto Creek provides fishing, hunting, and camping opportunities for power boaters, floaters, and bank fishermen. In the winter, trails in the area are used by snowmachines for dog mushing and cross-country skiing. Moose Creek begins at a small unnamed lake several miles east of Kroto Creek and flows roughly parallel to that creek for about 40 miles before the two join to become the Deshka. Because of extensive wetlands and the relatively remote location of Moose Creek, it is visited primarily by floaters in summer and snow travelers in winter. Recreation activities include fishing, hunting, and camping. In winter, the area is used by snowmachines and for dog mushing (ADNR, 1991).

8.6.4.2.6 Susitna Flats SGR

Portions of the Mainline, Pipeline Aboveground Facilities (e.g., MLBVs), and the Pipeline Associated Infrastructure (e.g., access roads, ATWS, camps and material sites) would be located within the Susitna Flats. Susitna Flats, which encompasses approximately 300,800 acres, is located between Beluga River and Point MacKenzie on the western side of Cook Inlet (ADF&G, 1988). It is managed by ADF&G and ADNR-DMLW to reduce effects on fish and wildlife populations, particularly waterfowl nesting, feeding, and migration; moose calving areas; spring and fall bear feeding areas; and salmon spawning and rearing habitats. It also provides public use of fish and wildlife and their habitat, particularly waterfowl, moose, and bear hunting; viewing; photography; and general public recreation. Each year, approximately 10 percent of the waterfowl harvest in the state occurs in Susitna Flats. New utilities may be allowed to cross the refuge where no feasible off-refuge alternative exists, using existing corridors wherever possible, consistent with refuge goals and objectives. Two major utility lines cross Susitna Flats: the Chugach Electric Association, Inc., electric transmission line and the ENSTAR natural gas pipeline (ADF&G, 1988). Susitna Flats is discussed further in Section 8.5.2.3.

8.6.4.2.7 Tanana Valley State Forest

Portions of the Mainline, Pipeline Aboveground Facilities (e.g., MLBVs), and the Pipeline Associated Infrastructure (e.g., access roads, ATWS, camps, pipe storage yards, and material sites) would be located within the Tanana Valley State Forest. The 1.81 million-acre forest extends 265 miles, from near the Canadian border to Manley Hot Springs. The forest was established in 1983 within Alaska's State Forest System for multiple purposes including timber management, subsurface mineral resources, oil and gas leasing, grazing, recreation, wildlife habitat, agriculture, and water quality (ADNR, 2001a; 2013b). The majority of the 1.78 million acres of this forest lies within the Tanana River basin in east-central Alaska. Timber production is the major commercial activity (ADNR, 2013c). The DMLW adjudicates the material sales from state forest land, in consultation with Division of Forestry. The forest also offers many recreational opportunities, including hunting, fishing, trapping, camping, hiking, dog mushing, cross-country skiing, wildlife viewing, snowmachining, gold panning, boating, and berry picking. The Tanana Valley State Forest is managed under the Tanana Valley State Forest Management Plan. A ROW permit from ADNR would be required for use of lands within the Tanana Valley State Forest. Timber with commercial or personal use values would be required to be salvaged from lands that would be cleared for the Mainline ROW.

Almost 90 percent of the area is forested, productive, and accessible. Natural and anthropogenic disturbance maintains the structure and function of the forest, and ensures productivity of its natural resources and sustained biological diversity (ADNR, 2001a). ADNR makes state forest management decisions based in accordance with statutes and regulations, as well as consideration of biological, economic, and social conditions. The Tanana Valley State Forest Management Plan was designed to promote multiple uses with minimal conflict, including potential development activities in the region.

8.6.4.2.8 Minto Flats SGR

Portions of the Mainline, Pipeline Aboveground Facilities (e.g., MLBVs), and the Pipeline Associated Infrastructure (e.g., access roads, ATWS, camps, pipe storage yards, and material sites) would be located within Minto Flats SGR. The Refuge encompasses approximately 500,000 acres and is located about 35 miles west of Fairbanks between the communities of Minto and Nenana (ADF&G, 2012). Minto Flats SGR was established by the Alaska Legislature in 1988 to ensure the protection and enhancement of habitat and the conservation of fish and wildlife, and to guarantee the continuation of hunting, fishing, trapping, and other compatible public uses within the Minto Flats area (ADF&G, 1992). Minto Flats SGR is comanaged by ADF&G and ADNR-DMLW. According to the Minto Flats State Game Refuge Management Plan issued in 1992, utility corridors and pipelines may be sited on refuge lands if they are determined to be compatible with the purposes for which the refuge was established (ADF&G, 1992). Proposals will be evaluated for compatibility with the refuge purposes listed in legislation and reflected in the goals of the management plan. Minto Flats State Game Refuge is also described in Section 8.5.2.3.

8.6.4.2.9 Scenic Byways

The Scenic Byways Program was established by the State of Alaska in 1993 and is administered by ADOT&PF's DPOR. The program allows for grant funding to be obtained to promote the byways' special qualities and also makes these routes eligible for designation as scenic byways through the National Scenic Byways Program administered by the Federal Highway Administration (ADOT&PF, 2011). There are no state restrictions that apply to scenic byways.

Portions of the Mainline, Pipeline Aboveground Facilities (four compressor stations and 19 MLBVs), and the Pipeline Associated Infrastructure (e.g., access roads, ATWS, camps, pipe storage yards, and material sites) would be located within the Dalton Highway Scenic Byway. Additional portions of the Mainline and Pipeline Associated Infrastructure would be located within the George Parks Highway Scenic Byway. The Dalton Highway Scenic Byway and George Parks Highway Scenic Byway (AS 19.40.010) are designated scenic byways through the Alaska Scenic Byways program administered by ADOT&PF. Corridor Partnership Plans have been developed for the Dalton Highway and George Parks Highway Scenic Byway (ADNR, 2008, 2010) that serve as guides for the management, protection, and enhancement of the qualities of the scenic byways. These plans are not mandates but provide information for use in the evaluation of the visual resources on along the Project corridor (Section 8.1.3). As previously noted, there are no state restrictions that apply to scenic byways. The state lands within the corridor are managed by ADNR-DMLW. A state lands ROW permit would be required for the Project. A visual impacts assessment was completed in 2015 and is provided in Appendix L.

In addition, the Seward Highway holds a triple designation as a United States Department of Agriculture Forest Service Scenic Byway, Alaska Scenic Byway, and an All-American Road. The Seward Highway lies within the Kenai Mountains-Turnagain Arm Corridor National Heritage Area (KMTA NHA, 2012). Although the Project does not have a proposed construction or operations footprint through this corridor, increased traffic related to logistics would impact scenic byways. More information with regard to impacts to scenic byways is provided in Section 8.11.2.1.1.4.

8.6.5 Revised Statute 2477 Rights-of-Way and 17(b) Easements

Revised Statute (RS) 2477 of Section 8 of the Mining Law of 1866 states: "The right of way for the construction of highways over public lands, not reserved for public uses, is hereby granted." Although the law was repealed by Congress with the enactment of FLPMA in 1976, the preexisting rights attributable to RS 2477 trails established under the statute remain in effect. While the existence and exact nature of RS 2477 ROWs may be subject to legal determination, such ROW, where established, may include ongoing access rights to many rural destinations, including by snowmachines, dogsled teams, and four-wheel, all-terrain vehicles. The Project Planning Area, defined as the Liquefaction Facility, the Mainline ROW, associated facilities, PBTL, PTTL, and the area where the GTP would be constructed, includes 28 described RS 2477 trails (Appendix F). There may be additional RS 2477 easements in the Project area that lack formal recognition (by a court, the Alaska Legislature, or ADNR administrative decision). These currently unrecognized easements, if found in the Project area, would be designated with a creation date, for third-party review purposes, as their initial use/establishment. The ADNR ROW permit would have stipulations to avoid or reduce effects to RS 2477 trails.

The Project area intersects special use areas, which are easements designated under ANCSA Section 17(b), which authorizes reserving easements on lands that will be conveyed to Alaska Native Corporations to allow public access to public land and water. 43 C.F.R. § 2650.4-7 describes the guidelines that are used in reserving easements in conveyance documents. Easements under Section 17(b) are reserved and managed by the federal government. Eleven 17(b) easements have been identified in the Project area (Appendix F).

8.6.6 Summary of Applicable Recreational Sites and Special Use Area Stipulations

8.6.6.1 Liquefaction Facility

The Liquefaction Facility site would include two 17(b) easements: Easement No. 10 and Easement No. 11. Table 8.6.6-1 provides the applicable stipulations of recreational sites and special use areas for the Liquefaction Facility.

TABLE 8.6.6-1

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations for the Liquefaction Facility

Name	Type of Recreational Site or Special Use Area	Construction ROW (Acres)	Potential Applicable Stipulations
ANCSA Easement No. 10	17(b) easements	3.2	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
ANCSA Easement No. 11	17(b) easements	0.7	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.

8.6.6.2 Interdependent Project Facilities

8.6.6.2.1 Pipelines

8.6.6.2.1.1 Mainline

The Mainline would include two ACECs, one scenic byway, two SGRs, one state forest, one national historic trail, two SRR areas, one special use area, 20 RS 2477 easements, and eight 17(b) easements. Table 8.6.6-2 provides the potentially applicable stipulations of recreational sites and special use areas for the Mainline.

TABLE 8.6.6-2

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations intersected by the Mainline

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
Dalton Highway Scenic Byway	Scenic Byway	Intermittently between 14.3 – 356.3	There are no state restrictions that apply to scenic byways.
RST 450 – Hickel Highway	RS 2477	62.8/301.6	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
Toolik Lake RNA	ACEC	127.2 - 137.3	The BLM's Utility Corridor Proposed RMP, which includes Toolik Lake RNA, specifies that management of the ACEC will not restrict existing or future energy transportation systems (BLM, 1989).

TABLE 8.6.6-2

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations intersected by the Mainline

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
Galbraith Lake ACEC	ACEC	139.2 - 150.5	The BLM's Utility Corridor Proposed RMP, which includes Galbraith Lake ACEC, specifies that management of the ACEC would not restrict existing or future energy transportation systems (BLM, 1989).
RST 254 – Wiseman-Chandalar	RS 2477	218.6	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 262 – Caro-Coldfoot	RS 2477	241.1	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 412 – Slate Creek	RS 2477	241.1	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 591 – Coldfoot-Junction Trail 49	RS 2477	241.1	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 9 – Coldfoot Chandalar Lake Trail	RS 2477	241.1	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 468 – Hunter Creek-Livengood	RS 2477	400.6	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RTE 66 – Dunbar-Brooks Terminal	RS 2477	Intermittently between 401.8–454.7	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
Minto Flats SGR	SGR	Intermittently between 430.9–468.6	According to the Minto Flats State Game Refuge Management Plan issued in 1992, utility corridors and pipelines may be sited on refuge lands if they are determined to be compatible with the purposes for which the refuge was established (ADF&G, 1992). Proposals would be evaluated for compatibility with the refuge purposes listed in legislation and reflected in the goals of the management plan.
RST 1595 – Dunbar-Minto-Tolovana	RS 2477	455.9	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
George Parks Highway Scenic Byway	Scenic Byway	Intermittently between 470–700	There are no state restrictions that apply to scenic byways.
RST 346 Nenana-Kantishna	RS 2477	473.9	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 345 Kobi-McGrath	RS 2477	497.3	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.

TABLE 8.6.6-2

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations intersected by the Mainline

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
RST 343 – Kobi-Kantishna	RS 2477	498.3	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 491 – Rex-Roosevelt	RS 2477	498.1	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 344 – Lignite-Kantishna	RS 2477	523.3	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RTE 340 – Lignite-Stampede	RS 2477	523.3	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 709 – Healy Diamond Coal Mine Dirt Road	RS 2477	527.9	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
ANCSA 17(b) Easements – Easement Number 21	17(b) Easement	547.3	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
ANCSA 17(b) Easements – Easement Number 17a	17(b) Easement	551.2	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
RST 625 Easements – Cantwell Small Tracts Road	RS 2477	566.5	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
ANCSA 17(b) Easements	17(b) Easement	574.1	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
RST 198 Susitna-McDougal	RS 2477	721.2	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 199 – Susitna-Rainy Pass	RS 2477	723.5	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.

TABLE 8.6.6-2

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations intersected by the Mainline

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
RST 1862 – Beluga Indian Trail	RS 2477	751.5	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
ANCSA 17(b) Easements – Easement Number 5h	17(b) Easement	794.5	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
Tanana Valley State Forest	State Forest	Intermittently between 407.7–454.6	The Tanana Valley State Forest is managed under the Tanana Valley State Forest Management Plan. A ROW permit from ADNR would be required for use of lands within the Tanana Valley State Forest. Timber with commercial or personal use values would be required to be salvaged from lands that would be cleared for the Mainline ROW.
Nenana River Gorge Special Use Area	Special Use Area	534.7 – 534.8 / 536.3 – 537.6	Pipeline or utility line construction is not listed as a generally allowed use on special use land (11 AAC 96.020). Therefore, a permit from ADNR-DMLW would be required.
North Slope Special Use Area (ADL 50666)	Special Use Area	Intermittently between 0.0 – 182.4	This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits are required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.
Denali State Park	State Park	609.1–646.9	Denali State Park is considered a 6(f) property under the LWCF Act (16 USC § 4601). Section 6(f) of the LWCF Act requires that no property acquired or developed with LWCF assistance should be converted to a use other than public outdoor recreational uses without the prior approval of the Secretary of the Interior. A ROW permit from ADNR would also be required for the Mainline crossing.
Kroto and Moose Creek SRR	SRR	703.9 – 705.8 / 707.1 – 707.5	Oil and gas gathering and feeding lines will be addressed on a case-by-case basis. Utilities shall be designed so as not to be a hazard to river or air navigation or public safety, so that there is little or no maintenance required and be designed to cross the river and the corridors at 90 degrees or as near perpendicular as possible. Construction of utility projects below ordinary high water or in the airspace above waterbodies may be allowed if the project is in the best public interest. Utilities that serve only a few users and cross waterbodies that receive high public use shall be discouraged. All construction below ordinary high water shall normally occur between May 15 and July 15 when there is the least potential for damage to fish. This period may vary depending on the ADF&G Title 16 Permit (ADNR, 1991).

TABLE 8.6.6-2

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations intersected by the Mainline

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
Iditarod National Historic Trail	National Historic Trail	720.8 and 724.3	Most of the Historic Trail is located on public lands managed by the State of Alaska or federal agencies, while some segments of the trail pass over private lands. The trail crosses lands owned by municipal governments, the State of Alaska, and several Native Corporations as well as federal lands managed by the BLM, U.S. Forest Service (USFS), USFWS, and Department of Defense. The State of Alaska and the BLM entered into a MOA regarding management of the INHT on both State and BLM-managed lands.
Alexander Creek Recreation River	SRR	727.3–728.5	Section 6(f)(3) requires LWCF areas be maintained for public outdoor recreation use unless the NPS approves substitute land determined to be of equivalent location, suitability for recreation, and greater or equal to the fair market value of the original property.

8.6.6.2.1.2 PBTL

The PBTL would not include any recreational sites or special use areas.

8.6.6.2.1.3 PTTL

The PTTL would include one scenic byway and an RS 2477 easement. Table 8.6.6-3 provides the applicable stipulations of recreational sites and special use areas for the PTTL.

TABLE 8.6.6-3

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations Intersected by the PTTL

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
Dalton Highway Scenic Byway	Scenic Byway	52.6 / 52.7	There are no state restrictions that apply to scenic byways.
North Slope Special Use Area (ADL 50666)	Special Use Area	0–62.5	This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits are required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.

TABLE 8.6.6-3

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations Intersected by the PTTL

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
RST 1043 – Bullen-Staines River	RS 2477	1.8 / 3.3–3.4 / 8.0	Easement must be surveyed before crossed/used (no restrictions on development of a pipeline ROW across this area). Any access restrictions on any ROWs managed by the ADNR-DMLW, including but not limited to those identified in AS 19.30.400 or acquired under former 43 U.S.C. 932 require prior written approvals by the Pipeline Coordinator and the DMLW. In the event that future upgrades to these ROWs are approved, the Lessee may be responsible for accommodating these upgrades.

8.6.6.2.2 Pipeline Aboveground Facilities

Two ACECs, one scenic byway, two SGRs, one state forest, one state park, and one special use area would be impacted by the footprint of the Pipeline Aboveground Facilities. Table 8.6.6-4 provides the applicable stipulations of recreational sites and special use areas for the Pipeline Aboveground Facilities.

TABLE 8.6.6-4

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations Impacted by Pipeline Aboveground Facilities

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
Toolik Lake RNA	ACEC	130	The BLM's Utility Corridor Proposed Resource Management Plan, which includes Toolik Lake RNA, specifies that management of the ACEC will not restrict existing or future energy transportation systems (BLM, 1989).
Galbraith Lake	ACEC	147	The BLM's Utility Corridor Proposed Resource Management Plan, which includes Galbraith Lake ACEC, specifies that management of the ACEC will not restrict existing or future energy transportation systems (BLM, 1989).
Dalton Highway Scenic Byway	Scenic Byway	Intermittently between 36.7 – 332.6	There are no state restrictions that apply to scenic byways.
Minto Flats SGR	SGR	467.1	According to the Minto Flats State Game Refuge Management Plan issued in 1992, utility corridors and pipelines may be sited on refuge lands if they are determined to be compatible with the purposes for which the refuge was established (ADF&G, 1992). Proposals will be evaluated for compatibility with the refuge purposes listed in legislation and reflected in the goals of the management plan.
Tanana Valley State Forest	State Forest	421.6	The Tanana Valley State Forest is managed under the Tanana Valley State Forest Management Plan. A ROW permit from ADNR would be required for use of lands within the Tanana Valley State Forest. Timber with commercial or personal use values would be

TABLE 8.6.6-4

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations Impacted by Pipeline Aboveground Facilities

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
			required to be salvaged from lands that would be cleared for the Mainline ROW.
Denali State Park	State Park	625.8	Denali State Park is considered a 6(f) property under the LWCF Act (16 USC § 4601). Section 6(f) of the LWCF Act requires that no property acquired or developed with LWCF assistance should be converted to a use other than public outdoor recreational uses without the prior approval of the Secretary of the Interior. A ROW permit from ADNR would also be required for the Mainline crossing. Alaska Senate Bill 70 (AK SB70) (Alaska State Legislature, 2015) passed on May 15, 2015, provides exceptions from designation as a special purpose site for portions of Denali State Park to allow for ROW leasing associated with natural gas pipelines.
Susitna Flats SGR	SGR	749.2	According to the Susitna Flats State Game Refuge Management Plan issued in 1988, utility corridors and pipelines may be sited on refuge lands if they comply with the goals and objectives for the protection of fish and wildlife populations, including moose calving areas, spring and fall bear feeding areas, and salmon spawning and rearing habitat (ADF&G, 1988).
North Slope Special Use Area (ADL 50666)	Special Use Area	36.7, 75.9, 112.0, 148.5	This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits are required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.

8.6.6.2.3 Pipeline Associated Infrastructure

Multiple recreational sites and special use areas would be impacted by the proposed pipeline infrastructure facilities. Table 8.6.6-5 provides the applicable stipulations of recreational sites and special use areas for the Pipeline Associated Infrastructure. Since the current Mainline route is located outside DNPP, the Project as proposed would avoid direct impacts to DNPP. There may be indirect impacts, to DNPP, and these impacts and mitigations to reduce them are discussed in more detail in 8.11.2 and 8.12.2.

TABLE 8.6.6-5

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations for Pipeline Associated Infrastructure

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
Denali State Park	LWCF Land	Intermittently between 609.1 and 646.9	Section 6(f)(3) requires LWCF areas be maintained for public outdoor recreation use unless the NPS approves substitute land determined to be of equivalent location, suitability for recreation, and greater or equal to the fair market value of the original property. Alaska Senate Bill 70 (AK SB70) (Alaska State Legislature, 2015) passed on May 15, 2015, provides exceptions from designation as a special purpose site for portions of Denali State Park to allow for ROW leasing associated with natural gas pipelines.
Alexander Creek Recreational River	SRR	Intermittently between 727.4 and 728.6	Oil and gas gathering and feeding lines will be addressed on a case-by-case basis. Utilities shall be designed so as not to be a hazard to river or air navigation or public safety, so that there is little or no maintenance required and be designed to cross the river and the corridors at 90 degrees or as near perpendicular as possible. Construction of utility projects below ordinary high water or in the airspace above waterbodies may be allowed if the Project is in the best public interest. Utilities that serve only a few users and cross waterbodies that receive high public use shall be discouraged. All construction below ordinary high water shall normally occur between May 15 and July 15 when there is the least potential for damage to fish. This period may vary depending on the ADF&G Title 16 Permit (ADNR, 1991).
ANCSA 17(b) Easements – Easement Number 5	17(b) Easement	794.5	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
ANCSA 17(b) Easements – Easement Number 5h	17(b) Easement	570.9	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
ANCSA 17(b) Easements – Easement Number 6b	17(b) Easement	581.9	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.

TABLE 8.6.6-5

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations for Pipeline Associated Infrastructure

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
ANCSA 17(b) Easements – Easement Number 15	17(b) Easement	559.6	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
ANCSA 17(b) Easements – Easement Number 16	17(b) Easement	556.4	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
ANCSA 17(b) Easements – Easement Number 17a	17(b) Easement	551.2	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
ANCSA 17(b) Easements – Easement Number 100	17(b) Easement	581.9	Uses allowed on a 17(b) easement are limited, and they are described in the conveyance document issued to a Native Corporation. Any use other than what is described in the conveyance document would require coordination with the agency managing the easement and/or with the owner of the land it crosses.
Dalton Highway Scenic Byway	Scenic Byway	Intermittently between 11.4 – 356.2	There are no state restrictions that apply to scenic byways.
Galbraith Lake ACEC	ACEC	Intermittently between 139 and 150	The BLM's Utility Corridor Proposed RMP, which includes Galbraith Lake ACEC, specifies that management of the ACEC will not restrict existing or future energy transportation systems (BLM, 1989).
Iditarod National Historic Trail	National Historic Trail	Intermittently between 720.7 and 724.3	Most of the Historic Trail is located on public lands managed by the State of Alaska or federal agencies, while some segments of the trail pass over private lands. The trail crosses lands owned by municipal governments, the State of Alaska, and several Native Corporations as well as federal lands managed by the BLM, USFS, USFWS, and the Department of Defense. The federal BLM coordinates cooperative management of the trail including being the primary contact for matters involving the trail.

TABLE 8.6.6-5

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations for Pipeline Associated Infrastructure

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
Kroto & Moose Creek SRR	SRR	Intermittently between 704.0 and 707.3	Oil and gas gathering and feeding lines will be addressed on a case-by-case basis. Utilities shall be designed so as not to be a hazard to river or air navigation or public safety, so that there is little or no maintenance required and be designed to cross the river and the corridors at 90 degrees or as near perpendicular as possible. Construction of utility projects below ordinary high water or in the airspace above waterbodies may be allowed if the Project is in the best public interest. Utilities that serve only a few users and cross waterbodies that receive high public use shall be discouraged. All construction below ordinary high water shall normally occur between May 15 and July 15 when there is the least potential for damage to fish. This period may vary depending on the ADF&G Title 16 Permit (ADNR, 1991).
Minto Flats SGR	SGR	Intermittently between 431.6 and 468.6	According to the Minto Flats State Game Refuge Management Plan issued in 1992, utility corridors and pipelines may be sited on refuge lands if they are determined to be compatible with the purposes for which the refuge was established (ADF&G, 1992). Proposals will be evaluated for compatibility with the refuge purposes listed in legislation and reflected in the goals of the management plan.
Nenana River Gorge Special Use Area	Special Use Area	Intermittently between 532.4 and 537.6	Pipeline or utility line construction is not listed as a generally allowed use on special use land (11 AAC 96.020). Therefore, a permit from ADNR-DMLW would be required.
North Slope Special Use Area (ADL 50666)	Special Use Area	Intermittently between 0.0 and 182.3	This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits are required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.
Snowden Mountain ACEC	ACEC	199	The BLM's Utility Corridor Proposed RMP, which includes Snowden Mountain ACEC, specifies that management of the ACEC will not restrict existing or future energy transportation systems (BLM, 1989).
Sukakpak Mountain ACEC	ACEC	209	The BLM's Utility Corridor Proposed RMP, which includes Sukakpak Mountain ACEC, specifies that management of the ACEC will not restrict existing or future energy transportation systems (BLM, 1989).
Susitna Flats SGR	SGR	Intermittently between 737.3 and 752.3	According to the Susitna Flats State Game Refuge Management Plan issued in 1988, utility corridors and pipelines may be sited on refuge lands if they comply with the goals and objectives for the protection of fish and wildlife populations, including moose calving areas, spring and fall bear feeding areas, and salmon spawning and rearing habitat (ADF&G, 1988).

TABLE 8.6.6-5

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations for Pipeline Associated Infrastructure

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
Tanana Valley State Forest	State Forest	Intermittently between 406.8 – 466.6	The Tanana Valley State Forest is managed under the Tanana Valley State Forest Management Plan. A ROW permit from ADNR would be required for use of lands within the Tanana Valley State Forest. Timber with commercial or personal use values would be required to be salvaged from lands that would be cleared for the Mainline ROW.
Toolik Lake RNA	ACEC	Intermittently between 128 and 137	The BLM's Utility Corridor Proposed RMP, which includes Toolik Lake RNA, specifies that management of the ACEC will not restrict existing or future energy transportation systems (BLM, 1989).
RST 1595 – Dunbar-Minto-Tolovana	RS 2477	455.8	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 1611 – Bergman-Cathedral Mountain	RS 2477	280.4	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 1862 – Beluga Indian Trail	RS 2477	752.0	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 198 Susitna-McDougal	RS 2477	721.1	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 200 – Susitna-Tyonek	RS 2477	Intermittently between 746.5 and 766.2	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 254 – Wiseman Chandalar	RS 2477	218.6	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 262 – Caro-Coldfoot	RS 2477	241.2	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 346 Nenana-Kantishna	RS 2477	473.8	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 412 – Slate Creek	RS 2477	241.1	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 450 – Hickel Highway	RS 2477	299.3, 300.5, 301.6	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 468 – Hunter Creek-Livengood	RS 2477	400.6	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.

TABLE 8.6.6-5

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations for Pipeline Associated Infrastructure

Name	Type of Recreational Site or Special Use Area	MPs	Potential Applicable Stipulations
RST 591 – Coldfoot-Junction Trail 49	RS 2477	241.1	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 625 – Cantwell Small Tracts Road	RS 2477	566.5	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RTE 66 – Dunbar-Brooks Terminal	RS 2477	Intermittently between 402.0 and 454.7	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 709 – Healy Diamond Coal Mine Dirt Road	RS 2477	526.7, 527.0, 528.8	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.
RST 9 – Coldfoot Chandalar Lake Trail	RS 2477	241.2	Certain land use actions on R.S. 2477 ROWs, including road construction, may require a permit under 11 ACC 96.010, or other authorization by ADNR.

8.6.6.2.4 GTP

The GTP, including associated facilities, would be located within the North Slope Special Use Area shown in Appendix B. Table 8.6.6-6 and Table 8.6.6-7 show the potentially applicable stipulations of this special use area.

TABLE 8.6.6-6

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations for the GTP

Name	Type of Recreational Site or Special Use Area	Acres	Potential Applicable Stipulations
North Slope Special Use Area (ADL 50666)	Special Use Area	227.9	This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits would be required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.

8.6.6.2.5 GTP Associated Infrastructure

TABLE 8.6.6-7

Summary of Potentially Applicable Recreational Sites and Special Use Area Stipulations for GTP Associated Infrastructure

Name	Type of Recreational Site or Special Use Area	Acres	Potential Applicable Stipulations
North Slope Special Use Area (ADL 50666)	Special Use Area	817.5	This designation requires that, in addition to permitting requirements under 11 AAC 96.010, permits would be required for geophysical activity, other exploration activity, construction activity, and transportation activity, except along established roads. This requirement does not prohibit the development of lands within the Umiat Meridian or the development of permitted easements and ROWs.

8.6.6.3 Non-Jurisdictional Facilities

PBU MGS project is located within the North Slope Special Use Area (ADL 50666) and would therefore be subject to the requirements of ADL 50666 (which are summarized in Tables 8.6.6-6 and 8.6.6-7).

The PTU Expansion project is located within the North Slope Special Use Area (ADL 50666) and would therefore be subject to the requirements of ADL 50666 (which are summarized in Tables 8.6.6-6 and 8.6.6-7).

The relocation of the KSH would not be located within any special use areas or recreational sites.

8.7 HAZARDOUS WASTE SITES, CONTAMINATION, AND LANDFILLS

A geospatial analysis was conducted for the Project footprint with agency databases of known or potential hazardous waste sites, contaminated sites, and landfills within the Project area and for sites within 0.25 mile of the Project area. This review included a search of the following data sources:

- Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Database (CSD);
- ADEC Leaking Underground Storage Tank (LUST) Program Database;
- ADEC Solid Waste Information Management System (SWIMS); and
- U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) databases.

The information contained in the ADEC CSD and LUST database includes data on federal facilities, Department of Defense facilities, Comprehensive Environmental Response, Compensation, and

Liability Act (CERCLA) sites, National Priority List (NPL) sites, and RCRA Corrective Action Sites. All of these databases identified contaminated sites and landfills either in the Project area or within 0.25 mile of it, except for the EPA NPL database. A summary of the findings is provided in Appendix E and depicted on maps in Appendix C.

Section 105(a) (8) (B) of CERCLA requires that the statutory criteria provided by the Hazard Ranking System be used to prepare a list of national priorities among the known releases or threatened release of hazardous substances, pollutants, or contaminants throughout the United States (EPA, 2012). This list is referred to as the NPL. The NPL is intended to guide the EPA in determining which sites warrant further investigation, identify what CERCLA-financed remedial actions may be appropriate, notify the public of those sites EPA believes warrant further investigation, and serve notice to potentially responsible parties that EPA may initiate CERCLA-financed remedial action (EPA, 2012).

EPA sites are classified as:

1. Proposed – Sites that are proposed (by the EPA, the state, or a concerned citizen) for addition to the NPL due to contamination by hazardous waste, and identified by the EPA as a candidate for cleanup because it poses a risk to human health and/or the environment (U.S. Department of Health and Human Services, 2009);

2. Deleted – Sites deleted from the NPL by the EPA (with state concurrence) because site cleanup goals have been met and no further response is necessary at the site.

There are five sites finalized and listed on the NPL. There are no additional proposed sites for NPL listings. Of the finalized NPL sites, none are located in proximity to the Project area, including the ROW, or any associated Project facility or related infrastructure.

8.7.1 Landfills

The ADEC SWIMS data indicate that there are five landfills located within the Project area. All the landfills within the Project area are retired (e.g., complete final closure reports and records have been submitted to ADEC in accordance with permit conditions). An additional eight landfills are located within 0.25 mile of the Project area. Seven of these are listed as retired, and one landfill is listed as active (ADEC permitted Class III landfill located at Mainline MP 131).

8.7.2 Alaska Contaminated Sites Program (CSP)

The ADEC CSP manages the cleanup of contaminated soil and groundwater in Alaska. All past and present contaminated sites, underground storage tanks, and LUST sites in the State of Alaska are listed and tracked through the ADEC CSP (ADEC, 2011a).

ADEC classifies its CSP sites into the following categories:

1. Cleanup Complete – ADEC designates “Cleanup Complete” status when efforts to reduce hazardous substance contamination have achieved the most stringent levels established in state regulation, or the possibility of human exposure to any residual contamination is highly unlikely;

2. Cleanup Complete with Institutional Controls – ADEC may allow hazardous substances to remain in the environment at a site if the contamination does not pose a risk to human health or the environment, but conditions or restrictions may be associated with the site that require compliance by current or future owners/operators. These conditions or restrictions require follow-up reporting; and

3. Open – Ongoing activities to monitor, remediate, or assess site conditions (ADEC, 2011b).

Review of the ADEC CSD indicates that within the Project area there are:

- Three sites are listed as cleanup complete;
- Four sites are listed as cleanup complete with institutional controls; and
- Two open sites.

Within 0.25 mile of the Project area, there are an additional 32 sites listed as cleanup complete. Fourteen sites are listed as cleanup complete with institutional controls, and 27 are listed as open sites. A mapbook of contaminated site locations is provided in Appendix C.

Review of the ADEC LUST database indicates that zero sites are listed as cleanup complete, two sites are listed as cleanup complete with institutional controls, and zero open sites are located within the Project area. Within 0.25 mile of the Project area, there are an additional 11 sites listed as cleanup complete, five sites listed as cleanup complete with institutional controls, and two sites listed as open.

Review of the ADEC RCRA indicates that no sites are listed as cleanup complete, cleanup complete with institutional controls, or open sites within the Project area. Within 0.25 mile of the Project area, there are no sites listed as cleanup complete or as cleanup complete with institutional controls, and one site is listed as an open site (the Tesoro Alaska Refinery).

Appendix E of Resource Report No. 8 includes information about institutional controls of four closed sites within the Project footprint. Mitigation measures for such sites would be: follow relevant institutional control restrictions, as well as the provisions of Resource Report No. 8, Appendix I (Unanticipated Contamination Discovery Plan) and Appendix J (Waste Management Plan).

8.7.2.1 Liquefaction Facility

Review of the ADEC CSD and LUST database indicate that eight sites are within 0.25 mile of the Liquefaction Facility, of which one would be located within the Project's construction footprint (Tesoro Northstore #201– Nikiski). Six of the sites within 0.25 mile of the Liquefaction Facility are classified as contaminated sites. One of the six sites (Unocal Chem/Cabin Lake Drum Site) is listed as cleanup complete. The remaining five sites are listed as open with ongoing site investigation or remedial activities occurring at the sites. The Unocal/Agrium Ammonia Urea Plant has multiple sites within its property boundaries (approximately 100 acres) and the media impacted include soil, subsurface soils, and groundwater contamination, which may occur in multiple aquifers. The extent of groundwater contamination at this property is unknown; however, offsite migration of contaminated groundwater

plumes has been documented (ADEC CSD). Contaminates of concern include petroleum products (diesel and lubrication oils), ammonia, sulfinol, and inorganic metals.

Two LUST sites are located within 0.25 mile of the LNG Plant area, of which one would be located in the Project footprint. This site is listed as cleanup complete with institutional controls, specifying that ADEC must approve any offsite transportation of contaminated soils prior to removal (Tesoro Northstore #201 – Nikiski). The other LUST site is listed as cleanup complete (Tesoro South Terminal).

The ADEC SWIMS data indicate that there are no landfills located within 0.25 mile of the Liquefaction Facility.

8.7.2.2 Interdependent Project Facilities

8.7.2.2.1 Pipelines

8.7.2.2.1.1 Mainline

Review of the ADEC CSD and LUST database indicates that 17 contaminated and LUST sites would be located within 0.25 mile of the Mainline construction ROW. 16 of the sites are classified as contaminated sites. 11 of these sites are listed as cleanup complete; two are listed as open and with ongoing site investigation or remedial activities occurring at the site. The remaining four sites are listed as cleanup complete with institutional controls in place.

One LUST site would be located within 0.25 mile of the Mainline construction ROW and is listed as cleanup complete.

There are three solid waste sites within 0.25 mile of the Mainline ROW: Alyeska Pump Station #1 and Pump Station #6; and Cantwell ADOT&PF Inter Waste Landfill The Alyeska Pump Station solid waste sites are classified as Class III Landfills and are associated with Alyeska TAPS pump stations and camps. The remaining landfill is a permitted inert landfill that is retired.

8.7.2.2.1.2 PBTL

Review of the ADEC CSD and LUST database indicates that there are no contaminated sites or LUST sites located within 0.25 mile of the PBTL. There are no landfills listed in the ADEC SWIMS database for the PBTL facility.

8.7.2.2.1.3 PTTL

Review of the ADEC CSD and LUST database indicate that there are six contaminated sites and no LUST sites within 0.25 miles of the PTTL. One of the contaminated sites is listed as cleanup complete, two as cleanup complete with institutional controls and three listed as open. There are no landfills listed in the ADEC SWIMS database for the PTTL facility.

8.7.2.2.2 Pipeline Aboveground Facilities

A review of the ADEC CSD and LUST database indicates that there are no listed contaminated sites and LUST sites within 0.25 mile of the Pipeline Aboveground Facilities. There are no landfills within 0.25 mile of the Pipeline Aboveground Facilities.

8.7.2.2.3 Pipeline Associated Infrastructure

The Pipeline Associated Infrastructure includes ATWS, access roads, construction camps, Mainline access roads, material sites, railroad work pads, and railroad spurs. Review of the ADEC CSD and LUST database indicates that 82 sites are located in or within 0.25 mile of the Pipeline Associated Infrastructure. 55 of the sites are classified as contaminated sites and eight of these sites are located within the Project area. Two of the sites within the Project area are listed as cleanup complete, two are listed as open, and the remaining four sites are listed as cleanup complete with institutional controls in place.

There are 16 LUST sites located within 0.25 mile of the Pipeline Associated Infrastructure, and one of these is located in the Project area (Mainline access road). This site is listed as cleanup complete with institutional controls in place. Nine of the LUST sites are listed as cleanup complete, while six are listed as cleanup complete with institutional controls specifying that ADEC must approve any offsite transportation of contaminated soils prior to excavation or removal of soils. One of the LUST sites is listed as open and requires additional site investigation or remedial activities.

There are 11 permitted and retired landfills listed in the ADEC SWIMS database located in or within 0.25 mile of the Project area. Four of the landfills are located within the Project area and are associated with construction camp or material sites. All four landfills are retired and no longer listed as permitted facilities in the ADEC SWIMS database. Seven landfills are not located within the Project area but are located within 0.25 mile and six of those sites are retired and no longer listed as permitted facilities. One landfill site is an active Class III Camp facility associated with Alyeska Pipeline Site 117-1B Camp.

8.7.2.2.4 GTP

Based on a review of the ADEC CSD, LUST, and SWIMS database, there would be no contaminated sites, LUST sites, or permitted or retired landfills within 0.25 mile of the GTP.

8.7.2.2.5 GTP Associated Infrastructure

Review of the ADEC CSD database indicates that three sites are located in the GTP Associated Infrastructure area. Two of the sites are listed as cleanup complete and one is listed as cleanup complete with institutional controls in place.

Review of the ADEC LUST and SWIMS database indicates that there are no LUST sites or permitted or retired landfills located within 0.25 mile of GTP Associated Infrastructure.

8.7.2.3 Non-Jurisdictional Facilities

There are 15 contaminated sites and one solid waste site within 0.25 mile of the PBU MGS Project. Of the 15 contaminated sites, 6 have cleanup complete, 3 have cleanup complete with institutional controls, 5 are listed as open, and 1 is listed as informational. The solid waste site is active. There is one contaminated site within 0.25 mile of the PTU Expansion listed as open. There are 10 contaminated sites and one LUST within 0.25 mile of all of the alternatives of the KSH relocation project. Of the contaminated sites, three have cleanup complete and seven are listed as open. The LUST is listed as cleanup complete.

8.8 DREDGED MATERIAL PLACEMENT AREAS

Existing dredge placement areas were identified by conducting a geospatial analysis of existing sites with the Project footprint. The National Oceanic and Atmospheric Administration (NOAA) Digital Cart Dataset, Dredge Disposal Areas, was used as the source. The Project would not cross any existing dredge placement areas and it is not anticipated that any existing dredge disposal areas would be encountered during construction.

Dredging related to construction of the temporary onsite MOF at the Liquefaction Facility would result in the need to create new dredge placement areas. The alternatives being considered for dredge placement are discussed in Section 10.6.4 of Resource Report No. 10.

8.9 RIGHTS-OF-WAY (ROWS)

The Project would cross numerous roads, railroads, pipelines, utilities, and power lines (a summary is provided in Appendix F). A geospatial analysis was conducted for the Project footprint in relation to existing ROWs by using the following data sources:

- ADOT&PF, Route Centerlines;
- Alaska Energy Authority;
- U.S. Census Bureau's Master Address File/Topologically Integrated Geographic Encoding and Referencing Database, Alaska Roads;
- ADNR – Information Resource Management Section, Alaska Pipelines 1:63,360;
- Alyeska Pipeline Service Company, APSC Fuel Gas Line;
- Unocal/Chevron/Hilcorp, Pipeline/Hilcorp East Forelands Pipelines;
- ConocoPhillips, Pipeline/Cook Inlet Tyonek Onshore Pipeline;
- ADNR – Information Resource Management Section, Alaska Railroads;
- ADNR, RS 2477 Trails;

- BLM, Sec 17b Easements digitized;
- Iditarod National Historic Trail; and,
- GCI, ConocoPhillips, New Horizons Telecom Inc., ADNR – Information Resource Management Section, NOAA, electric power lines in Alaska associated with transmission and distribution.

Much of the underlying geospatial data obtained from the listed sources were in line format versus point or polygon format. This allowed for simple routing collocation analysis. Areas of collocation were based on the centerline of each feature and assumed to be 500 feet or less, centerline to centerline (see Resource Report No. 10 for a discussion of collocation).

The following assumptions were made in regard to existing ROW widths for foreign (non-Project) ROW crossings:

- Major highways including; Dalton Highway, George Parks Highway, Denali Highway, Old Anchorage-Fairbanks Highway, Elliott Highway and the KSH were assumed to have 200-foot ROWs, while all other roads were assumed to have a ROW width of 60 feet (11 AAC 51.015);
- RS 2477 easements were assumed to be 100 feet;
- 17(b) easements (BLM, 1978) were assumed to have easement widths of 25 feet;
- The Alaska Railroad was assumed to have a 200-foot ROW (ARRC, 2012); and
- Pipeline ROW widths were assumed to be 100 feet wide (Joint Pipeline Office, nd).

Although the information provided in the following sections is an analysis in GIS of the Project footprint overlap with estimated road, railroad, pipelines, utilities, powerlines, and/or trails, Project representatives would work with each owner of the existing ROW to reduce effects of the Project footprint on the ROW. The acreage presented in the following sections is an initial estimate that would be refined in discussions with each ROW owner/operator.

8.9.1 Roadways

8.9.1.1 Liquefaction Facility

The Liquefaction Facility site would include the ROW of 39 roads (Appendix F), including minor roads and 17(b) easements (see Section 8.6.5). The construction ROW would include approximately 68 acres of roadway ROW, while the operational footprint would include 19 acres of existing road ROWs, including both state and borough ROWs. The Liquefaction Facility area would also cross the KSH, a principal arterial roadway. The KSH is part of the National Highway System that provides an intermodal connection between the Sterling Highway to the port facility owned and operated by Offshore Systems Kenai, which is located at the north end of Nikishka Beach Road, just north of the KSH at about Highway MP 26.5. The planned Liquefaction Facility location would require that an approximately 1.33-mile segment of the existing KSH be relocated to the east to allow for site safety

and security buffer zones. Project representatives are working with ADOT&PF and Kenai Peninsula Borough on the highway relocation planning including routing discussions, public engagement, permitting, and construction. It is anticipated that the relocation would be completed prior to the start of Project construction. Additional details on the relocation of the KSH are provided in Section 1.3.3.4 of Resource Report No. 1. Because Marine Terminal construction and temporary MOF operation would limit the ability of the public to transit north/south along the beach, the Project representatives would consider mitigating this loss with measures such as installing an alternate public beach access point.

8.9.1.2 Interdependent Project Facilities

8.9.1.2.1 Pipelines

8.9.1.2.1.1 Mainline

The Mainline construction ROW would cross or be within the ROW of 75 roads, including minor roads, RS2477 trails (see Section 8.6.5), 17(b) easements, and major highways (Appendix F). The Mainline is located within the existing north-south linear corridor of several roadways for much of the route, paralleling:

- The Dalton Highway from Deadhorse to Livengood, a distance of approximately 400 miles; and
- The George Parks Highway from Nenana to south of Trapper Creek, a distance of approximately 235 miles.

Additional details concerning collocation of the Mainline with existing linear corridors are provided in Section 1.3.2.1 and Appendix N of Resource Report No. 1, and Section 10.4.2.2 of Resource Report No. 10.

The Mainline would cross several major highways as outlined in Table 8.9.1-1.

TABLE 8.9.1-1

Major Highway Crossings by the Mainline

Borough	MP	Road
NSB	63.28	Dalton Highway
	68.08	
	122.89	
	136.5	
	143.84	
	148.24	
	149.34	
	168.66	
	169.01	

TABLE 8.9.1-1

Major Highway Crossings by the Mainline

Borough	MP	Road
	171.8	
	182.03	
YKCA	193.32	
	196.52	
	206.55	
	210.21	
	228.12	
	231.01	
	252.27	
	259.82	
	310.67	
	341.63	
	347.79	
	370.2	
	398.19	
	400.72	Elliott Highway
	470.74	George Parks Highway
	472.70	
DB	498.71	
	521.75	
	532.37	
	566.44	Denali Highway
	566.76	Old Anchorage-Fairbanks Highway
	572.62	Parks Highway
MSB	588.22	
	612.57	
	625.08	
	630.19	
	631.63	
	640.46	
	648.49	
	657.58	

8.9.1.2.1.2 PBTL

The construction ROW of the PBTL would not cross any roadways.

8.9.1.2.1.3 PTTL

The construction ROW of the PTTL would cross and/or be within the ROW of 15 roads (Appendix F). The PTTL would not be within the ROW of or cross any major highways.

8.9.1.2.2 Pipeline Aboveground Facilities

The Pipeline Aboveground Facilities' footprint would intersect with the ROW of two roads, the Dalton Highway and Unnamed Road 1302 (Appendix F). Neither of these roads would be crossed by the proposed facilities.

8.9.1.2.3 Pipeline Associated Infrastructure

The construction ROW of the Pipeline Associated Infrastructure would cross and/or be within the ROW of 137 existing roads, including major highways (e.g., Denali Highway, Dalton Highway, Elliot Highway, and George Parks Highway) (Appendix F).

8.9.1.2.4 GTP

The GTP footprint would not cross or be within the ROW of any existing roads.

8.9.1.2.5 GTP Associated Infrastructure

The construction ROW of the GTP Associated Infrastructure would be within four overhead powerlines ROWs (Appendix F). The GTP Associated Infrastructure would cross four minor road ROWs (Appendix F, Table 6).

8.9.1.3 Non-Jurisdictional Facilities

PBU MGS project would cross and/or be within 16 road ROWs, five overhead powerlines, one perennial stream/river, and 11 pipeline/utilities ROWs. The PTU Expansion project would cross and/or be within one RS2477 ROW and one pipeline/utility ROW. The KSH relocation project would cross and/or be within two ADOT&PF Design and Construction, two private, six pipeline/utilities, 65 roads, and two 17(b) easement ROWs.

8.9.2 Railroads

Only one railroad is located within the Project area (the Alaska Railroad). The construction ROW of the Mainline and Pipeline Associated Infrastructure ROW would cross and/or be within the Alaska Railroad ROW (Appendix F). The Mainline would also cross the Alaska Railroad four times at approximate MPs 532, 573, 588, and 609.

The Alaska Railroad ROW would not be within or crossed by any other Project facilities.

8.9.3 Pipelines

The Project would cross or be located within the ROW of multiple pipelines and pipeline systems. A listing by Project facility of the pipeline ROWs that would be crossed is provided in Appendix F. Project representatives would work closely with the Alaska Joint Pipeline Office and the owners of the pipelines to develop site-specific crossing plans, as applicable.

The Mainline would generally follow TAPS southward from the Prudhoe Bay area to Livengood. Details concerning collocation of the Mainline with existing linear corridors are provided in Section 1.3.2.1 and Appendix N of Resource Report No. 1 and Section 10.4.2.2 of Resource Report No. 10.

8.9.4 Utilities

The Liquefaction Facility footprint would not include any existing utilities. The Project's Interdependent Facilities would cross or be located within the ROW of multiple buried or overhead utilities, including powerlines and fiber-optic cables (Appendix F). Project representatives would work closely with the owners of existing utilities to develop site-specific crossing plans, as applicable.

8.9.5 ADNR Easements

8.9.5.1 Liquefaction Facility

The Liquefaction Facility footprint and the Project's pipeline facilities would cross or be located within the ROW of multiple ADNR easements (Appendix F).

The easements crossed by the Project would include both state (e.g., ADOT&PF, Alaska Energy Authority) and private entities. Project representatives would work closely with the owners of existing easements to develop site-specific crossing plans, as applicable.

8.9.5.2 Interdependent Project Facilities

8.9.5.2.1 GTP

The GTP footprint and construction ROW of the GTP Associated Infrastructure would not include any existing easements.

8.9.6 Waterways

Waterbodies that are of sufficient size and use may be designated as navigable under the authority Section 10 Rivers and Harbors Act, and would require a permit for work in or affecting the waterway. The Project facilities would cross several of these waters. A discussion of these crossings is provided in Resource Report No. 2 (see Section 2.3.5.6).

8.10 STATE OF ALASKA'S COASTAL ZONE

In 2011, the State of Alaska's Coastal Zone Management Program expired (Federal Register, 2011). Therefore, the Coastal Zone Management Act is not applicable to the Project at this time. There are Coastal Zone Management Plans or regulations in three of the boroughs that the Project would cross—

the NSB, MSB, and KPB— that could have application to coastal aspects of local permitting decisions for the Project. Project representatives would work closely with local governments using the Borough Coastal Zone Management Plans where applicable to plan construction activity and mitigate or avoid potential impacts.

8.11 POTENTIAL CONSTRUCTION IMPACTS AND MITIGATION MEASURES

Land use and recreational considerations for potential impacts related to construction depend on the timing and location of construction activities and may include the following potential effects (socioeconomic effects are discussed in more detail in Resource Report No. 5):

- Temporary loss of land use types;
- Proximity to residential and commercial areas;
- Potential conflicts with current land use plans, zoning, and regulations;
- Crossing of ROWs (e.g., navigable waterways, roads);
- Anticipated recovery time for land use types post-construction;
- Potential disrupted or restricted access to recreational areas (e.g., hunting, fishing, snow machine access);
- Noise impacts on recreation and subsistence activity from construction activity and the use of helicopters in remote areas; and,
- Potential disrupted vehicle, vessel, and air traffic.

The proposed Project has the potential to affect land use within the Project footprint, in addition to nearby land uses. Land use impacts are considered for residences and commercial buildings within 200 feet, planned developments within 0.25 mile, and recreation and special use areas within 1 mile.

Mitigation of potential land use and recreational impacts during Project construction would involve optimizing construction schedules as much as practicable, coordinating with landowners and land managers for alternate access and/or temporarily closing areas for the construction season, and developing restoration plans compatible with land management plans or objectives. A summary of direct and indirect impacts and mitigations is provided in Table 8.11-1.

TABLE 8.11-1

Potential Impacts from Construction

Agricultural Land (2.2 Total Acres)	**Direct**	Temporary loss and productivity of agricultural land. Soil compaction and erosion; damaging surface or subsurface irrigation or drainage systems from vehicles traversing, trenching and backfilling.
	Indirect	Soil erosion; damaging surface or subsurface irrigation; potential for damage to underground drainage tile or drainage systems upon which surround land uses rely.
	Severity and Duration	Temporary and minor. Less than 2.5 acres of direct impact on farms that makeup an estimated 131 acres of agricultural land. There are approximately 834,000 acres of total farmland in Alaska. The impacts would be during construction only and can be reduced or reversed through mitigation measures. Potential long-term impacts from gravel placement for access roads and ATWS, however these would be in areas not cultivated and accounts for less than 1 percent of agricultural land in these locations.
	Mitigation	Contact affected landowners and tenants to coordinate restoration. Replace topsoil in cases of topsoil removal or disturbance. Repair damaged tile lines if water is not flowing.
Commercial/ Industrial Land (96 Total Acres)	**Direct**	Direct impacts from construction would include increased use of commercial and industrial sites, such as material sites, temporary closures of commercial fishing, and increased traffic. Potential impacts to resource sale licenses including loss of access to materials.
	Indirect	Temporary increase of dust and increase in human presence from the construction workforce, increased hauling of materials and workforce traffic, competition for use of some local public services and restricted access in the vicinity of the Project area. Increased use of public roads may result in increased need for maintenance.
	Severity and Duration	Temporary and minor. Neighboring businesses at the Liquefaction Facility and on the North Slope are industrial in nature. Indirect impacts would only occur during construction and reduced through mitigation measures.
	Mitigation	Implement a dust control plan that includes measures such as water suppression and limiting on-site vehicle speed. The use of camps would reduce the effects of workforce traffic, and stresses on local public services.
Forest (12,643 Total Acres)	**Direct**	Loss of forest from construction activity. Forest clearing before construction as part of site preparation.
	Indirect	Could cause fragmentation or a disturbance in the surrounding area to wildlife and protected areas that rely on trees and vegetation as part of a greater area for habitat; impacts on recreational and subsistence hunting.
	Severity and Duration	Permanent, long-term, and minor. The conversion of forest land for ROW and aboveground facilities would be permanent. For construction of temporary, associated infrastructure, and in areas where trees would regrow, long-term impacts associated with tree removal would be visible. The amount of forest land required for construction is minor relative to the amount of forest land present in Alaska.
	Mitigation	Where applicable, implement the *Project Restoration Plan* as detailed in the *Upland Erosion Control, Revegetation, and Maintenance Plan*. This includes restoring original stable grade of forested areas so that the area may revert to forest through natural successional processes after construction.
Open Land (14,288 Total Acres)	**Direct**	Grading and leveling of open land as part of site preparation.
	Indirect	Removal of the vegetative mat may result in erosion and drainage impacts to surrounding areas.
	Severity and Duration	Temporary and minor. Impacts to open land would be limited to the construction period and open land would be restored to previous use except for in areas of permanent conversion to commercial/industrial. In the case of the Liquefaction Facility and GTP, the facilities would be adjacent to and consistent with other industrial land uses.

TABLE 8.11-1

Potential Impacts from Construction

	Mitigation	Where applicable, implement the *Project Restoration Plan* as detailed in the *Upland Erosion Control, Revegetation, and Maintenance Plan* (located in Resource Report No. 7, Appendix D).
Open Water (42,870 Total Acres)	**Direct**	Nearshore, in-water work would include excavation of the nearshore areas to facilitate pre-trenching, installation of the pipeline, burying, and cleanup. Across Cook Inlet, the pipe would be laid on the bottom using a lay barge. Construction of the PLF, MOF, and dredging would be a direct impact to open water including impacts to aquatic resources, increased vessel traffic in the navigation channel during construction, and restricted access for personal use fishing and commercial fishing. Increased sedimentation and turbidity, decreased dissolved oxygen concentrations, and increased potential accidental spills. Withdrawal and discharge of hydrostatic test water from fresh waterbodies has the potential to temporarily affect the use of surface water sources as well as change the temperature and contribute to stream bank and substrate scour. Hydrostatic test water for offshore construction would use seawater for testing, with negligible impact.
	Indirect	Potential for impacts similar to direct impacts in surrounding water depending on flow volume and the waterbody substrate.
	Severity and Duration	Temporary and minor. The majority of the bottom within the total acreage identified would not be disturbed as this takes into account the width of the anchor spread for the pipeline lay barge (up to 1 mile on either side of the lay barge). Areas outside of anchor locations and where the pipeline is laid would not be disturbed. Cook Inlet is highly turbid and sedimentation is common, would only occur during construction, and would be reduced through mitigation measures. The withdrawal of surface water is not anticipated to constitute a large percentage of the total source water. In the case of the Liquefaction Facility, the facilities would be adjacent to and consistent with other industrial open water uses.
	Mitigation	Monitoring turbidity and managing activity type and duration to reduce or avoid increases above determined limits. Water withdrawal from and discharges to open water would be managed and approved by applicable permitting agencies. Using energy dissipating devices and sediment barriers to prevent erosion, streambed scour, and sedimentation.
Residential Land (1,427 Total Acres)	**Direct**	No direct impacts to residential land as a result of construction activity; residences would have been purchased prior to construction.
	Indirect	Temporary increase of dust and noise and increase in human presence from the construction workforce, increased hauling of materials and workforce traffic, competition for use of some local public services and restricted access in the vicinity of the construction area.
	Severity and Duration	Temporary and minor. Residential land would have been purchased for the Project prior to construction. Indirect impacts would only occur during construction and would be reduced through mitigation measures.
	Mitigation	Coordinate with property owners before and throughout the construction process to reduce indirect impacts on land owners. Notify land owners of work schedule and planned activities. Implement a dust control plan that includes measures such as water suppression, covering truckloads during transit, and limiting onsite vehicle speed. The use of camps would reduce the effects of workforce traffic, and stresses on local public services. Reduce noise impacts by working generally accepted business hours near areas that are populated. Direct lighting toward construction areas and not toward neighboring residential areas to reduce impacts to residences within 200 feet.
Recreation and Special Use Land	**Direct**	Construction activities would temporarily affect recreational traffic and use patterns in recreational areas. Disruption, dust, noise, and visual impacts during construction may be a nuisance to users and could cause a disturbance to wildlife and protected areas.
	Indirect	Potential for indirect impacts similar to direct impact in recreational areas within 1 mile of the construction area, primarily from changes to public access during construction; habitat loss and fragmentation for wildlife that rely on trees and vegetation; impacts on recreational and subsistence hunting.
	Severity and Duration	Temporary and minor. The impact would be to only one area at any given time (except for simultaneous construction at the GTP and LNG) and would only occur during construction.

TABLE 8.11-1

Potential Impacts from Construction

	Mitigation	Maintain access to recreational and special use areas during construction; and where applicable, implement the *Project Restoration Plan* as detailed in the *Upland Erosion Control, Revegetation, and Maintenance Plan* (located in Resource Report No. 7, Appendix D).
Visual Resources	**Direct**	Construction activities would have temporary effects to the visual quality for viewers in the vicinity of the construction site. Temporary effects would be created by work crews and camps, construction equipment and materials, machinery, lighting, and associated infrastructure. These effects include grading land and clearing vegetation.
	Indirect	Vegetation regrowth period following construction would be an indirect, short-term impact. New vegetation may be lighter green, short, and patchy in texture compared to other vegetation in the viewshed.
	Severity and Duration	Temporary and minor. Adding linear vegetation clearing and buildings creates less contrast in locations where there are existing industrial facilities in the vicinity (e.g., at the Liquefaction Facility and GTP site). The visual impacts from the presence of construction equipment and work crews would only occur during construction.
	Mitigation	Apply Visual Resource Management (VRM) methodology to identify and evaluate scenic resources; implement objectives to preserve the existing character of the landscape. Where applicable, implement the *Project Restoration Plan* as detailed in the *Upland Erosion Control, Revegetation, and Maintenance Plan* (located in Resource Report No. 7, Appendix D).

8.11.1 Liquefaction Facility

8.11.1.1 Land Use

Table 8.2.2-1 shows the land use types and land requirements within the construction footprint. Construction of the Marine Terminal, including the temporary onsite MOF, will result in construction within the nearshore portion of Cook Inlet. Certain land use impacts would depend on construction schedule. The schedule for construction of the Liquefaction Facility is provided in Section 1.5.1 of Resource Report No. 1, which includes concurrent construction of the Marine Terminal and LNG Plant.

8.11.1.1.1 Agricultural

No agricultural lands would be located within the Liquefaction Facility construction footprint. No impacts to agricultural land would be anticipated as a result of construction of the Liquefaction Facility.

8.11.1.1.2 Commercial/Industrial Land

The Liquefaction Facility construction footprint would include commercial/industrial land. All commercial and industrial land holdings would have been purchased for the Project prior to start of construction. The site is in an area of commercial/industrial development; as such, the construction of the Liquefaction Facility and Marine Terminal would not change current land use for existing commercial lands. Therefore, no impacts to commercial/industrial land would be anticipated as a result of construction of the Liquefaction Facility.

No direct impacts on businesses within the footprint of the Liquefaction Facility would be anticipated as a result of construction. See Resource Report Nos. 5 and 9 for additional information on potential indirect effects related to socioeconomics, air quality, and noise.

8.11.1.1.2.1 ADNR Shore Fishery Leases

The Project area would overlap with commercial fishing areas. Of the 12 shore fishery leases within 200 feet of the Liquefaction Facility, 7 would be located within the footprint, 1 would be within 50 feet, and four would be within 200 feet of the Liquefaction Facility. Commercial fishing in the area includes setnet fishing and drift-net fishing.

To mitigate potential impacts, Project representatives would proactively engage commercial fishing representatives and other marine resource users with early and substantive communication regarding construction activities that could impact commercial fishing operations. It is anticipated there would be temporary effects on setnet leaseholders due to Marine Terminal construction including: restricted fishing for certain leases during certain fishing seasons if construction, dredging, or vessel traffic is occurring in the immediate vicinity; increased vessel traffic and waterway use during certain seasons; and, inadvertent damage to submerged fishing gear. Project representatives would make every effort to address issues concerning commercial fishing in a quick and mutually agreeable manner without sacrificing construction execution certainty and safety of the fisherman and construction workers.

Additional information on potential effects to commercial fishing are provided in Section 5.4.2.7.1.2 Resource Reports No. 5.

8.11.1.1.3 Forested Land

The majority of the Liquefaction Facility site is forested land. Forested land would be cleared before construction as part of site preparation. The Project representatives would seek to reduce clearing forested land for construction. Impacts to forested land would be permanent or long-term and minor relative to the amount of forest land present in Southcentral Alaska.

8.11.1.1.4 Open Land

Open land would be graded and leveled during construction, as part of site preparation. Open land would be converted to industrial land for the life of the Liquefaction Facility. Construction impacts to open land would be permanent and minor; the facilities would be adjacent to and consistent with other industrial land uses.

8.11.1.1.5 Open Water

Construction of the Marine Terminal, including dredging for installation of the temporary onsite MOF, would result in impacts to open water within Cook Inlet. Potential impacts include impacts to aquatic resources, increased vessel traffic in the navigation channel during construction, and restricted access for personal use fishing and commercial fishing. A discussion of potential effects to commercial fishing areas is provided in Section 8.11.1.2. Potential impacts to water resources are further discussed in Resource Report No. 2.

Existing sedimentation patterns and rates in the construction area would be evaluated and construction activities would be planned in accordance with tApplicant's *Plan* and *Procedures* to reduce and avoid impacts to open water such as increased sedimentation and turbidity. The Project *Spill Prevention, Control, and Countermeasure Plan* and *Stormwater Pollution Prevention Plan* would be followed to prevent the likelihood of and respond appropriately to silt laden runoff and accidental spills of petroleum products.

Construction impacts to open water use would be predominately temporary and minor. Following construction activities, most open water areas outside of the Marine Terminal area would revert to their current use. Water from Cook Inlet is planned to be used to hydrotest the LNG tanks to help conserve the onshore fresh water resource.

8.11.1.1.6 Residential

All residential land would have been purchased for the Project prior to start of construction. Buildings are in the process of being removed from the properties as the land is acquired. The land would no longer be classified as residential. Therefore, no impacts on private landowners within the footprint of the Liquefaction Facility would be anticipated as a result of construction.

Mitigation measures to reduce noise, increased lighting, and dust to residences within 200 feet as a result of construction of the Liquefaction Facility include:

- Buffer zones on the south and east of trees between the Project and neighboring property;

- Use dust suppression techniques (see Resource Report No. 9, *Fugitive Dust Control Plan*);
- Adhere to noise abatement procedures (see Resource Report No. 9, *Construction Noise Abatement Plan*); and,
- Shield and direct lighting toward the construction areas and not toward neighboring residential areas to reduce impacts to residences.

Additional discussion on mitigation for increased lighting is included in the visual resources operations impacts section. See Resource Report Nos. 5 and 9 for additional information on potential indirect effects related to socioeconomics, air quality, and noise.

8.11.1.1.7 Planned Residential and Commercial Areas

The KPB Planning Department is not aware of any planned development projects, residential or commercial, within 0.25 mile of the Liquefaction Facility. No effects to planned residential or commercial areas would be anticipated as a result of construction of the Liquefaction Facility.

Project representatives will continue to consult and coordinate with the applicable jurisdictions and affected landowners to identify planned developments in proximity to the Liquefaction Facility.

8.11.1.2 Zoning

The Liquefaction Facility would be located in the KPB, but not within other established local zoning districts or any incorporated cities. Zoning within the portion of the KPB that would be intersected by the Liquefaction Facility is unrestricted. It is not anticipated that construction of the Liquefaction Facility would impact existing zoning in the area because most of the coastal neighbors are existing industrial facilities.

8.11.1.3 Landownership and Special Management Areas

A summary of landownership for the Liquefaction Facility site is provided in Table 8.5-1. Appendix K of Resource Report No. 1 contains a landowner list and Appendix B contains Project maps depicting landownership. Section 8.1 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project.

8.11.1.3.1 Federally Owned and Managed Land

The Liquefaction Facility would be located entirely on nonfederal lands. Therefore, no impacts to federal land ownership or management would occur from construction of the Liquefaction Facility.

8.11.1.3.2 State-Owned and -Managed Land

The portion of the Liquefaction Facility within Cook Inlet, below the ordinary high water mark, that would be on state-owned lands would be subject to and managed in accordance with the Kenai Area Plan (ADNR, 2001b) thereby minimizing or avoiding direct and indirect impacts. Construction of the proposed Marine Terminal would be consistent with the plan's goals for waterfront development: "Aid

in the development of infrastructure (ports, roads, log transfer facilities, railroads, etc.) and continue to provide support to waterfront industries."

8.11.1.3.3 Local and Other Management Areas

Development of the Liquefaction Facility and associated Marine Terminal would support the KPB Comprehensive Plan's Goal 5.7, Objective 1, which is to recognize and encourage port and harbor expansion plans by others to promote economic development. In addition, Goal 6.5 calls for maintaining the freedom of property owners in rural areas of the KPB to make decisions and control use of their private land consistent with other goals and objectives of the comprehensive plan (KPB, 2005). The proposed Project would be consistent with the plan's goals and objectives. Therefore, no direct or indirect effects to the KPB's land management from construction of the Liquefaction Facility are anticipated.

8.11.1.4 Recreation and Special Use Areas

There would be no National WSRs, National Historic Trails, or scenic byways located within the Liquefaction Facility construction footprint. Therefore, no impacts to these recreational sites or special use areas would be anticipated as a result of construction of the Liquefaction Facility.

There are two recreation and special use areas that would be located within the Liquefaction Facility construction footprint, both of which are 17(b) easements (see Appendix D). A discussion of these areas is provided in the following section.

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

8.11.1.4.1 Revised Statute 2477 Rights-of-Way and 17(b) Easements

In the area where the construction camp would be located, currently Salamatof Native Village Corporation land, two 17(b) easements are found on the property. One is for a road access and one is for oil and gas pipeline access. The road access easement is along the eastern edge of the property and would not be impacted. The oil and gas pipeline easement would be surveyed to locate the construction camp on the site without impacting that easement.

Project representatives would work closely with the BLM during construction planning for the Liquefaction Facility to coordinate and reduce impacts to those access easements.

8.11.1.5 Hazardous Waste Sites, Contamination, and Landfills

A summary of known or potential hazardous waste sites, contaminated sites, and landfills within 0.25 mile of the Liquefaction Facility is provided in Appendix E. No known landfills occur on the site. The *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if previously unknown contaminated or buried waste was found during construction activities on the site.

For known contaminated sites that are listed as "cleanup complete with institutional controls," ADEC would need to be informed prior to excavations that may impact residual contamination at the sites. A plan to avoid impacting the contaminated area or to complete cleanup would be prepared for ADEC review and approval prior to construction.

8.11.1.6 Dredged Material Placement Areas

Construction of the Liquefaction Facility would not cross or be in proximity of any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of construction of the Liquefaction Facility.

Placement of dredge material from construction of the temporary onsite MOF would occur within Cook Inlet. Potential impacts associated with the establishment of dredge placement areas include:

- The excavated sediment would be rich in fine soil particles. During breakup and the open-water season, fine soil particles may be transported away from the dredge placement areas by waves and currents, potentially increasing local turbidity levels; and,

- The dredge placement areas would be located offshore in Beluga Whale CHA 2. Noise and other disturbances from the construction activity may slightly redirect beluga whale migration routes.

The following inherent aspects would potentially reduce impacts resulting from the placement of dredged material:

- The placement of the dredged material would be expected to be temporary with fine soil particles being dispersed by wave and current energy over long periods of time;

- Potential increases in turbidity may be masked by naturally increased background turbidity from the dispersion of similar particles in the adjacent seafloor; and,

- Implementation of the Construction Environmental Plans and Operations Environmental Management Plans for managing the dredge placement areas (these plans would be developed prior to construction).

Further discussion regarding dredge material placement area(s) and potential impacts are included in Resource Report No. 10. Options for dredge material disposal that were considered include beneficial use of the material, in-water and nearshore placement, and upland placement. Considerations for the selection of dredge material disposal options include the availability of the site, dredged material physical and chemical compatibility, potential environmental impact, and practicability (cost, technology, and logistics). Dredge material disposal options were considered individually and in combination.

8.11.1.7 ROWs

A summary of the ROWs that would be within the construction footprint of the Liquefaction Facility is provided in Appendix F. Construction of the Liquefaction Facility would not cross any railroads, utilities, or waterway ROWs. The direct impacts to utility ROWs would be associated with the relocation of utilities associated with the relocation of the KSH into the dedicated utility corridor that would be established on the eastern boundary of the property. Utilities along the KSH would be relocated during facility construction. No other direct impacts to existing railroad, utility, or waterway ROWs would be anticipated as a result of construction of the Liquefaction Facility. See Resource

Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

Outside of the facility site, there would be truck deliveries of materials and supplies to the site. Impacts of the use of existing roads and highways by the Project is addressed in Resource Report No. 5.

8.11.1.7.1 Roadways

During construction, roadways on the Liquefaction Facility site would be removed as part of site preparation. No impacts to other existing public road ROWs would be anticipated as a result of construction of the Liquefaction Facility, with the exception of the relocation of the KSH. The planned Liquefaction Facility location would require that an approximately 1.33-mile segment of the existing KSH be relocated to the east to avoid potential conflicts with the Liquefaction Facility. It is anticipated that the relocation would be completed prior to the start of Project construction. Project representatives are working with the ADOT&PF and KPB on the highway relocation planning including routing discussions, public engagement, permitting, and construction planning. More information on the relocation of the KSH is found in Appendix M of Resource Report No. 1.

8.11.2 Interdependent Project Facilities

8.11.2.1 Pipelines

8.11.2.1.1 Mainline

8.11.2.1.1.1 Land Use

The Mainline is expected to be buried with the exception of fault crossings and at four aerial river crossings. Table 8.2.2-1 includes the land use types and land requirements within the construction ROW. Construction would primarily affect two types of land use: open (49 percent) and forested lands (48 percent).

Certain impacts would be reduced as a result of the construction schedule. Winter construction reduces impacts to ground and vegetation disturbance, avoids conflicting seasonal recreational uses, and reduces traffic impacts more common in the summer. Not all impacts are avoided, but those portions of the Project scheduled for winter construction would result in less or no impact. The schedule for construction of the Mainline is provided in Section 1.5.1 of Resource Report No. 1.

Agricultural

Less than 0.5 acre of the Mainline construction ROW would consist of agricultural land. The use of farming equipment and the cultivation of row crops and pastureland would not likely be possible during the construction period. Construction activities such as clearing, grading, trenching, stripping, and backfilling could indirectly impact agricultural lands by causing soil erosion by damaging surface or subsurface irrigation or drainage systems, and by degrading fertile soils through mixing and compaction. Any impacts to these agricultural lands would be short-term and limited to the duration of Mainline construction.

Mitigation measures to reduce impacts to agricultural land would, if applicable, include topsoil segregation, decompaction, and repair/replacement of irrigation and drainage structures.

Commercial/Industrial Land

There are three buildings within the Mainline ROW that are commercial or industrial. There are 20 buildings within 200 feet of the ROW, of which 14 are within 50 feet. These buildings are located in the industrial area north of the Liquefaction Facility.

General mitigation measures related to noise and dust are described in the residential discussion in this section. Specific mitigation measures to reduce impacts from increased human presence and increased hauling of materials and workforce traffic would include the maintenance of access and traffic flow during construction to the extent possible, particularly for emergency vehicles. Site-specific plans would be developed, if applicable, with the business owners for facilities within 50 feet of the construction workspace and would likely be avoided once the construction ROW is surveyed in those areas, or reduced and/or reconfigured so that the pipeline could be built with minimal impact to these facilities. This would reduce the competition for use of some local public services, and restricted access in the vicinity of the Mainline ROW.

Resource Sales

There are seven material sale sites within the Mainline ROW. Additional material sites would potentially be developed to supply Project needs and make them available for other projects as appropriate. This would reduce competition for resources or loss of access to materials on leaseholders. Resource Report No. 6 outlines the potential material sites that are being investigated to provide material needs during construction.

Department of Natural Resources Shore Fishery Leases

The Project footprint overlaps with commercial and recreational fishing areas. There are four shore fishery leases within the construction ROW of the Mainline within Cook Inlet. Commercial fishing in the area includes setnet fishing and drift-net fishing. The Project team has established relationships with leaseholders during engineering studies and discussed ways to reduce potential impacts. Potential mitigation would entail continued negotiations with the leaseholders and ADNR to develop solutions to fishing restrictions and how, if possible, to accommodate fishing activities over the construction time period. This would reduce temporary potential effects on leaseholders from nearshore trenching and anchoring, scheduling conflicts, safety setbacks, and exclusion areas during construction.

Forested Land

Forested land within the entire Mainline construction ROW would be cleared during site preparation. The Mainline construction footprint would remain unvegetated until construction is completed. It is anticipated that construction impacts on forested land inside the permanent ROW would be permanent and minor relative to the amount of forested land in the state. Impacts outside of the permanent ROW would be long-term and minor. After Mainline construction, forested areas outside of the permanent ROW would revert to preconstruction conditions; however, it is anticipated that the area will take many years to return to preconstruction conditions.

To reduce the potential for fragmentation of forest stands and reduce habitat fragmentation, the Mainline has been collocated with existing ROWs and utility corridors for approximately 73 percent of the route as discussed in Section 1.3.2.1 and 10.4.2.2 of Resource Report Nos. 1 and 10, respectively. As detailed in the *Upland Erosion Control, Revegetation, and Maintenance Plan* (Applicant's *Plan*, see Appendix D of Resource Report No. 7), after final construction cleanup, these areas would be restored as outlined in the Project *Restoration Plan* (see Resource Report No. 3).

The economic value of removal of timberland within the Mainline construction ROW is provided in Section 5.4.2.9 of Resource Report No. 5.

Open Land

Open land within the entire construction ROW would be cleared before construction, during site preparation. The Mainline construction ROW would remain unvegetated until construction is completed. As detailed in the Applicant's *Plan* (Appendix D of Resource Report No. 7), after final construction cleanup, the Project *Restoration Plan* would be followed to initiate ROW restoration. It is anticipated that impacts from Mainline construction would be temporary and minor.

Open Water

A list of proposed waterbody crossings, construction method, construction timing, and anticipated impacts is provided in Resource Report No. 2. Following pipeline construction, use of open water would revert to preconstruction conditions. It is anticipated that impacts from Mainline construction would be temporary and minor.

Construction of the Mainline across Cook Inlet would impact open water. Nearshore, in-water work would include excavation of the nearshore areas to facilitate pre-trenching, installation of the pipeline, burying, and cleanup. Across Cook Inlet, the pipe would be laid on the bottom using a lay barge. Additional details concerning pipeline construction across Cook Inlet are provided in Section 1.5.2.4 of Resource Report No. 1. The majority of the bottom within this area would not be disturbed as this takes into account the width of the anchor spread for the pipeline lay barge (up to 1 mile on either side of the lay barge). Areas outside of anchor locations and where the pipeline is laid would not be disturbed. It is anticipated that open water impacts in Cook Inlet from Mainline construction would be temporary and minor.

Residential

Approximately 2 percent of the Mainline's construction ROW would consist of lands characterized as residential. There are two residential buildings (houses or associated buildings) within 50 feet and nine additional residential buildings within 200 feet of the Mainline construction ROW (Table 8.3.1-1). The impacts to residences would be expected to be temporary and minor as mitigation measures are applied. See Resource Report Nos. 5 and 9 for additional information on potential indirect effects related to socioeconomics, air quality, and noise.

Mitigation measures to reduce the impacts to local residences due to noise, dust, and visual effects include:

- Before construction begins, surveys would be conducted to confirm the location of buildings relative to the pipeline and to ascertain whether the buildings are occupied residences and if so if the residences are seasonal or permanent, or if they are businesses;

- For areas where residences are within 50 feet of the proposed construction workspace, site-specific drawings depicting how construction in the area near the residence would be conducted would be produced to assist with identifying additional potential impacts and mitigation;

- For areas where residences are greater than 50 feet from any workspace but less than 200 feet, Project representatives would coordinate with each owner to develop measures to reduce impacts to their residence/business; and

- Various measures to control dust, noise, remove trash, secure the workspace, and reduce the visual impacts would be developed specific to the layout of the residence and the construction workspace.

Planned Residential and Commercial Areas

One planned residential development near MP 796 was identified within 0.25 mile of the Mainline construction ROW.

Most planned commercial projects within the Mainline construction ROW are associated with ADOT&PF activities, including use of material sites and road repairs and rehabilitation. Some material sites are already in operation but permits extend out a decade or more in some instances. There is also a road crossing associated with a proposed mine and several proposed oil and gas-related activities including pipelines, landing facilities, and geotechnical studies (drilling boreholes).

There is a planned development at Clear Air Force Base (AFB), located near MP 493.5. Access to Clear AFB is near MP 499. However, there is no apparent overlap of construction schedules between the planned development at Clear AFB and the Project. During construction of the Project, no aircraft activity is either planned or necessary to support Project construction and there is no anticipated impact to this development. The Applicant would work directly with Clear AFB personnel during construction of the Project on efficient traffic and roadway management. The Applicant would also coordinate with Clear AFB regarding any other concerns that the Air Force might have in order to mitigate impacts to Clear AFB during both the construction and operations phases of the Project.

Impacts to other planned residential and commercial developments include the potential for conflicts in the use of local resources including roadways for the hauling of materials and workforce traffic, increased human presence from the construction workforce, competition for use of some local public services, and restricted access to areas during construction

Mitigation measures would be implemented to reduce short-term effects to planned development activities. The following mitigation measures would be proposed for planned developments in proximity to the Mainline construction ROW and would focus primarily on proactive communication with the planned development project proponents, including:

- Maintain contact with project proponents regarding the Project schedule and developments;

- Notify impacted landowners prior to the initiation of construction across their properties and if there would be any interruptions to access during construction; and

- Invite representatives of planned development activities to be on site during construction when necessary.

8.11.2.1.1.2 Zoning

The Mainline would be located in the NSB, YKCA, FNSB, DB, MSB, and KPB. Local management for these areas is discussed in Section 8.11.2.1.7 Local and Other Management Areas. Construction of the Mainline is not anticipated to impact existing zoning in any borough because the zoning designations applicable to the land intersected by the Mainline do not prohibit development of utility (including pipeline) crossings.

8.11.2.1.1.3 Land Ownership and Special Management Areas

A summary of land ownership crossed by the Mainline is provided in Table 8.5-1 and a breakdown by MP is provided in Table 8.5-3. Appendix B also contains Project maps depicting land ownership. The proposed Mainline route (Route Revision B) is a preliminary route and the Project representatives are working to avoid impacts to Native allotments. Surveys in 2016 and 2017 will identify the proper property boundaries so that final routing and workspace layout can be developed to avoid the allotments.

Section 8.1 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project. Project representatives are currently consulting with the land management agencies on the land management plans, management objectives, project conformance, and mitigation measures necessary for the Project.

The Project representatives would apply for authorization of a temporary ROW for the pipeline (and aboveground facilities) on state, federal, and borough lands, as well as on lands with rights held by Alaska Native Corporations. In addition, easement agreements with private landowners would be obtained. The temporary ROW would provide a temporary, less-than-fee limited interest in the land that would enable the pipeline and aboveground facilities to be constructed. Authorization of the temporary pipeline ROW would have no direct effect on fee land ownership because the surface and subsurface land ownership would not change.

Construction of the Mainline may indirectly affect land status by altering future state land disposals in that some land parcels within the construction ROW may become less desirable due to the presence of the pipeline. This effect would be local (affecting only the future land disposals within the ROW) and would be low in intensity (not prohibiting future land disposals but decreasing the likelihood of a transaction). Indirect effects on land status would therefore be considered short-term and minor.

Federally Owned and Managed Land

The acres of federally managed land that would be impacted by construction of the Mainline are shown in Table 8.5-1. Construction of the Mainline would be consistent with the applicable BLM RMPs and the Dalton Highway Recreation Area Management Plan (see Table 8.5.1-1). As described in Section

8.5.1, the BLM is in the process of updating the Central Yukon RMP, which will replace both the Utility Corridor RMP and the previous Central Yukon RMP in their entirety, and a small part of the Southwest Management Framework Plan. Because one of the planning criteria for the new Central Yukon RMP is to avoid proposing actions or activities with potential impacts to existing and future energy transportation systems within lands withdrawn by Public Land Order 5150 (PLO 5150) (those lands within the Utility Corridor), future pipeline development in the Mainline is already being considered by BLM during development of the RMP. In the order, the original intent of PLO 5150 was a federal withdrawal of land to provide a transportation and utility corridor for TAPS. The BLM is committed to future negotiations with the State of Alaska regarding the pipeline/utility corridor. The BLM will consider and recommend further modification of PLO 5150 to allow for the conveyance of additional lands within the pipeline/utility corridor as long as the BLM is able to adequately meet other management responsibilities, including management of the pipeline/utility corridor and subsistence resources and activities (BLM, 2008). Therefore, construction of the Mainline would not impact BLM's land use planning.

Because the construction footprint of the Mainline would be located outside of USFWS-managed lands, no impacts on USFWS land use planning are anticipated. While the Mainline construction footprint would also be located outside of the NPS-managed DNPP, impacts to Denali State Park—a Section 6(f) parkland—would occur. Impacts to Section 6(f) parkland are discussed under Recreation and Special Use Areas.

State-Owned and -Managed Land

The acres of state-managed land (including submerged lands within Cook Inlet) that would be impacted by construction of the Mainline are shown in Table 8.5-1. Construction of the Mainline would generally be consistent with the applicable existing ADNR and ADF&G plans and state classification orders (see Table 8.5.2-2), which either have explicit provisions for utility crossings or do not explicitly prohibit utility crossings. To be fully compliant with ADNR and ADF&G plans, the Mainline would need to be constructed in a way that follows the stipulations shown in Table 8.5.2-2 regarding timber management, protection and enhancement of habitat resources, conservation of fish and wildlife populations, trail crossings/maintenance of public access, and buffers/setbacks. Potential impacts from the construction of the Mainline would be verified as consistent with plans' management guidelines, pending the implementation of the mitigation measures described in the Project's application as well as those being developed in consultation with land management agencies. Mitigation measures (as described herein) would be implemented and therefore no direct or indirect effects to ADNR's or ADF&G's land use planning under existing land use plans would be anticipated.

As described in Section 8.5.2, ADNR is in the process of developing the North Slope Management Plan (anticipated mid-year 2016). The Mainline would be located along an existing energy transportation corridor within the NSB (that would likely be considered as part of the management plan) and therefore no impacts on ADNR's planning in the NSB would be anticipated.

Construction of the Mainline would be consistent with the purposes for which ADOT&PF manages the Dalton Highway, which include encouraging the development of the state's resources (AS 19.40.010). Therefore, no impacts on ADOT&PF's planning along the Dalton Highway would be anticipated.

Local and Other Management Areas

While the NSB Comprehensive Plan contains policies related to the development of oil and gas resources intended to reduce impacts to fish and wildlife populations and habitat, subsistence, and residents of the North Slope, there are no prohibitions against the development of pipelines within the NSB; therefore, no direct or indirect effects to the NSB's land management from construction of the Mainline would be anticipated.

The DB Comprehensive Plan does not contain polices related to the development of pipelines within the Borough. According to the DB Comprehensive Plan, land in the DB is zoned unrestricted unless otherwise provided for by ordinance (DB, 2009). There are no prohibitions on land zoned unrestricted (Ordinance 96-04 § 2). Therefore, no impacts on the DB's land management from construction of the Mainline would be anticipated.

The FNSB zoning map and zoning code are extensions of the comprehensive plan land use categories, and are the administrative tools for implementing land use policies and regulations. Pursuant to the zoning code, the installation and maintenance of utility lines are permitted uses in all zoning districts. Therefore, no direct or indirect effects to the FNSB's land management from construction of the Mainline would be anticipated.

The Mainline would intersect the MSB-designated Denali State Park Special Land Use District. While minimum setbacks from lot lines, water courses and waterbodies, and ROWs are required for buildings constructed within the district, utility lines are specifically excluded from the definition of buildings in Sections 17.55 and 17.17 of the MSB Code. There are no prohibitions against the development of pipelines within the MSB, and development of the Project would be consistent with the MSB Comprehensive Plan's (MSB, 2005) policy of orderly development of multimodal transportation, including pipelines (Policy T1-4). As a result, the Project would be consistent with the plan, and no direct or indirect effects to the MSB's land management from construction of the Mainline would be anticipated.

Zoning within the portion of the KPB intersected by the Mainline is unrestricted. The KPB Comprehensive Plan does not contain goals, objectives, or implementation actions specific to development of a pipeline ROW on lands within the KPB. However, Goal 6.5 calls for maintaining the freedom of property owners in rural areas of the KPB to make decisions and control use of their private land consistent with other goals and objectives of the comprehensive plan (KPB, 2005). The proposed Project would be consistent with the plan's goals and objectives. Therefore, no direct or indirect effects to the KPB's land management from construction of the Mainline would be anticipated.

8.11.2.1.1.4 Recreation and Special Use Areas

The Mainline would cross or be within 1 mile of one NWR, three ACECs, one scenic byway, two SGRs, one state forest, one national historic trail, two SRR areas, one special use area, 20 RS 2477 easements, and eight 17(b) easements. Table 8.6.6-2 provides the applicable stipulations of recreational sites and special use areas for the Mainline. All applicable permits would be obtained and guidelines followed (as outlined by these agencies) during construction. In addition, site-specific Public Land Use and Recreational Use Coordination Plans would be developed after the FEIS but prior to start of construction.

National WSR System

The nearest WSR to the Project is the North Fork of the Koyukuk River, which is located in the Gates of the Arctic NPP, just over 1 mile west of the Mainline. It is not anticipated that Project construction would impact any rivers that are part of the National WSR System.

National Trails System

The Mainline route would intersect the INHT at two separate locations, approximately at MP 720.8 and MP 724.3, affecting approximately 0.22 acre during construction. Construction would happen during winter. The Mainline ROW would intersect the trail approximately 35 miles northwest of Anchorage on lands managed by the ADNR. The management framework, as outlined in the INHT Comprehensive Management Plan (BLM 1986b), would be considered during construction.

LWCF-Funded Areas

- The NPS would consider conversion of public outdoor recreation areas to another use if the following conditions are met: Practicable alternatives to the conversion have been evaluated and rejected on a sound basis. Section 6(f)(3) requires that LWCF-funded public areas be maintained for public outdoor recreation unless suitable substitute land with equivalent location, suitability for recreation, and greater than or equal to fair market value of the original land, is approved by NPS;

- In general, impacts would be temporary and limited to the period of active construction, which could last several weeks to months in any one area. Construction-related impacts on these areas should be managed by constructing these facilities adjacent to existing ROWs to the extent practicable, ensuring effective post-construction restoration of the ROW to preconstruction conditions, and coordinating construction activities with land management agencies so that they occur outside of the primary recreation and special use periods;

- The property proposed for substitution is of at least fair market value as the property to be converted; and

- The property proposed for replacement is of reasonably equivalent usefulness and location for recreational purposes as that being converted.

Areas of Historical or Cultural Significance

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

Recreational Sites and Special Use Areas

The Mainline would intersect Denali State Park, which is a Section 6(f) parkland, for approximately 38 miles (from approximately MP 609 to MP 647). Mainline construction would affect approximately 750 acres of Denali State Park (Table 8.5-2) and the proposed Project would therefore trigger a 6(f) LWCF (16 USC 4601 et seq.) conversion and would require approval from the Secretary of the Interior for the conversion of lands. In addition, a state ROW lease would be required from the ADNR

Commissioner under AS 38.35, administered by the SPCS. Alaska Senate Bill 70 (Alaska State Legislature, 2015) passed on May 15, 2015, provides exceptions from designation as a special purpose site for portions of Denali State Park to allow for ROW leasing associated with natural gas pipelines.

The Nenana River Gorge Special Use Area would be intersected by the Mainline from MP 533 to MP 538 (Appendix D). The buried trenchless method (i.e., horizontal directional drilling [HDD] or direct pipe) is proposed to be used and Project representatives would coordinate closely with the ADNR-DMLW.

The following measures would be considered to mitigate potential impacts to recreation and special use areas:

- Maintain existing public access routes and uses wherever possible;
- Collocate with existing and planned transportation, utilities, and adjacent pipelines where practicable;
- Reduce mainline preconstruction activity during high-use periods (recreation and tourism);
- Coordinate early and regular consultation with the public and tourism and recreation businesses;
- Reduce construction activities during high-use periods to the extent practicable;
- Reduce off-road vehicle use in remote areas associated with Mainline construction activities;
- Reduce the creation of new public vehicular access to remote areas associated with Mainline construction activities;
- Reduce impacts to the existing natural landscape in these areas to the extent practicable. The Mainline route was selected and designed with the assistance of visual impact experts;
- Measures including vegetative screening would be employed to reduce potential impacts and reduce the visibility of the pipeline, especially in the most visually sensitive areas.

The proposed Mainline ROW does not intersect the Arctic NWR and no acreage would be affected by construction (Appendix D). The lands lying within the Arctic NWR would not be used or impacted by the Mainline. Nonetheless, the Project representatives would coordinate with USFWS during construction planning and pipeline installation to reduce impacts to access of the valuable resources and recreational opportunities within the refuge.

The Tanana Valley State Forest would be intersected by the proposed Mainline at several locations between MP 408–455 (Appendix D). ADNR would determine appropriate stipulations and measures in the affected areas. It is expected that impacts would be minor and temporary. These effects would be mitigated by measures designed to reduce the potential effects of construction-related activities in the forest, and include (ADNR, 2001a):

- Coordinate closely with the ADNR and USFWS prior to and during construction and follow stipulations and measures to reduce potential effects on fish and wildlife and/or their habitats. Proper restoration actions must be designed and executed in situations where potential effects cannot be avoided. In some cases, habitat replacement or enhancement in the same region may be appropriate to benefit impacted species;

- Follow ADNR's stipulations for protecting natural resources managed in the forest;

- Reduce soil erosion, habitat loss, and degradation of scenic and recreation areas;

- Coordinate closely with the ADNR to coordinate continued public use of recreationally important areas;

- Work with the ADNR for temporary or permanent access to barrier gates on some roads;

SRRs: The Alexander Creek and Kroto Creek & Moose Creek SRRs, located in the MSB, would be intersected by the proposed Mainline. These crossings (approximately 1 to 2 miles each) would affect 25 and 39 acres, respectively, during Mainline construction. Minimal impacts associated with temporary land disturbance during construction would occur. Project representatives would work closely with the ADNR during construction planning and execution to reduce potential impacts to year-round recreational experience in these areas. The ADF&G would also be consulted regarding the avoidance of potential effects to fish and game resources in these Legislatively Designated Areas. To reduce and mitigate impacts, existing corridors would be maintained across areas during construction, consistent with the goals and objectives of the SRRs, to the extent practicable.

ACECs: Two ACECs would be intersected by the proposed Mainline, including Galbraith Lake ONA (MP 139 to 151; approximately 187 acres) and Toolik Lake RNA (MP 128 to 138; approximately 173 acres) during construction (Appendix D). A ROW permit from the BLM would be required prior to construction. Effects to these ACECs are expected to be minimal, and Project representatives would work closely with the BLM during operation to protect valuable resources and reduce effects. Toolik Lake RNA is managed for Arctic natural resources research at the Toolik Field Station. Temporary construction-related impacts would be low, as Project representatives would work closely with BLM to protect ongoing research projects conducted in the area to the extent practicable.

SGRs: The Minto Flats and Susitna SGRs would be intersected by the Mainline at several locations (Appendix D), affecting approximately 424 acres and 239 acres during construction, respectively. Project representatives would work closely with the ADF&G and ADNR-DMLW prior to and during operation to alleviate potential impacts to these game refuges. It is anticipated that effects in these two areas would be minimal and temporary. Mitigation measures to reduce potential impacts could include the following:

- Maintain existing corridors across areas during construction, consistent with refuge goals and objectives, to the extent practicable. New development may be permissible if no feasible off-refuge alternatives exist;

- Coordinate with managing agencies (ADF&G and ADNR-DMLW) to reduce potential impacts to fish and wildlife populations; and

- Work with the ADF&G and ADNR-DMLW to manage potential effects to refuges from MLBV operation (e.g., Minto Flats; ADF&G, 1992).

Scenic Byways

The Dalton Highway Scenic Byway would be intersected by the Mainline at two stretches, including MPs 14–182 (2,862 acres) and MP 182–406 (3,814 acres) (Appendix D). The Mainline ROW is also in proximity to and parallel to the George Parks Highway Scenic Byway for approximately 230 miles (MPs 470–700), and crosses the highway at 12 locations. Minimal impacts could include temporary bypass access in regions of the highway that are closed during construction activities. In addition, effects to aesthetic value of the Dalton Highway Scenic Byway (see Section 8.13) could also occur because construction activities would occur throughout the year. Project representatives would work closely with the ADNR and BLM during construction planning and coordination to reduce potential impacts to sensitive resources in and along these scenic byways. The guidance in BLM's (1991b) Recreation Management Plan for the Dalton Highway RMA and ADNR's (2008) Corridor Partnership Plans would be followed for construction-related activities in or adjacent to recreation facilities located along these scenic byways.

Revised Statute 2477 Rights-of-Way and 17(b) Easements

The Mainline would intersect 20 RS 2477 ROWs and eight 17(b) easements, affecting 11 acres and 2 acres during construction, respectively.

The Applicant would work closely with the ADNR-DMLW and the BLM respectively during Mainline construction planning to reduce or prevent construction-related impacts to public access along RS 2477 ROWs and 17(b) easements. Temporary impacts would occur during construction in the form of a minor land disturbance when sections of the pipeline are buried following staging and assembly.

In addition to the mitigation measures listed previously for the Liquefaction Facility in Section 8.11.1, impacts would be reduced by removal of vegetation such as trees and brush in areas that could become destabilized, ensuring that material extraction would not trigger or accelerate shoreline erosion locally or in an adjacent area.

8.11.2.1.1.5 Hazardous Waste Sites, Contamination, and Landfills

A review of the ADEC CSD and LUST database indicates that there are listed contaminated sites and LUST sites located in the Mainline construction ROW that may be encountered by construction activities (see Section 8.7.2 and Appendix E). Potential impacts associated with Project construction and mitigation measures would be similar to those described in Section 8.11.1.6 for the Liquefaction Facility.

8.11.2.1.1.6 Dredged Material Placement Areas

The Mainline would not cross or be in proximity of any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of construction of the Mainline.

8.11.2.1.1.7 ROWs

A summary of the ROWs that would be within the construction footprint of the Mainline is provided in Appendix F. The proposed construction ROW would cross pipelines, railroads, utilities, trails, driveways, and local and state roads. Potential impacts would include disruption of traffic flow and utility service.

It is not anticipated that there would be disruptions to services because the following mitigations would reduce the potential disruption of traffic flow and utility service as a result of Mainline construction: obtaining crossing permits prior to crossing installation, as applicable, and in concert with the consultation and communication with landowners; and the use of Project design features to reduce these impacts.

Project design features to reduce impacts may include installing by trenchless methods (boring below the existing ROW). In addition, site-specific plans would be developed for crossing of railroads and the TAPS pipeline.

Direct impacts to transportation and utilities due to construction of the Mainline are expected to be temporary and minor. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

Roadways

For major road crossings, a boring method in accordance with Project-specific specifications and the requirements of road crossing permits and approvals would be used. Major roads would be crossed using trenchless methods and site-specific designs would be implemented for major highway crossings. For road crossings where the pipeline cannot be installed by boring, a trench would be excavated. In such cases, a temporary bypass or bridge would be built to reduce the effects to traffic flow.

Pipelines

Crossing of existing facilities that have cathodic protection would be designed to reduce effects through the coordination of existing utilities' cathodic protection systems and the Project's cathodic protection system.

Utilities

Crossing of aerial utilities and power lines would be made at either side, from the midpoint between the towers that support the overhead lines. This would reduce or remove the possibility of the pipeline interfering with a tower, supporting guy wires, or foundations of the towers. This preliminary crossing design would need to be validated when third-party crossing agreements have been completed.

Waterways

A list of proposed waterbody crossings, construction method, construction timing, and anticipated impacts is provided in Resource Report No. 2. Construction of the Mainline would cross multiple navigable freshwater waterways, as well as Cook Inlet. Any interruption in use of the waterway would be temporary and minor.

The Waterway Suitability Assessment (WSA) is provided as an appendix to Resource Report No. 11 and a summary of the mitigation measures proposed for LNGC traffic in Cook Inlet is provided in Resource Report No. 11.

Coastal Management Program

Project representatives would work closely with local governments using the Borough Coastal Zone Management Plans where applicable to plan construction activity and mitigate or avoid potential impacts.

8.11.2.1.2 PBTL

8.11.2.1.2.1 Land Use

The PBTL would be constructed on VSMs and HSMs in an area of Prudhoe Bay occupied by oil and gas production facilities and operations. The primary type of land use affected by PBTL construction would be open land, accounting for approximately 99 percent of the construction ROW.

The PBTL would be installed in the winter using ice roads and pads, which would avoid and reduce certain potential impacts to land use; for the PBTL, winter construction reduces impacts to ground and vegetation disturbance. Not all impacts are avoided, but those portions of the Project scheduled for winter construction would result in less or no impact. The schedule for construction of the PBTL is provided in Section 1.5.1 of Resource Report No. 1. It is anticipated that any effects related to land use from construction of the PBTL would be temporary and minor.

8.11.2.1.2.2 Residential and Commercial Areas

There would be no residential or commercial areas within 200 feet of the PBTL. No impacts to residential or commercial areas would be anticipated as a result of construction of the PBTL.

8.11.2.1.2.3 Planned Residential and Commercial Areas

There are no planned developments within 0.25 mile of the PBTL. No impacts to planned residential or commercial areas would be anticipated as a result of construction of the PBTL.

8.11.2.1.2.4 Zoning

The PBTL would cross lands within the NSB that are zoned for resource development. It is not anticipated that construction of the PBTL would impact existing zoning in the area.

8.11.2.1.2.5 Land Ownership and Special Management Areas

A summary of land ownership crossed by the PBTL is provided in Table 8.5-1 and Project maps depicting land ownership are provided in Appendix B.

Federally Owned and Managed Land

The PBTL would not be located on federally owned or federally managed lands. No impacts to federally owned or managed land would be anticipated as a result of construction of the PBTL.

State-Owned and -Managed Land

The acres of state-owned land that would be impacted by the PBTL are listed in Table 8.5-1. The PBTL would be consistent with CL 618, which does not prohibit any specific uses for the lands in the Project area. The PBTL would be subject to the North Slope Management Plan, once that plan is developed and adopted by the ADNR. Because the PBTL would be located at the terminus of an existing energy transportation corridor within the NSB that has already been considered during development of the plan, no impacts to ADNR's planning in the NSB are anticipated.

Local and Other Management Areas

The PBTL would not be located on locally owned or locally managed lands. No impacts to locally managed land would be anticipated as a result of construction of the PBTL.

8.11.2.1.2.6 Recreation and Special Use Areas

The construction ROW of the PBTL would not cross any identified recreation or special use land, including National WSRs, National Historic Trails, or scenic byways. No impacts to recreation or special use areas would be anticipated as a result of construction of the PBTL.

Areas of Historical or Cultural Significance

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

8.11.2.1.2.7 Hazardous Waste Sites, Contamination, and Landfills

The construction ROW of the PBTL would not cross any identified contaminated sites, LUST sites, or landfills. The *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if contaminated or hazardous media were suspected during construction.

8.11.2.1.2.8 Dredged Material Placement Areas

The PBTL would not cross or be in proximity to any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of construction of the PBTL.

8.11.2.1.2.9 ROWs

Construction of the PBTL would not cross any railroads, utilities, or waterway ROWs. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials. A complete list of the ROWs that would be within the construction footprint is provided in Appendix F. Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities.

8.11.2.1.3 PTTL

8.11.2.1.3.1 Land Use

Similar to the PBTL, the PTTL would be above ground on VSMs in an area of Prudhoe Bay occupied by oil and gas production facilities and operations. The primary type of land use affected by PTTL construction would be open land, accounting for 97 percent of the construction ROW.

The PTTL would be installed in the winter using ice roads and pads, which would avoid and reduce potential impacts to land use. The schedule for construction of the PTTL is provided in Section 1.5.1 of Resource Report No. 1. It is anticipated that any effects related to land use from construction of the PTTL would be temporary and minor.

Open Water

The proposed design is for the PTTL to cross under the Putuligayuk, Kadleroshilik, and Shaviovik rivers and to have an aerial crossing of the west channel of the Sagavanirktok river, and open cut to cross the main channel of the Sagavanirktok River. Following pipeline construction, use of open water would revert to preconstruction conditions. It is anticipated that impacts from PTTL construction would be temporary and minor.

8.11.2.1.3.2 Residential and Commercial Areas

There is one commercial structure, described as oil and gas related, that would be within 200 feet of the construction ROW of the PTTL. The commercial structure is also related to the oil and gas industry. Access and traffic flow during construction activities would be maintained to the extent possible. In addition, Project representatives would provide notification for any planned interruptions to access during construction as discussed further in Resource Report No. 5. Any impacts to the business would be anticipated to be temporary and minor.

8.11.2.1.3.3 Planned Residential and Commercial Areas

No planned developments have been identified within 0.25 mile of the PTTL. However, there is mention of a "Discussed Road" between Prudhoe and Kaktovik in the Kaktovik Comprehensive Plan (2014). At this time, this road appears to be in the preliminary stages of development, and the likelihood of its future development is unknown. It is not anticipated that construction of the PTTL would impact planned residential or commercial areas.

8.11.2.1.3.4 Zoning

The PTTL would cross lands within the NSB that are zoned for resource development. It is not anticipated that construction of the PTTL would impact existing zoning in the area.

8.11.2.1.3.5 Land Ownership and Special Management Areas

A summary of land ownership crossed by the PTTL is provided in Table 8.5-1 and Project maps depicting land ownership are provided in Appendix B.

Federally Owned and Managed Land

The PTTL would not be located on federally owned or federally managed lands. No impacts to federally owned or managed land would be anticipated as a result of construction of the PTTL.

State-Owned and Managed Land

The acres of state-owned land that would be impacted by the PTTL are shown in Table 8.5-1. The PTTL would be consistent with CL 618, which does not prohibit any specific uses for the lands in the Project area. The PTTL would be subject to the North Slope Management Plan, once that plan is developed and adopted by ADNR. Because the PTTL would be located at the terminus of an existing energy transportation corridor and along a coastline where other pipelines currently exist that have already been considered during development of the plan, no impacts to ADNR's planning in the NSB would be anticipated.

Local and Other Management Areas

While the NSB Comprehensive Plan contains policies related to the development of oil and gas resources intended to reduce impacts to fish and wildlife populations and habitat, subsistence, and residents of the North Slope, there are no prohibitions against the development of pipelines within the NSB. Therefore, no direct or indirect effects to the NSB's land management would be anticipated from construction of the PTTL.

8.11.2.1.3.6 Recreation and Special Use Areas

The PTTL ROW would impact 1,726.6 acres (of which 613.6 would be during operations) of recreational and special use areas (ADNR Special Use Area) (Table 8.6-1). There would be no National WSRs or National Historic Trails located within the PTTL construction ROWs. The PTTL would intersect the Dalton Highway and one RS 2447 ROW (Bullen-Staines River). All applicable permits would be obtained and guidelines followed (as outlined by these agencies) during construction. In addition, the Project is developing site-specific Public Land Use and Recreational Use Coordination Plans would be developed after the FEIS but prior to start of construction.

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

Scenic Byways

The Dalton Highway Scenic Byway would be intersected by the PTTL ROW for approximately 2 miles (beginning at PTTL MP 52.5 and ending at PTTL MP 54.6) affecting approximately 19 acres. Project representatives would work closely with the ADNR-DMLW and the BLM during construction planning and coordination to reduce potential impacts to sensitive resources in and along this scenic byway. The guidance in the BLM's Recreation Management Plan for the Dalton Highway RMA (BLM, 1991b) would be followed for construction activities in or adjacent to recreation facilities located along the byway. Potential construction-related impacts would be expected to be minimal, as construction would primarily occur during the winter months when traffic on the highway is reduced compared to summer months. Minimal impacts could include temporary bypass access in regions of the highway that are closed during construction activities. Mitigation measures described for the Mainline would be appropriate to reduce impacts to the byway in the PTTL construction footprint.

Revised Statute 2477 Rights-of-Way and 17(b) Easements

The Bullen-Staines River RS 2477 ROW (RST 1043) would be intersected by the PTTL construction ROW in several locations from PTTL MP 0.03 to PTTL MP 8.1, affecting approximately 4 acres. Minimal impacts would be expected from PTTL intersections of RST 1043. Mitigation measures could be employed as appropriate to accommodate any uses that would be shown to exist.

8.11.2.1.3.7 Hazardous Waste Sites, Contamination, and Landfills

The construction ROW of the PTTL would not cross any identified contaminated sites, LUST sites, or landfills. The *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if contaminated or hazardous media were suspected during construction.

8.11.2.1.3.8 Dredged Material Placement Areas

The PTTL would not cross or be in proximity of any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of construction of the PTTL.

8.11.2.1.3.9 ROWs

Construction of the PTTL would not cross any railroads or utilities. No direct impacts to existing railroad or utility ROWs would be anticipated as a result of construction of the PTTL. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials. A complete list of the ROWs that would be within the construction footprint is provided in Appendix F. Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities.

Waterways

The proposed design is for the PTTL to cross under the Putuligayuk, Sagavanirktok, Kadleroshilik, and Shaviovik rivers. Following pipeline construction, use of the waterways associated with the PTTL would continue as normal. It is anticipated that impacts to waterways from PTTL construction would be temporary and minor.

8.11.2.2 Pipeline Aboveground Facilities

8.11.2.2.1 Land Use

Tables 8.2.2-1 and 8.2.2-2 show the land use types and land requirements within the construction footprint. Certain impacts would be reduced as a result of the construction schedule. Winter construction reduces impacts to ground and vegetation disturbance, avoids conflicting seasonal recreational uses, and reduces traffic impacts more common in the summer. Not all impacts are avoided, but those portions of the Project scheduled for winter construction would result in less or no impact. The schedule for construction of the Pipeline Aboveground Facilities is provided in Section 1.5.1 of Resource Report No. 1. The land use changes would be permanent because the entire area disturbed for construction would be used during operations.

8.11.2.2.1.1 Agricultural

No agricultural lands would be located within the construction footprint of the Pipeline Aboveground Facilities. No impacts on agricultural land would be anticipated as a result of construction of the Pipeline Aboveground Facilities.

8.11.2.2.1.2 Commercial/Industrial Land

No commercial/industrial lands would be located within the construction footprint or within 200 feet of the Pipeline Aboveground Facilities. No impacts to commercial/industrial land would be anticipated as a result of construction of the Pipeline Aboveground Facilities.

8.11.2.2.1.3 Forested Land

Forested land within the construction footprint of the Pipeline Aboveground Facilities would be cleared before construction during site preparation. This would result in a permanent conversion of forest land to industrial use in these areas. Impacts to forested land would be permanent and minor.

Where feasible and prudent, timber with commercial or personal use values would be salvaged from lands cleared for construction. The economic value of removal of timberland is provided in Section 5.4.2.9 of Resource Report No. 5.

8.11.2.2.1.4 Open Land

Open land within the construction footprint of the Pipeline Aboveground Facilities would be cleared before construction during site preparation. This would result in a permanent conversion of open land to industrial use in these areas. Impacts to open land would be permanent and minor.

8.11.2.2.1.5 Open Water

Open water would not be located within the construction footprint of the Pipeline Aboveground Facilities. No impacts to open water would be anticipated as a result of construction of the Pipeline Aboveground Facilities.

8.11.2.2.1.6 Residential

Effects from construction to residential use would be short-term and minor, with only approximately 1 percent of the construction footprint of the Pipeline Aboveground Facilities classified as residential land. There are no residential structures within 200 feet of the Pipeline Aboveground Facilities' construction ROW.

8.11.2.2.1.7 Planned Residential and Commercial Areas

There are no planned developments within 0.25 mile of the Pipeline Aboveground Facilities. No impacts to planned residential or commercial areas would be anticipated as a result of construction of the Pipeline Aboveground Facilities.

8.11.2.2.2 Zoning

The Pipeline Aboveground Facilities would be located within the NSB, YKCA, FNSB, DB, MSB, and KPB. It is not anticipated that construction of the Pipeline Aboveground Facilities would impact existing zoning in these areas.

8.11.2.2.3 Land Ownership and Special Management Areas

A summary of land ownership crossed by the Pipeline Aboveground Facilities is provided in Table 8.5-1, and Appendix B contains Project maps depicting land ownership. Section 8.0 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project. The Project representatives are currently consulting with the land management agencies on the land management plans, management objectives, Project conformance, and mitigation measures necessary for the Project.

The Project representatives would apply for authorization of a temporary ROW for the aboveground facilities on state, federal, and borough lands, as well as on lands with rights held by Alaska Native Corporations. In addition, the easement agreements with private landowners would be obtained. The temporary ROW would provide a temporary, limited interest in the land that would enable the pipeline and aboveground facilities to be constructed.

The impacts to land management from development of the aboveground facilities would be similar to the impacts described for the Mainline, because the land use policies that apply to pipelines are generally assumed to include the aboveground facilities that occur alongside pipeline development.

8.11.2.2.4 Recreation and Special Use Areas

Table 8.6.6-2 provides the applicable stipulations of recreational sites and special use areas within the construction footprint of the Pipeline Aboveground Facilities. All applicable permits would be obtained and guidelines followed (as outlined by these agencies) during construction. In addition, site-specific Public Land Use and Recreational Use Coordination Plans would be developed after the FEIS but prior to start of construction.

There would be no National WSRs or National Historic Trails located within the construction footprint of the Pipeline Aboveground Facilities. Therefore, no impacts to these recreational sites or special use areas would be anticipated as a result of facility construction.

The impacts and proposed mitigation for construction of the Pipeline Aboveground Facilities in recreational and special use areas, as well as scenic byways, would be similar to those described for the Mainline. The land use policies that apply to pipelines are generally assumed to include the aboveground facilities that occur alongside pipeline development. This would include aboveground facilities intersecting Denali State Park, the Tanana Valley State Forest, the Galbraith Lake ONA ACEC, the Toolik Lake RNA ACEC, the Minto Flats and Susitna SGRs, and the Dalton Highway Scenic Byway.

8.11.2.2.5 Hazardous Waste Sites, Contamination, and Landfills

The construction ROW of the Pipeline Aboveground Facilities would not cross any identified contaminated sites, LUST sites, or landfills. The *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if contaminated or hazardous media were suspected during construction.

8.11.2.2.6 Dredged Material Placement Areas

The construction ROW of the Pipeline Aboveground Facilities would not cross or be in proximity of any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of construction of the Pipeline Aboveground Facilities.

8.11.2.2.7 ROWs

A summary of the ROWs that would be within the construction footprint of the Pipeline Aboveground Facilities is provided in Appendix F. Construction of the Pipeline Aboveground Facilities would not cross any railroads, utilities, or waterway ROWs. No direct impacts to existing railroad, utility, or waterway ROWs would be anticipated as a result of construction of the Pipeline Aboveground Facilities. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

8.11.2.2.7.1 Roadways

Authorities that have jurisdiction over roads and highways to be affected by construction of the aboveground facilities, including the ADOT&PF, would be consulted to obtain the necessary permits and develop traffic management plans.

8.11.2.2.7.2 Pipelines

Buried and/or overhead pipelines would be crossed during construction of the Pipeline Aboveground Facilities. Prior to the start of grading and construction activities, crossings would be surveyed and the owner of the pipeline or utility would be notified. Crossing permits would be obtained prior to crossing installation. Crossing of existing facilities that have cathodic protection would be designed to reduce effects through the coordination of the existing utilities' cathodic protection system and the Project's cathodic protection system. The Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities.

8.11.2.3 Pipeline Associated Infrastructure

8.11.2.3.1 Land Use

Table 8.2.2-1 shows the land use types and land requirements within the construction footprint. Certain impacts would be reduced as a result of the construction schedule. Winter construction reduces impacts to ground and vegetation disturbance, avoids conflicting seasonal recreational uses, and reduces traffic impacts more common in the summer. Not all impacts are avoided, but those portions of the Project scheduled for winter construction would result in less or no impact. The schedule for construction of the Pipeline Associated Infrastructure is provided in Section 1.5.1 of Resource Report No. 1. The

majority of the construction footprint would be permanently converted to industrial land use since this infrastructure is anticipated to remain in place following construction activities.

8.11.2.3.1.1 Agricultural

Less than 1 percent of the construction footprint of the Pipeline Associated Infrastructure would consist of agricultural land. Construction of the Pipeline Associated Infrastructure would impact agricultural land, however the impacts would be temporary, only for the duration of the construction period at that location, and minor because the land could be used for agricultural use thereafter.

8.11.2.3.1.2 Commercial/Industrial Land

Less than 1 percent of the construction footprint of the Pipeline Associated Infrastructure would consist of commercial/industrial land (see Table 8.2.2-1). The construction of Pipeline Associated Infrastructure would permanently convert commercial/industrial land to access roads and material sites, which is consistent with the types of development characterized by commercial/industrial land uses. Therefore, no impacts are expected for commercial/industrial lands due to Pipeline Associated Infrastructure construction.

Indirect impacts to commercial buildings within 200 feet of the Pipeline Associated Infrastructure would be similar to those described for the Mainline in Section 8.11.2.1. There are 127 commercial buildings within 200 feet of the Pipeline Associated Infrastructure. Of these, 103 are within 50 feet of the construction footprint. See Resource Report Nos. 5 and 9 for additional information on potential indirect effects related to socioeconomics, air quality, and noise.

Resource Sale Licenses

There are 75 resource sale licenses within the construction footprint of the Pipeline Associated Infrastructure. Two of these are for timber sales and the remainder are for material sites. Potential impacts on these leaseholders would be loss of access to materials they have existing plans to use. However, the impacts would likely be beneficial to leaseholders who have not yet developed sites but may then have access to them as material sources are developed to supply Project needs.

8.11.2.3.1.3 Forested Land

Approximately 48 percent of the construction footprint of the Pipeline Associated Infrastructure would consist of forested land. Forested land within the entire construction footprint would be cleared before construction and during site preparation. Forest land would not be restored following construction; therefore, there would be a permanent conversion of forest land in these areas (see Operational Impacts in Section 8.12.2.1.5.1). It is anticipated that construction of the Pipeline Associated Infrastructure would result in permanent and minor impacts to forested land.

The Project representatives are committed to fully and responsibly using all merchantable fiber affected by Pipeline Associated Infrastructure construction. Where feasible and prudent, timber with commercial or personal use values would be salvaged from lands cleared for Pipeline Associated Infrastructure construction. The economic value of removal of timberland is provided in Section 5.4.2.9 of Resource Report No. 5.

8.11.2.3.1.4 Open Land

Approximately 44 percent of the construction footprint of the Pipeline Associated Infrastructure would consist of open land. Open land within the entire construction area would be cleared before construction during site preparation. Material sites and access road construction constitute the primary Pipeline Associated Infrastructure to be constructed on open land. Post-construction, this permanent conversion of open land would represent a beneficial impact for non-Project-related users of the new and improved access roads and material sites. Other impacts to open land may come in the form of increased access to recreational and special use areas addressed in more detail in Section 8.12.2.1.1.4.

8.11.2.3.1.5 Open Water

Approximately 1 percent of the construction footprint of the Pipeline Associated Infrastructure would consist of open water. It is anticipated that impacts to open water as a result of construction would be long-term and minor. The reservoir would create a new source of open water, would be similar to other surface waters prevalent in the area, would be in an area identified for oil and gas development, and its use is consistent with industrial water use in the region. Impacts to open water are further discussed in Resource Report No. 2.

8.11.2.3.1.6 Residential

Approximately 7 percent of the construction footprint of the Pipeline Associated Infrastructure would consist of land classified as residential land. A discussion of residences within proximity to the Pipeline Associated Infrastructure is provided in the following section. It is anticipated that construction of the Pipeline Associated Infrastructure would result in permanent and minor impacts on residential land.

Indirect construction impacts on residences within 200 feet of the Pipeline Associated Infrastructure would be similar to those described for the Mainline in Section 8.11.2.1. There are 66 residential buildings within 200 feet of the Pipeline Associated Infrastructure. Of these, 22 are within 50 feet of the construction area. See Resource Report Nos. 5 and 9 for additional information on potential indirect effects related to socioeconomics, air quality, and noise.

8.11.2.3.1.7 Planned Residential and Commercial Areas

There are no planned developments within 0.25 miles of the Pipeline Associated Infrastructure. Any potential construction-related impacts would be related to increased traffic and competition for resources in the cases when material sites are more strictly limited or the resource is scarce. A benefit would be that planned residences and commercial developments may have access to material sites developed by the Project.

8.11.2.3.2 Zoning

Pipeline Associated Infrastructure would be located within the NSB, FNSB, DB, MSB, and KPB. Similar to construction of the Mainline, it is not anticipated that construction of Pipeline Associated Infrastructure would impact existing zoning in these areas.

8.11.2.3.3 Land Ownership and Special Management Areas

A summary of land ownership crossed by the Pipeline Associated Infrastructure is provided in Table 8.5-1. Appendix K of Resource Report No. 1 contains a list of land owners, and Appendix B contains Project maps depicting land ownership. Section 8.0 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project. Project representatives are currently consulting with the land management agencies on the land management plans, management objectives, Project conformance, and mitigation measures necessary for the Project.

The Project representatives would apply for authorization of a temporary ROW for the Pipeline Associated Infrastructure on state, federal, and borough lands, as well as on lands with rights held by Alaska Native Corporations. In addition, easement agreements with private landowners would be obtained. The temporary ROW would provide a temporary, limited interest in the land that would enable the facilities to be constructed.

The impacts to land management from development of the Pipeline Associated Infrastructure would be similar to the impacts described for the Mainline, because the land use policies that apply to pipelines are generally assumed to include the Pipeline Associated Infrastructure that occur alongside pipeline development.

8.11.2.3.4 Recreation and Special Use Areas

Table 8.6.6-2 provides the applicable stipulations of recreational sites and special use areas within the construction footprint of the Pipeline Associated Infrastructure. All applicable permits would be obtained and guidelines followed (as outlined by these agencies) during construction. In addition, site-specific Public Land Use and Recreational Use Coordination Plans would be developed after the FEIS but prior to start of construction.

There would be no National WSRs located within the construction ROW of the Pipeline Associated Infrastructure. Therefore, no impacts to WSRs would be anticipated as a result of construction of the Pipeline Associated Infrastructure.

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

The impacts to recreational sites and special use areas, as well as scenic byways, from development of the Pipeline Associated Infrastructure would be similar to the impacts described for the Mainline, because the land use policies that apply to pipelines are generally assumed to include the associated infrastructure that occur alongside pipeline development. This would include the Pipeline Associated Infrastructure intersecting the INHT, Denali State Park, the Nenana River Gorge Special Use Area, the Tanana Valley State Forest, SRRs (Alexander Creek, Kroto Creek & Moose Creek), ACECs (Galbraith Lake ONA, Toolik Lake, Sukakpak, Snowden), SGRs (Minto Flats, Susitna), Dalton Highway Scenic Byway, RS 2477 ROWs, and 17(b) easements.

8.11.2.3.5 Hazardous Waste Sites, Contamination, and Landfills

A review of the ADEC CSD and LUST database indicates that there are listed contaminated sites, LUST sites, and retired landfills located in the construction footprint of the Pipeline Associated Infrastructure that may be encountered by construction activities (see Section 8.7.2 and Appendix E).

Potential impacts associated with Project construction and mitigation measures would be similar to those described in Section 8.11.1.6 for the Liquefaction Facility.

8.11.2.3.6 Dredged Material Placement Areas

The construction footprint of the Pipeline Associated Infrastructure would not cross or be in proximity to any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of construction of the Pipeline Associated Infrastructure.

8.11.2.3.7 ROWs

A summary of the ROWs that would be within the construction footprint of the Pipeline Associated Infrastructure is provided in Appendix F. The proposed construction ROW would cross pipelines, railroads, utilities, trails, driveways, and local and arterial roads. Potential effects would include disruption of traffic flow and utility service. However, Project design features as well as consulting with local agencies and stakeholders prior to start of construction would reduce these effects.

Direct effects to transportation and utilities due to construction of the Mainline are expected to be temporary and minor. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

8.11.2.3.7.1 Roadways

Authorities that have jurisdiction over roads and highways to be affected by the Pipeline Associated Infrastructure construction, including ADOT&PF, would be consulted to obtain the necessary permits and develop traffic management plans.

8.11.2.3.7.2 Railroads

The Pipeline Associated Infrastructure construction ROW would be within or cross the ARRC ROW in multiple locations. Material sites and access roads would also be located within the ARRC ROW. Seven railroad spurs and railroad work pads would be located within the ARRC ROW, none of which would cross the Alaska Railroad.

8.11.2.3.7.3 Pipelines

Buried and/or overhead pipelines would be crossed during construction of the Pipeline Associated Infrastructure. Prior to the start of ROW grading and construction activities, crossings would be surveyed and the owner of the pipeline or utility would be notified. Crossing permits would be obtained prior to crossing installation. Crossing of existing facilities that have cathodic protection would be designed to reduce effects through the coordination of the existing utilities' cathodic protection systems and the Project's cathodic protection system.

8.11.2.3.7.4 Waterways

A list of proposed waterbody crossings, construction method, construction timing, and anticipated impacts is provided in Resource Report No. 2. Construction of the Pipeline Associated Infrastructure would cross multiple navigable freshwater waterways, as well as Cook Inlet. Signs and other flagging

would be installed, signage would be maintained until ground disturbing activities are complete, equipment bridges would be installed as necessary and pipe strings would be fabricated, and testing would be performed before open water crossing construction.

Any interruption in use of the waterway would be temporary and minor.

8.11.2.4 GTP

8.11.2.4.1 Land Use

The schedule for construction of the GTP is provided in Section 1.5.1 of Resource Report No. 1. Table 8.2.2-1 shows the land use types and land requirements within the construction footprint. The entire construction footprint would be permanently converted to industrial land use. The primary type of land use affected by GTP construction would be open land, accounting for 97 percent of the total area.

8.11.2.4.1.1 Agricultural

No agriculture lands would be located within the GTP construction footprint. No impacts to agriculture land would be anticipated as a result of construction of the GTP.

8.11.2.4.1.2 Commercial/Industrial Land

The installation of the GTP would affect commercial and industrial land; 1 percent of the total GTP footprint would be on land currently classified as commercial and industrial land. There would be no commercial areas within 200 feet of the GTP.

8.11.2.4.1.3 Forested Land

No forest lands would be located within the GTP construction footprint. No impacts to forest land would be anticipated as a result of construction of the GTP.

8.11.2.4.1.4 Open Land

The installation of the GTP would convert open land to industrial use. Land use in the Prudhoe Bay area in proximity to the GTP is primarily associated with oil and gas industrial developments, such as the Central Gas Facility (CGF) and TAPS. Impacts to open land from construction of the GTP would therefore be minor and permanent.

8.11.2.4.1.5 Open Water

The GTP was sited to avoid open water areas. Construction of the GTP would permanently convert some open water to industrial land (less than 3 percent of GTP total land use). See Resource Report No. 2 for additional information on surface water impacts. Impacts to open water from construction of the GTP would be permanent and minor.

8.11.2.4.1.6 Residential Land

There would be no residential buildings within 200 feet of the GTP. No impacts to residential or commercial areas would be anticipated as a result of construction of the GTP.

8.11.2.4.1.7 Planned Residential and Commercial Areas

There are no planned developments within 0.25 mile of the GTP. No impacts to planned residential or commercial areas would be anticipated as a result of construction of the GTP.

8.11.2.4.2 Zoning

The GTP would cross lands within the NSB that are zoned for resource development. It is not anticipated that construction of the GTP would impact existing zoning in the area.

8.11.2.4.3 Land Ownership and Special Management Areas

A summary of land ownership within the GTP construction footprint is provided in Table 8.5-1, and Appendix B contains Project maps depicting land ownership. Section 8.0 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project.

8.11.2.4.3.1 Federally Owned and Managed Land

The GTP would be located entirely on nonfederal lands. Therefore, no impacts to federal land ownership or management would occur from construction of the GTP.

8.11.2.4.3.2 State-Owned and -Managed Land

While authorization from the ADNR would allow the Project to occupy state lands for the purposes of construction of the GTP, the underlying surface and subsurface land status would not change. Therefore, there would be no direct or indirect effects to the existing land status from construction of the GTP.

The GTP would be subject to the North Slope Management Plan, once that plan is developed and adopted by ADNR. Because the GTP would be located at the terminus of an existing energy transportation corridor and within an industrial area of the NSB that has already been considered during development of the plan, no impacts to the ADNR's planning in the NSB are anticipated.

8.11.2.4.3.3 Local and Other Management Areas

The GTP would not intersect locally owned lands. Therefore, no impacts to local land management would occur from construction of the GTP.

8.11.2.4.4 Recreation and Special Use Areas

The construction footprint of the GTP would not cross any identified recreation or special use land, including National WSRs, National Historic Trails, or scenic byways. No impacts to recreation or special use areas would be anticipated as a result of construction of the GTP.

8.11.2.4.5 Hazardous Waste Sites, Contamination, and Landfills

The construction footprint of the GTP would not cross any identified contaminated sites, LUST sites, or landfills. The Project representatives would implement the *Unanticipated Contamination Discovery Plan* (Appendix I) if contaminated or hazardous media were suspected during construction.

8.11.2.4.6 Dredged Material Placement Areas

The construction footprint of the GTP would not cross or be in proximity to any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of construction of the GTP.

8.11.2.4.7 ROWs

A summary of the ROWs that would be within the construction footprint of the GTP is provided in Appendix F. Construction of the GTP would not cross any roads, railroads, pipelines, or waterway ROWs. No direct impacts to existing railroad, utility, or waterway ROWs would be anticipated as a result of construction of the GTP. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

8.11.2.4.7.1 Utilities

Buried and overhead utilities would be crossed during construction of the GTP. Prior to the start of ROW grading and construction activities, crossings would be surveyed and the owner of the pipeline would be notified. Crossing permits would be obtained prior to crossing installation. Crossing of aerial utilities and power lines would be made at either side, from the midpoint between the towers that support the overhead lines. This would reduce or remove the possibility of the pipeline interfering with a tower, supporting guy wires, or foundations of the towers. This preliminary crossing design would need to be validated when third-party crossing agreements have been completed.

8.11.2.5 GTP Associated Infrastructure

8.11.2.5.1 Land Use

Table 8.2.2-1 shows the land use types and land requirements within the construction ROW. The primary type of land use affected by construction of the GTP Associated Infrastructure would be open land (51 percent) and open water (42 percent). Certain impacts would be reduced as a result of the construction schedule. Winter construction reduces impacts to ground and vegetation disturbance, avoids conflicting seasonal recreational uses, and reduces traffic impacts more common in the summer. Not all impacts are avoided, but those portions of the Project scheduled for winter construction would result in less or no impact. The schedule for construction of the associated GTP infrastructure is provided in Section 1.5.1 of Resource Report No. 1.

8.11.2.5.1.1 Agricultural

No agriculture lands would be located within the construction footprint of the GTP Associated Infrastructure. No impacts to agriculture land would be anticipated as a result of construction of the GTP Associated Infrastructure.

8.11.2.5.1.2 Commercial/Industrial Land

Commercial and industrial lands would be located within the construction footprint of the GTP Associated Infrastructure (7 percent). The impact would be negligible on commercial and industrial land because the land use for the GTP Associated Infrastructure would be consistent with the existing land use.

There would be no commercial buildings within 200 feet of the GTP Associated Infrastructure. No impacts on commercial areas would be anticipated as a result of construction of the GTP Associated Infrastructure.

8.11.2.5.1.3 Forested Land

No forest lands would be located within the construction footprint of the GTP Associated Infrastructure. No impacts to forest land would be anticipated as a result of construction of the GTP Associated Infrastructure.

8.11.2.5.1.4 Open Land

The installation of the GTP Associated Infrastructure would convert open land to commercial and industrial land (51 percent of total GTP Associated Infrastructure; 3 percent of the total Project footprint). The infrastructure is anticipated to remain in place following construction activities. Land use in the Prudhoe Bay area in proximity to the GTP is primarily associated with oil and gas industrial developments, such as the CGF and TAPS. Impacts to open land from construction of the GTP Associated Infrastructure would be permanent and minor.

8.11.2.5.1.5 Open Water

Construction related to the improvements to DH 4 would temporarily affect open water. It is anticipated that impacts to open water would be temporary and minor.

Construction related to the modifications to the barge bridge site would temporarily affect open water. Preparation of the barge bridge site would occur during the open water season and removed prior to the onset of winter. It is anticipated that impacts to open water would be temporary and minor.

Construction of the water reservoir/mine site would create a new area of open water. The impacts from the creation of new open water would be permanent and minor.

8.11.2.5.1.6 Residential

There would be no residential buildings or residential land in the construction footprint of the GTP Associated Infrastructure. No impacts to residential land would be anticipated as a result of construction of the GTP Associated Infrastructure.

8.11.2.5.1.7 Planned Residential and Commercial Areas

There are no planned developments within 0.25 mile of the GTP Associated Infrastructure. No impacts to planned residential or commercial areas would be anticipated as a result of construction of the GTP Associated Infrastructure.

8.11.2.5.2 Zoning

The GTP Associated Infrastructure would cross lands within the NSB that are zoned for resource development. It is not anticipated that construction of the GTP Associated Infrastructure would impact existing zoning in the area.

8.11.2.5.3 Land Ownership and Special Management Areas

A summary of land ownership for the GTP Associated Infrastructure is provided in Table 8.5-1, and Appendix B contains Project maps depicting land ownership. Section 8.0 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project.

The GTP Associated Infrastructure would be located on state-owned land and Native allotments and the impacts would be similar to those described for the GTP.

8.11.2.5.4 Recreation and Special Use Areas

The construction footprint of the GTP Associated Infrastructure would not cross any identified recreation or special use land, including National WSRs, National Historic Trails, or scenic byways. No impacts to recreation or special use areas would be anticipated as a result of construction of the GTP Associated Infrastructure.

8.11.2.5.5 Hazardous Waste Sites, Contamination, and Landfills

A review of the ADEC CSD and LUST database indicates that there are listed contaminated sites located in the construction footprint of the GTP Associated Infrastructure that may be encountered by construction activities (see Section 8.7.2 and Appendix E). Potential impacts associated with Project construction and mitigation measures would be similar to those described in Section 8.11.1.6 for the Liquefaction Facility.

8.11.2.5.6 Dredged Materials and Placement Areas

The construction footprint of the GTP Associated Infrastructure would not cross or be in proximity to any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of construction of the GTP Associated Infrastructure.

8.11.2.5.7 ROWs

A summary of the ROWs that would be within the construction footprint of the GTP Associated Infrastructure is provided in Appendix F. Construction of the GTP would not cross any railroads or utility ROWs. No direct impacts to existing railroad or utility ROWs would be anticipated as a result

of construction of the GTP Associated Infrastructure. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

Roadways

Authorities that have jurisdiction over roads and highways to be affected by construction of the GTP Associated Infrastructure, including the ADOT&PF, would be consulted to obtain the necessary permits and develop traffic management plans.

Pipelines

Buried and/or overhead pipelines would be crossed during construction of the GTP Associated Infrastructure. Prior to the start of ROW grading and construction activities, crossings would be surveyed and the owner of the pipeline or utility would be notified. Crossing permits would be obtained prior to crossing installation. Crossing of existing facilities that have cathodic protection would be designed to reduce effects through the coordination of the existing utilities' cathodic protection system and the Project's cathodic protection system.

Waterways

There is no dredging planned at West Dock. Any interruption in use of the waterway during sealifts and installation of the dock head modifications would be temporary and minor.

8.11.3 Non-Jurisdictional Facilities

The PBU MGS project and PTU Expansion project potential construction impacts would be from land use changes primarily affecting commercial/industrial and open land. Direct impacts from construction would include increased use of commercial and industrial sites, potential temporary impacts to subsistence, and increased traffic. Impacts to buried and/or overhead pipelines include crossing the Point Thomson Export Pipeline and West Gathering Line during construction of the PTU Expansion project.

The KSH relocation project potential construction impacts would be from land use changes, primarily affecting forest, open, residential, and commercial land and the relocation of utilities and other ROWs. There is a potential for minor habitat fragmentation, however the area is primarily industrial in nature. It is the intent of the ADOT&PF to avoid wetlands to the extent practicable.

The following mitigation measures and Best Management Practices would potentially reduce construction impacts of Non-Jurisdictional Facilities:

- The use of camps on the North Slope is common and would reduce the effects of workforce traffic;
- Providing notice of project activities as appropriate to landowners or communities adjacent to the Project area;
- Consulting with the ADNR-DMLW with respect to use and activities on state land;

- Ensuring, via survey and demarcation, project activities do not encroach upon Native allotments or Traditional Land Use sites where applicable;

- Facilitating traditional uses of the Project area; and,

- Informing project personnel through training and other means about areas that are restricted.

8.12 POTENTIAL OPERATIONAL IMPACTS AND MITIGATION MEASURES

Land use and recreational considerations for operations-related impacts could include:

- Permanent conversion of land use (i.e., facility footprints);
- Restrictions to existing land use, including restricted access to previous recreational areas;
- Restrictions to future land use; and
- Proximity to residential and commercial areas.

The proposed Project has the potential to affect land use within the Project footprint, in addition to nearby land uses. Land use impacts are considered for residences and commercial buildings within 200 feet, planned developments within 0.25 mile, and recreation and special use areas within 1 mile.

TABLE 8.12-1

Potential Impacts from Operations

Agricultural Land (0 Total Acres)	**Direct**	No direct impacts from operations
	Indirect	No indirect impacts from operations
	Severity and Duration	N/A
	Mitigation	N/A
Commercial/ Industrial Land (85 Total Acres)	**Direct**	No direct impacts from operations
	Indirect	Indirect impacts to surrounding commercial/industrial land from operations include increased noise, increase in human presence from the operations workforce, and competition for use of some local public services.
	Severity and Duration	Permanent and minor. Existing commercial/industrial land would have been purchased for the Project. Commercial and industrial land use is compatible with operations.
	Mitigation	Implement best management practices (BMPs) to reduce noise from operations. Make repairs to roads, trails, fences, or other improvements associated with the Project throughout operations and maintenance.
Forest (5,140 Total Acres)	**Direct**	Permanent conversion of forest land to open land or commercial/industrial land within the permanent ROW. Routine mowing/clearing of vegetation and clearing for the ROW and helicopter landing along the length of the ROW.
	Indirect	Potential indirect impacts include habitat loss and fragmentation for wildlife that rely on trees and vegetation; impacts on recreational and subsistence hunting.
	Severity and Duration	Permanent and minor. The Mainline would follow an existing utility corridor from Deadhorse to Livengood. The conversion of forest land for ROW and aboveground facilities would be permanent. The amount of forest land required for operations is minor relative to the amount of forest land present in Alaska and in areas adjacent the Project area.
	Mitigation	Routine mowing/clearing of vegetation would not be conducted more frequently than necessary for operations and maintenance of the ROW and only when vegetation exceeds a specific height. Trees and brush would not be removed unless they interfered with the safe operation of Project facilities. A corridor not exceeding the maximum width required for access/maintenance centered on the pipeline may be maintained in an herbaceous state.
Open Land (6,445 Total Acres)	**Direct**	Permanent conversion of some open land to commercial/industrial land for aboveground facilities and access roads.
	Indirect	No indirect impacts from operations
	Severity and Duration	Permanent and minor. Open land is abundant in Alaska. The Mainline would be buried and would remain as open land during operations.
	Mitigation	During operations open land would revert to original conditions except for in cases of aboveground facilities and access roads.
Open Water (491 Total Acres)	**Direct**	Operation of the Marine Terminal would require permanent structures within Cook Inlet. This portion of the Project area overlaps with economically significant commercial fishing areas.

TABLE 8.12-1

Potential Impacts from Operations

	Indirect	Impacts to aquatic resources, increased vessel traffic in the navigation channel, and restricted access for personal use fishing and commercial fishing in the surrounding area.
	Severity and Duration	Permanent and minor. Permanent facilities in Cook Inlet would be in operation for the life of the Project. The use of open water for industrial activity is consistent with adjacent open water use for marine facilities. It is not anticipated that the presence of the Mainline would impact the use of open water in Cook Inlet.
	Mitigation	Coordinate operations schedules (use of waterways) with commercial fisheries management and users to reduce indirect impacts.
Residential Land (453 Total Acres)	**Direct**	Permanent conversion of residential land to open land or commercial/industrial land. No other direct impacts from operations.
	Indirect	Indirect impacts to surrounding residential land from operations include increased noise and light, increase in human presence from the operations workforce, and competition for use of some local public services.
	Severity and Duration	Permanent and minor. Existing residential land would have been purchased for the Project and converted to open land or commercial/industrial land.
	Mitigation	Implement BMPs to reduce noise from operations. Make repairs to roads, trails, fences, or other improvements associated with the Project throughout operations and maintenance. Install downcast lighting to reduce impacts to residences within 200 feet of operations. Light only when it is needed. Use the minimum amount of light necessary. Select lamps with warmer colors. Select the most energy efficient lamps and fixtures. Avoid unnecessary flaring of gas at night.
Recreation and Special Use Land	**Direct**	Permanent easement through recreation and special use land restricting some access and use
	Indirect	Potential permanent changes to parking, access, and use of surrounding recreation areas during facility operations; habitat loss and fragmentation for wildlife that rely on trees and vegetation; impacts on recreational and subsistence hunting.
	Severity and Duration	Permanent and minor. Access and use of recreation and special use land would be maintained as much as possible through coordination efforts with state and federal agencies and through the routing and design considerations.
	Mitigation	Routing and design considerations for recreation and special use land were applied to reduce impacts. The Project representatives would work closely with state and federal agencies during operational planning for the Liquefaction Facility to reduce or prevent any potential operation-related impacts, such as providing alternate access during peak seasons of recreation use to areas where access has been limited or restricted.
Visual Resources	**Direct**	Permanent changes in landscape characteristics that have an aesthetic value. Potential direct impacts from operations would be associated with new aboveground structures and access roads as well as areas that would be cleared of forest and would be permanently maintained as open land.
	Indirect	No indirect visual resource impacts from operations

TABLE 8.12-1

Potential Impacts from Operations

	Severity and Duration	Permanent and minor. Although aboveground facilities and access routes would be located in areas previously undisturbed, the impacts would be minor by implementing mitigation measures. The Mainline ROW would be mostly buried, and the Liquefaction Facility and GTP would be in areas primarily designated for commercial/industrial use. Aboveground facilities, primarily compressor stations, would create the greatest visual impact.
	Mitigation	Routing and design considerations for visual resources were applied to reduce and avoid aesthetic impacts where possible. Maintain vegetative buffers where applicable will reduce visual contrasts for new structures. More detail will be provided after the visual assessment is completed. Potential mitigation measures include using downcasted lighting, selecting the same color to paint new facilities to reduce offsite visual effect, and texturing and coating pipelines and gathering lines to reduce glare. See the section on residential land above for more mitigations regarding lighting.

8.12.1 Liquefaction Facility

8.12.1.1 Land Use

Table 8.2.2-1 shows the land use types and land requirements within the permanent footprint of the Liquefaction Facility. The site facilities would be concentrated along the coast during operations. Vegetation outside of the facility boundary would serve as a natural buffer. The remainder of the site not used after construction would be fenced, appropriately vegetated, and serve as a space buffer between the facilities and the nearby community. For the temporary MOF, the sheet piling and other structures would be removed when they are no longer required.

8.12.1.1.1 Agricultural

No agriculture lands would be located within the permanent footprint of the Liquefaction Facility. No impacts on agriculture land would be anticipated as a result of Liquefaction Facility operation.

8.12.1.1.2 Commercial/Industrial Land

The permanent footprint of the Liquefaction Facility site would impact approximately 9 acres of commercial/industrial land. However, the site is a commercial/industrial development; as such, operation of the Liquefaction Facility would not change the current land use. Therefore, no impacts on commercial/industrial land are anticipated as a result of Liquefaction Facility operation.

All private land holdings would have been purchased for the Project prior to start of construction. Therefore, no direct impacts on businesses would be anticipated as a result of operation of the Liquefaction Facility. In addition, the majority of the Liquefaction Facility site operations would be occurring along the coastline, minimizing any potential impacts to commercial areas outside of the facility footprint but in proximity to the site's fence line. See Resource Report Nos. 5 and 9 for additional information on potential indirect effects related to socioeconomics, air quality, and noise.

8.12.1.1.2.1 ADNR Shore Fishery Lease

Twelve shore fishery leases are within 200 feet of the proposed Liquefaction Facility. The Project representatives currently engage regularly with leaseholders and other stakeholders to communicate Project activities to avoid and mitigate impacts and would continue during operations. Additional information on potential effects to commercial fishing are provided in Section 5.4.2.7.1.2 Resource Reports No. 5.

8.12.1.1.3 Forested Land

As noted in Section 8.11.1, Liquefaction Facility operations would require the permanent conversion of forest land; however, during operations, no additional impacts to forested land would be anticipated.

8.12.1.1.4 Open Land

As noted in Section 8.11.1, Liquefaction Facility operations would require the permanent conversion of open land to commercial/industrial land. However, the impacts to open land, although permanent,

would be minor; the area is primarily developed and in proximity to other industrial developments, such as the Tesoro Refinery, Kenai LNG Plant, and the Agrium Facility.

8.12.1.1.5 Open Water

Operation of the Marine Terminal would require permanent infrastructure within Cook Inlet. As previously described in Section 8.11.1.1, this portion of the Project area overlaps with economically significant commercial fishing areas. Within the permanent footprint of the Marine Terminal, impacts to open water would be permanent, minor, and consistent with the adjacent marine facilities. Impacts to open water are further discussed in Resource Report No. 2. See Resource Report No. 5 for additional information on potential socioeconomic impacts.

8.12.1.1.6 Residential Land

All private land holdings on the Liquefaction Facility site would have been purchased for the Project prior to start of construction. The land would no longer be classified as residential. Therefore, no impacts to residential land would be anticipated from operation of the Liquefaction Facility. See Resource Report Nos. 5 and 9 for additional information on potential indirect effects related to socioeconomics, air quality, and noise.

8.12.1.2 Zoning

The Liquefaction Facility would be located in the KPB, but not within established local option zoning districts or any incorporated cities. It is not anticipated that operation of the Liquefaction Facility would impact existing zoning in the area.

8.12.1.3 Land Ownership and Special Management Areas

A summary of land ownership for the Liquefaction Facility site is provided in Table 8.5-1, and Appendix B contains Project maps depicting land ownership. Section 8.0 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project.

8.12.1.3.1 Federally Owned and Managed Land

The Liquefaction Facility would be located entirely on nonfederal lands. Therefore, no impacts to federal land ownership or management would be anticipated from operation of the Liquefaction Facility.

8.12.1.3.2 State-Owned and -Managed Land

The marine portion of the Liquefaction Facility that would be below the ordinary high water mark would be managed by the state in accordance with the Kenai Area Plan (ADNR, 2001b). Operation of the proposed Marine Terminal would be consistent with the plan's goals for waterfront development: "Aid in the development of infrastructure (ports, roads, log transfer facilities, railroads, etc.) and continue to provide support to waterfront industries." Operation of the Marine Terminal in proximity to other industrial transfer facilities in the area would also be consistent with the plan's direction to jointly use and consolidate resource transfer sites wherever feasible and prudent. Therefore, no impacts on ADNR's land management due to operation of the proposed Liquefaction Facility are anticipated.

8.12.1.3.3 Local and Other Management Areas

Operation of the Liquefaction Facility and associated Marine Terminal would support the KPB Comprehensive Plan's Goal 5.7, Objective 1, which is to recognize and encourage port and harbor expansion plans by others to promote economic development. In addition, Goal 6.5 calls for maintaining the freedom of property owners in rural areas of the KPB to make decisions and control use of their private land consistent with other goals and objectives of the comprehensive plan (KPB, 2005). The proposed Project would be consistent with the plan's goals and objectives. Therefore, no direct or indirect effects to the KPB's land management from operation of the Liquefaction Facility would be anticipated.

8.12.1.4 Recreation and Special Use Areas

There would be no National WSRs, National Historic Trails, or scenic byways located within the permanent footprint of the Liquefaction Facility. Therefore, no impacts to these recreational sites or special use areas would be anticipated as a result of operation of the Liquefaction Facility.

There are two recreation and special use areas located within the Liquefaction Facility footprint, both of which are 17(b) easements (see Appendix D and Figure 8.6-1). Project representatives would work closely with the BLM during operational planning for the Liquefaction Facility to reduce or prevent any potential operations-related impacts on sensitive resources present in these 17(b) easements.

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

8.12.1.5 Hazardous Waste Sites, Contamination, and Landfills

A summary of known or potential hazardous waste sites, contaminated sites, and landfills within 0.25 mile of the Liquefaction Facility is provided in Appendix E. During any maintenance or repair activities that required ground disturbance, the Project *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if buried debris that may contain hazardous substances or contaminated media were encountered.

For those sites that are listed as cleanup complete with institutional controls, ADEC would need to be informed prior to excavations that may impact residual contamination at the sites. This condition may limit ground disturbing operations at the facility. These areas and sites of concern would be identified and site personnel would be informed of any restrictions associated with the sites. Further discussion regarding public health impacts can be found in Resource Report No. 5.

8.12.1.6 Dredged Material Placement Areas

The permanent footprint of the Liquefaction Facility would not cross or be in proximity to any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of operation of the Liquefaction Facility.

8.12.1.7 ROWs

A summary of the ROWs that would be within the permanent footprint of the Liquefaction Facility is provided in Appendix F. No direct impacts to existing railroad, utility, or waterway ROWs would be

anticipated as a result of operation of the Liquefaction Facility. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities that may result in potential impacts similar to those described for Project construction.

8.12.1.7.1 Waterways

The Liquefaction Facility would be located on the eastern shore of Cook Inlet in the Nikiski area of the Kenai Peninsula. As part of the Liquefaction Facility, the Marine Terminal would be operated and maintained in accordance with a WSA and U.S. Coast Guard Letter of Recommendation. Refer to Resource Report No. 5 for any potential indirect socioeconomic effects.

8.12.1.8 Coastal Management Program

See section 8.10 for more information regarding the state of the Coastal Zone Management Program. The Applicant would work closely with local governments using the Borough Coastal Zone Management Plans where applicable to plan operations activity and mitigate or avoid potential impacts.

8.12.2 Interdependent Project Facilities

8.12.2.1 Pipelines

8.12.2.1.1 Mainline

8.12.2.1.1.1 Land Use

Table 8.2.2-1 shows the land use types and land requirements within the Mainline's permanent ROW. The primary types of land use that would be impacted by the operations ROW is open land (52 percent) and forested land (46 percent). During operations, the pipeline would be buried and any impacts to land use from pipeline repair would be similar to those described for construction.

Agricultural

The operational footprint of the Mainline would require the permanent conversion of some agriculture land: approximately 0.2 acres. The overall loss of agriculture land as a result of Mainline operations would be minor.

Commercial/Industrial Land

No commercial/industrial lands would be located within the operations ROW of the Mainline. No impacts on commercial/industrial land would be anticipated as a result of Mainline operations.

Indirect impacts from operation and maintenance of the Mainline to commercial land in close proximity include visual and noise impacts and a possible reduction of land value. As provided in Section 8.15, the majority of the pipeline route is within existing corridors and a portion of the Mainline would be collocated with TAPS, which would decrease the introduction of contrast in landform, vegetation, and

buildings. The pipeline will be buried along the majority of the Mainline and therefore permanent visual and noise-related impacts to residential areas would be expected to be minor.

Forested Land

The operational footprint of the Mainline would require the permanent conversion of forested land. Routine vegetation mowing or clearing over the full width of the operations ROW in uplands would not be done more frequently than every three years. However, to facilitate periodic corrosion/leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained in an herbaceous state. Where it is necessary for helicopters to land, an area up to 10 acres may be cleared and a 100- by 100-foot pad would be installed. Impacts to forested land would be long-term, but minor, because of the amount of forested land present in Alaska and because the pipeline would be routed within existing corridors to the extent practicable.

Open Land

The operational footprint of the Mainline would include open land. Open space would be cleared of herbaceous growth before construction, during site preparation. During operations, the pipeline would be buried and open land along the ROW would revert to preconstruction conditions. No impacts to open land are anticipated as a result of Mainline operations.

Open Water

During operations, the pipeline would be buried and it is not anticipated that any open water areas that are crossed by the onshore portion of the pipeline would be impeded. Within Cook Inlet, the pipeline would either be sitting on the seabed or buried at the shoreline crossings. It is not anticipated that the presence of the Mainline would impact the use of open water in Cook Inlet. No impacts to open water are anticipated as a result of Mainline operations.

Residential Land

Effects to residential land use along the operations ROW of the Mainline would be long-term and minor, with approximately 2 percent of the Mainline ROW consisting of residential land. Residential land use would be converted to utility use for the life of the proposed Project. The permanent conversion would put constraints on development of residential land.

Operation and maintenance of the Mainline has the potential to affect residential areas in close proximity to the Mainline through visual and noise impacts.

The pipeline would be buried along the majority of the Mainline, and permanent visual and noise-related impacts to residential areas would be expected to be minor, while no indirect impacts to property values are expected (see Resource Report No. 5).

8.12.2.1.1.2 Zoning

The Mainline would be located in the NSB, YKCA, DB, MSB, and KPB. It is not anticipated that operation of the Mainline would impact existing zoning in any of these areas.

8.12.2.1.1.3 Land Ownership and Special Management Areas

A summary of land ownership crossed by the Mainline is provided in Table 8.5-1, and Appendix B contains Project maps depicting land ownership. Section 8.0 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project. The land management agencies are currently being consulted about the land management plans, management objectives, Project conformance, and mitigation measures necessary for the Project.

The Project representatives would apply for authorization for a ROW for the Mainline on state, federal, and borough lands. In addition, easement agreements with private landowners would be obtained as well as on lands with rights held by Alaska Native Corporations. The operations ROW would provide a permanent, limited interest that would enable the Project to operate, maintain, inspect, test, and terminate the pipeline within the designated easement. Authorization of the pipeline ROW would have no direct effect on land ownership because the surface and subsurface land ownership would not change.

Operation of the Mainline may indirectly affect land status by altering future state land disposals in that some land parcels close to the operations ROW may become less desirable to acquire due to the presence of the pipeline. This effect would be local (affecting only the future land disposals within the ROW) and would be low in intensity (not prohibiting future land disposals but decreasing the likelihood of a transaction). Indirect effects on land status would therefore be considered minor.

The Mainline would be consistent with the applicable land use plans; therefore, no direct or indirect impacts to federal, state, and local land management would be anticipated.

8.12.2.1.1.4 Recreation and Special Use Areas

The Mainline would directly impact 8,397 acres of recreational and special use land (Table 8.6-1). As discussed in Section 8.11.2.1, the Mainline would be within 1 mile of (indirectly impact) one NWR, three ACECs, two scenic byways, two SGRs, one state forest, one national historic trail, two SRR areas, one special use area, 20 RS 2477 easements, and eight 17(b) easements. Other impacts to recreational sites or special use areas may come in the form increased access, and increased recreation use, which could lead to a disruption of wildlife, compaction of soils and loss of vegetation on trails and around campsites, increased human waste and trash, and increased wildfire potential.

Table 8.6.6-2 provides the applicable stipulations of recreational sites and special use areas for the Mainline. All applicable permits would be obtained and guidelines followed (as outlined by these agencies) during operations. In addition, site-specific Public Land Use and Recreational Use Coordination Plans would be developed.

National WSR System

No national WSRs would be located within the Mainline permanent ROW. It is not anticipated that operation of the Mainline would impact any rivers that are part of the National WSR System.

National Trails System

The Mainline would intersect the INHT at two separate locations, MP 720 and MP 724, affecting approximately 0.14 acre during operation. The Mainline ROW would intersect the trail approximately 35 miles northwest of Anchorage on lands managed by the ADNR and BLM. The management framework, as outlined in the INHT Comprehensive Management Plan (BLM, 1986b), would be considered during operations; however, as described in the discussion of construction impacts, the proposed pipeline would have no direct or indirect effects on ADNR's responsibilities with regard to the INHT.

Areas of Historical or Cultural Significance

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

Recreational Sites and Special Use Areas

Project representatives would work closely with the applicable land management agencies during Mainline operation and maintenance planning and execution to reduce potential impacts to valuable resources and reduce unreasonable threats to existing public values. The Project representatives would attempt to retain existing public access routes and uses to reduce impacts to easements during Mainline operation.

8.12.2.1.1.5 Hazardous Waste Sites, Contamination, and Landfills

There are contaminated and LUST sites and landfills that would be located in the permanent Mainline ROW that may be impacted by ongoing operations (see Appendix E and Section 8.7.2). Operational activities in the area would be guided by the presence of contaminated soils and groundwater associated with contaminated sites, LUST sites, or landfills. Data would be gathered during the construction phase of the Project on avoidance areas in regard to impacted media such as soils, ground and surface water, and sediments. Permanent groundwater monitoring systems and remedial systems would be identified and avoided during operations.

For those sites that are listed as cleanup complete with institutional controls, ADEC would need to be informed prior to excavations that may impact remaining contamination, and/or residual contamination at the sites. This condition may limit Mainline operations and maintenance. Operations within or near sites that are listed as open with ongoing site investigation or remedial activities occurring at the sites would impose limits on facility operations. These areas and sites of concern would be identified and site personnel would be informed of any restrictions associated with the sites. Further discussion regarding public health impacts can be found in Resource Report No. 5.

Potential impacts and mitigation measures for maintenance and repair activities would be similar to those described in Section 8.11.2.1 for construction. During these activities, the Project representatives would adhere to its *Unanticipated Contamination Discovery Plan* (Appendix I).

8.12.2.1.1.6 Dredged Material Placement Areas

The permanent ROW of the Mainline would not cross any dredged material placement areas. Operation of the Mainline would not impact any dredged material placement areas.

8.12.2.1.1.7 ROWs

The Mainline would meet or exceed Department of Transportation standards at 49 C.F.R. 192.327 and would be buried below the ground surface at the depth required for safe crossing of existing ROWs and constructed in compliance with federal and state regulations, standards, and specifications. No impacts to ROWs would be anticipated from operation of the Mainline.

Potential impacts from pipeline repair would be similar to those described for construction. Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities.

8.12.2.1.2 PBTL

8.12.2.1.2.1 Land Use

As discussed previously, the PBTL would be aboveground in an area of Prudhoe Bay occupied by oil and gas production facilities and operations. Table 8.2.2-1 shows the land use types and land requirements within the permanent ROW. It is anticipated that any effects related to land use from operation of the PBTL would be permanent but minor.

8.12.2.1.2.2 Residential and Commercial Areas

There are no residential or commercial buildings within the permanent ROW of the PBTL. It is not anticipated that there would be any impacts to residential and commercial areas from operation of the PBTL.

8.12.2.1.2.3 Planned Residential and Commercial Areas

There are no planned developments within 0.25 mile of the PBTL. No impacts to planned residential or commercial areas would be anticipated as a result of operations of the PBTL.

8.12.2.1.2.4 Zoning

The PBTL would cross lands within the NSB that are zoned for resource development. It is not anticipated that operation of the PBTL would impact existing zoning in the area.

8.12.2.1.2.5 Land Ownership and Special Management Areas

8.12.2.1.2.6 Recreation and Special Use Areas

The permanent ROW of the PBTL would not cross any identified recreation or special use land, including National WSRs, National Historic Trails, or scenic byways. No impacts to recreation or special use areas would be anticipated as a result of operation of the PBTL.

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

8.12.2.1.2.7 Hazardous Waste Sites, Contamination, and Landfills

The permanent ROW of the PBTL would not cross any identified contaminated sites, LUST sites, or landfills. The *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if contaminated or hazardous media were suspected during maintenance or repair activities.

8.12.2.1.2.8 Dredged Material Placement Areas

The PBTL would not cross or be in proximity of any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of operation of the PBTL.

8.12.2.1.2.9 ROWs

The permanent ROW of the PBTL would not cross any railroads, utilities, or waterway ROWs. No direct impacts to existing railroad, utility, or waterway ROWs would be anticipated as a result of operation of the PBTL. Impacts would be anticipated to be similar to Project construction.

8.12.2.1.3 PTTL

8.12.2.1.3.1 Land Use

Similar to the PBTL, the PTTL would be located above ground in an area of Prudhoe Bay occupied by oil and gas production facilities and operations. Table 8.2.2-1 shows the land use types and land requirements within the permanent ROW. The primary type of land use affected by PTTL construction would be open land (98 percent). The presence of the PTTL would put permanent constraints on development in the immediate vicinity of the pipeline. It is anticipated that any effects related to land use from operation of the PTTL would be permanent but minor.

8.12.2.1.3.2 Residential and Commercial Areas

There would be no residential or commercial areas within proximity of the PTTL. No impacts to residential or commercial areas would be anticipated as a result of operation of the PTTL.

8.12.2.1.3.3 Planned Residential and Commercial Areas

There are no planned developments within 0.25 mile of the PTTL. No impacts to planned residential or commercial areas would be anticipated as a result of operations of the PTTL.

8.12.2.1.3.4 Zoning

The PTTL would cross lands within the NSB that are zoned for resource development. It is not anticipated that operation of the PTTL would impact existing zoning in the area.

8.12.2.1.3.5 Land Ownership and Special Management Areas

A summary of land ownership crossed by the PTTL is provided in Table 8.5-1 and Project maps depicting land ownership are provided in Appendix B. The permanent ROW for the PTTL would be

on state lands and a small portion of private land (2.3 acres). The permanent ROW would provide a permanent, limited interest that would enable the pipeline to be operated, maintained, inspected, tested, and terminated within the designated easement. Authorization of the permanent PTTL ROW would have no direct effect on land ownership because the surface and subsurface land ownership would not change.

8.12.2.1.3.6 Recreation and Special Use Areas

The PTTL ROW would impact 1,726.6 acres (of which 613.6 would be during operations) of recreational and special use areas (ADNR Special Use Area) (Table 8.6-1).

The PTTL would intersect the Dalton Highway and one RS 2447 ROW (Bullen-Staines River). All applicable permits would be obtained and guidelines followed (as outlined by these agencies) during operation. In addition, site-specific Public Land Use and Recreational Use Coordination Plans would be developed after the FEIS but prior to start of construction.

Project representatives would work closely with the applicable land management agencies during PTTL operation and maintenance planning and execution to reduce potential impacts to valuable resources and reduce threats to existing public values. Existing public access routes and uses to reduce impacts to easements during PTTL operation would be retained where possible.

There would be no National WSRs or National Historic Trails located within the permanent ROW of the PTTL. Therefore, no impacts to these recreational sites or special use areas would be anticipated as a result of operation of the PTTL. Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

8.12.2.1.3.7 Hazardous Waste Sites, Contamination, and Landfills

The permanent ROW of the PTTL would not cross any identified contaminated sites, LUST sites, or landfills. The *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if contaminated or hazardous media were suspected during maintenance and repair activities.

8.12.2.1.3.8 Dredged Material Placement Areas

The PTTL would not cross or be in proximity of any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of operation of the PTTL.

8.12.2.1.3.9 ROWs

Construction of the PTTL would not cross any railroads or utilities. No direct impacts to existing railroad, utility, or waterway ROWs would be anticipated as a result of operation of the PTTL. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities. Impacts would be anticipated to be similar to those from Project construction.

Roadways

The PTTL ROW crosses the ROW of Northstar Compressor to C Pad Pipe Access Road. The PTTL would provide for safe crossing of existing ROWs and constructed in compliance with federal and state regulations, standards, and specifications. No impacts to ROWs would be anticipated from operation of the PTTL.

Potential impacts from operations would be similar to those described for construction. Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities.

Waterways

The proposed design is for the PTTL to cross under the Putuligayuk, Sagavanirktok, Kadleroshilik, and Shaviovik rivers. During operations, use of the waterways would continue as normal. It is not anticipated that operation of the PTTL would impact any waterways.

8.12.2.2 Pipeline Aboveground Facilities

8.12.2.2.1 Land Use

Table 8.2.2-1 shows the land use types and land requirements within the permanent footprint of the Pipeline Aboveground Facilities. Operations of the Pipeline Aboveground Facilities would permanently convert land to industrial use. The primary type of land use affected by the operation of Pipeline Aboveground Facilities is open land (53 percent) and forested land (47 percent).

8.12.2.2.1.1 Agricultural

No agricultural lands would be within the permanent footprint of the Pipeline Aboveground Facilities. No impacts to agricultural land would be anticipated as a result of Pipeline Aboveground Facilities operation.

8.12.2.2.1.2 Commercial/Industrial Land

No commercial/industrial lands would be located within the permanent footprint of the Pipeline Aboveground Facilities. No impacts to commercial/industrial land are anticipated as a result of Pipeline Aboveground Facilities operation.

8.12.2.2.1.3 Forested Land

Impacts to forest land within the permanent footprint of the Pipeline Aboveground Facilities would be the same as identified for construction (see Section 8.11.2.1). Impacts to forested land would be permanent and minor.

8.12.2.2.1.4 Open Land

Impacts to open land within the permanent footprint of the Pipeline Aboveground Facilities would be the same as identified for construction (see Section 8.11.2.1). Impacts to open land would be permanent and minor.

8.12.2.2.1.5 Open Water

No open water would be located within the permanent footprint of the Pipeline Aboveground Facilities. No impacts to open water are anticipated as a result of operations of Pipeline Aboveground Facilities.

8.12.2.2.1.6 Residential

Impacts to residential land within the permanent footprint of the Pipeline Aboveground Facilities would be the same as identified for construction (see Section 8.11.2.1). There are no residential buildings within the permanent footprint of the Pipeline Aboveground Facilities. There would be no anticipated impacts to residential areas associated with operations of Pipeline Aboveground Facilities.

The Pipeline Aboveground Facilities (e.g., compressor stations, heater stations, meter stations, MLBVs) would be located within the NSB, YKCA, FNSB, DB, MSB, and KPB. It is not anticipated that operation of the Pipeline Aboveground Facilities would impact existing zoning in these areas.

8.12.2.2.2 Land Ownership and Special Management Areas

A summary of land ownership crossed by the Pipeline Aboveground Facilities is provided in Table 8.5-1 and Appendix B contains Project maps depicting land ownership. Section 8.0 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project. Project representatives are currently consulting with the land management agencies on the land management plans, management objectives, Project conformance, and mitigation measures necessary for the Project.

Similar to the Mainline, the Project representatives would apply for authorization for the aboveground facilities on state, federal, and borough lands. In addition, land for the Project would be purchased in fee from private landowners including Alaska Native Corporations. Alternatively, long-term lease arrangements would be pursued. The impacts to land management from operation of the aboveground facilities would be similar to the impacts described for the Mainline because the land use policies that apply to pipelines are generally assumed to include the aboveground facilities that occur alongside pipeline development.

8.12.2.2.3 Recreation and Special Use Areas

The Pipeline Aboveground Facilities would impact recreational and special use areas (Table 8.6-1). Table 8.6.6-2 provides the applicable stipulations of recreational sites and special use areas for the Pipeline Aboveground Facilities. All applicable permits would be obtained and guidelines followed (as outlined by these agencies) during operations. In addition, site-specific Public Land Use and Recreational Use Coordination Plans would be developed after the FEIS but prior to start of construction.

There would be no National WSRs or National Historic Trails located within the permanent footprint of the Pipeline Aboveground Facilities. Therefore, no impacts to these recreational sites or special use areas would be anticipated as a result of operation of the Pipeline Aboveground Facilities.

The impacts to recreational sites and special use areas, as well as scenic byways, from operation of the aboveground facilities would be similar to the impacts described for the Mainline, because the land use

policies that apply to pipelines are generally assumed to include the aboveground facilities that occur alongside pipeline development. This would include aboveground facilities intersecting Denali State National Park, the Tanana Valley State Forest, the Galbraith Lake ONA ACEC, the Toolik Lake RNA ACEC, the Minto Flats and Susitna SGRs, and the Dalton Highway Scenic Byway.

8.12.2.2.4 Hazardous Waste Sites, Contamination, and Landfills

The permanent footprint of the Pipeline Aboveground Facilities would not cross any identified contaminated sites, LUST sites, or landfills. The *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if contaminated or hazardous media were suspected during any maintenance or repair activities.

8.12.2.2.5 Dredged Material Placement Areas

The permanent footprint of the Pipeline Aboveground Facilities would not cross or be in in the proximity of any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of operation of the Pipeline Aboveground Facilities.

8.12.2.2.6 ROWs

A summary of the ROWs that would be within the operations footprint of the Pipeline Aboveground Facilities is provided in Appendix F. The Pipeline Aboveground Facilities would not cross any railroads, utilities, or waterway ROWs. No direct impacts to existing railroad, utility, or waterway ROWs would be anticipated as a result of the Pipeline Aboveground Facilities. See Resource Report No. 5 for additional information on potential indirect effects related to transportation during operations.

8.12.2.3 Pipeline Associated Infrastructure

8.12.2.3.1.1 Land Use

Table 8.2.2-1 shows the land use types and land requirements within the permanent footprint of the Pipeline Associated Infrastructure. The operational footprint of the Pipeline Associated Infrastructure would be associated with the use of access roads.

Agricultural

No agricultural lands would be within the permanent footprint of the Pipeline Associated Infrastructure. No impacts to agricultural land would be anticipated as a result of use of Pipeline Associated Infrastructure during operations.

Commercial/Industrial Land

No commercial/industrial lands would be within the permanent footprint of the Pipeline Associated Infrastructure. No impacts to commercial/industrial land would be anticipated as a result of use of Pipeline Associated Infrastructure during operations.

Temporary, intermittent access to Pipeline Associated Infrastructure would be required to support Project-related operation and maintenance activities. Potential impacts could include visual, noise, and

access impacts to residential and commercial areas. Permanent visual- and noise-related impacts to residential areas would be expected to be temporary and minor (see Resource Report No. 9), while no impacts would be expected to area access (see Resource Report No. 5).

Forested Land

The operational footprint of the Pipeline Associated Infrastructure would result in the permanent conversion of forested land. Forest land would not be restored within the operational footprint; therefore, there would be a permanent conversion of forest land in these areas. Due to the amount of forested land in the area, the impact would be minor.

Open Land

The operational footprint of the Pipeline Associated Infrastructure would result in the permanent conversion of open land. Open land would not be restored within the operational footprint of the Pipeline Associated Infrastructure and therefore, would be a permanent conversion of open land in the areas. Due to the amount of open land in the area, the impact would be minor.

Open Water

No open water would be impacted by the permanent footprint of the Pipeline Associated Infrastructure. No impacts to open water would be anticipated as a result of use of Pipeline Associated Infrastructure during operations.

Residential

Effects to residential land for Pipeline Associated Infrastructure would be similar to the impacts described for the Mainline. Residential land use would be converted to permanent utility use for the life of the Project. The permanent conversion would put constraints on development of residential land and would be minor.

Zoning

Similar to the Mainline, it is not anticipated that operation of the Pipeline Associated Infrastructure would impact existing zoning.

8.12.2.3.1.2 Land Ownership and Special Management Areas

A summary of land ownership crossed by the Pipeline Associated Infrastructure is provided in Table 8.5-1 and Appendix B contains Project maps depicting land ownership. Section 8.0 describes the consultations conducted to date with federal and state agencies and other parties interested in the Project. Project representatives are currently consulting with the land management agencies on the land management plans, management objectives, Project conformance, and mitigation measures necessary for the Project.

The impacts to land management from operation of the Pipeline Associated Infrastructure would be similar to the impacts described for the Mainline, because the land use policies that apply to pipelines

are generally assumed to include the Pipeline Associated Infrastructure that occur alongside the pipeline.

8.12.2.3.1.3 Recreation and Special Use Areas

The Pipeline Associated Infrastructure would impact recreational and special use areas (Table 8.6-1). Table 8.6.6-2 provides the applicable stipulations of recreational sites and special use areas in the operational footprint of the Pipeline Associated Infrastructure. All applicable permits would be obtained and guidelines followed (as outlined by these agencies) during operations. In addition, site-specific Public Land Use and Recreational Use Coordination Plans would be developed after the FEIS but prior to start of construction.

There would be no National WSRs located within the construction ROW of the Pipeline Associated Infrastructure. Therefore, no impacts to WSRs would be anticipated as a result of use of the Pipeline Associated Infrastructure during Project operations.

Information regarding areas of historical or cultural significance is provided in Resource Report No. 4.

The impacts to recreational sites and special use areas, as well as scenic byways, from use of the Pipeline Associated Infrastructure would be similar to the impacts described for the Mainline, because the land use policies that apply to pipelines are generally assumed to include the associated infrastructure that occur alongside the pipeline. Project representatives would keep the public informed of temporary detours, parking restrictions and alternatives, and operation schedules through a publicly available website and in some cases, written media, including local newspapers.

8.12.2.3.1.4 Hazardous Waste Sites, Contamination, and Landfills

A review of the ADEC CSD and LUST database indicates that there are listed contaminated sites, LUST sites, and retired landfills located in the footprint of the Pipeline Associated Infrastructure that may be encountered by maintenance and repair activities (see Section 8.7.2 and Appendix E). Potential impacts associated with Project maintenance and repair activities and the proposed mitigation measures would be similar to those described in Section 8.11.1.6 for the Liquefaction Facility.

8.12.2.3.1.5 Dredged Material Placement Areas

The Pipeline Associated Infrastructure would not cross or be in the proximity of any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of use of the Pipeline Associated Infrastructure during Project operations.

8.12.2.3.1.6 ROWs

A complete list of the ROWs that would be within the footprint is provided in Appendix F. Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities.

Roadways

The Pipeline Associated Infrastructure construction ROW crosses or is within the ROW of 63 existing roads, including four major highways: Dalton Highway, Elliot Highway, George Parks Highway, and

the KSH. The permanent ROW intersects or crosses approximately 1,169 acres of existing roadway ROW, resulting in minor potential effects to the human and natural environment. Refer to Resource Report No. 5 for any potential indirect socioeconomic effects.

Railroads

The Pipeline Associated Infrastructure operations ROW would be within or cross the Alaska Railroad ROW in multiple locations. There are seven railroad spurs and railroad work pads located within the Alaska Railroad ROW, none of which would cross the Alaska Railroad. The minimum depth of cover would be 10 feet for railroad crossings, as specified in ARRC standards (49 C.F.R. 192 requires a minimum of 3 feet at drainage ditches of public roads and railroads). Refer to Resource Report No. 5 for any potential indirect socioeconomic effects.

Pipelines

The Pipeline Associated Infrastructure ROW crosses or intersects with multiple pipeline ROWs in the Project area, including the Point Thomson Export Pipeline, TAPS, and others in YKCA, FNSB, MSB, and KPB. The permanent footprint consists of 123 acres of existing pipeline ROWs, resulting in minor potential effects to the human and natural environment. Refer to Resource Report No. 5 for any potential indirect socioeconomic effects.

Utilities

The Pipeline Associated Infrastructure ROW would intersect with overhead powerlines, GCI fibers, and Quintillion infrastructure throughout the Project area. The permanent ROW would intersect with 195.3 acres of Utility ROW, resulting in minor effects to the human and natural environment. Refer to Resource Report No. 5 for any potential indirect socioeconomic effects.

ADNR Easements

The Pipeline Associated Infrastructure ROW would cross multiple easement ROWs along the Project area. The operations ROW would intersect with 2.19 acres of utilities ROW, resulting in minor effects to the human and natural environment. Refer to Resource Report No. 5 for any potential indirect socioeconomic effects.

Waterways

The Pipeline Associated Infrastructure ROW would cross multiple rivers within the Project area, including the Sagavanirktok, John, Tolovana, and Nenana rivers. The permanent ROW would intersect or overlap with 698.4 acres, resulting in minor effects to the human and natural environment. Refer to Resource Report No. 5 for any potential indirect socioeconomic effects.

8.12.2.4 GTP

8.12.2.4.1.1 Land Use

Table 8.2.2-1 shows the land use types and land requirements within the permanent footprint for the GTP. All of the land use impacts would be permanent, because the entire area disturbed for construction

would be used during operations. Thus, the impacts described previously for construction would also apply to facility operations.

Agricultural

The operational footprint of the GTP would not include agricultural land. No impacts to agricultural land would be anticipated from GTP operations.

Commercial/Industrial Land

The operational footprint of the GTP would impact commercial/industrial land. The impact would be negligible as this land use is consistent with the operation of the GTP.

There are no commercial buildings within 200 feet of the GTP. No impacts to commercial areas due to GTP operation are anticipated.

Forested Land

The operational footprint of the GTP would not include forested land. No impacts to forested land would be anticipated from GTP operations.

Open Land

Impacts to open land from GTP operation would be the same as those identified for construction (see Section 8.11.2.2). It is anticipated that impacts would be permanent and minor.

Open Water

Operation of the GTP would require permanent infrastructure. Within the permanent footprint of the GTP, impacts to open water would be permanent, minor, and consistent with the adjacent facilities. Impacts to open water are further discussed in Resource Report No. 2.

Residential

There are no residential buildings in the footprint of the GTP or within 200 feet of the GTP. No impacts to residential areas due to GTP operation are anticipated.

Planned Residential and Commercial Ares

There are no planned developments within 0.25 mile of the GTP. No impacts to planned residential or commercial areas would be anticipated as a result of operations of the GTP.

8.12.2.4.1.2 Zoning

The GTP would cross lands within the NSB that are zoned for resource development. It is not anticipated that operation of the GTP would impact existing zoning in the area.

8.12.2.4.1.3 Land Ownership and Special Management Areas

The GTP would not intersect federal or local lands. The acres of state-owned land that would be impacted by the GTP are shown in Table 8.5-1. While authorization from ADNR would allow the state lands to be occupied for the purposes of operations, the underlying surface and subsurface land status would not change. Therefore, there would be no direct or indirect effects to the existing land status from operation of the GTP.

The GTP would be subject to the North Slope Management Plan, once that plan is developed and adopted by the ADNR. Because the GTP would be located at the terminus of an existing energy transportation corridor and within an industrial area of the NSB that has already been considered during development of the plan, no impacts to ADNR's planning in the NSB would be anticipated.

8.12.2.4.1.4 Recreation and Special Use Areas

The permanent footprint of the GTP would not cross any identified recreation or special use land, including National WSRs, National Historic Trails, or scenic byways. No impacts to recreation or special use areas would be anticipated as a result of operation of the GTP.

8.12.2.4.1.5 Hazardous Waste Sites, Contamination, and Landfills

The permanent footprint of the GTP would not cross any identified contaminated sites, LUST sites, or landfills. The *Unanticipated Contamination Discovery Plan* (Appendix I) would be implemented if contaminated or hazardous media were suspected during maintenance or repair activities.

8.12.2.4.1.6 Dredged Material Placement Areas

The permanent footprint of the GTP would not cross or be in proximity to any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of operation of the GTP.

8.12.2.4.1.7 ROWs

A summary of the ROWs that would be within the operation footprint of the GTP is provided in Appendix F. The GTP would not cross any roads, railroads, pipelines, or waterway ROWs. No direct impacts to existing railroad, utility, or waterway ROWs would be anticipated as a result of operation of the GTP. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

8.12.2.5 GTP Associated Infrastructure

During operations, the GTP Associated Infrastructure would consist of the water reservoir, pipelines, material site, and access roads.

8.12.2.5.1 Land Use

The primary type of land use affected by permanent footprint of the GTP Associated Infrastructure would be open land, accounting for approximately 69 percent of the total land use.

8.12.2.5.1.1 Agricultural

No agricultural lands would be within the permanent footprint of the GTP Associated Infrastructure. No impacts to agricultural land would be anticipated as a result of GTP Associated Infrastructure operation.

8.12.2.5.1.2 Commercial/Industrial Land

The operational footprint of the GTP Associated Infrastructure would impact commercial/industrial land. The impact would be negligible as this land use is consistent with the operation of the GTP Associated Infrastructure.

There are no commercial areas within 200 feet of the GTP. No impacts would be anticipated because of the permanent footprint of the GTP Associated Infrastructure.

8.12.2.5.1.3 Forested Land

No forested lands would be within the permanent footprint of the GTP Associated Infrastructure. No impacts to forested land would be anticipated as a result of the GTP Associated Infrastructure operation.

8.12.2.5.1.4 Open Land

Open land would not be reclaimed within the permanent footprint of the GTP Associated Infrastructure and therefore would be a permanent conversion of open land. However, this would represent a minor impact to open land given that much land within the Prudhoe Bay area is associated with oil and gas industrial developments, such as the CGF and TAPS, which are in relatively close proximity to the GTP Associated Infrastructure.

8.12.2.5.1.5 Open Water

The permanent footprint of the GTP Associated Infrastructure would include open water. This would primarily be associated with the barge bridge and GTP reservoir, pump facilities, and reservoir pad. The operation of the GTP reservoir would create open water. This permanent conversion and creation of open water would be expected to be permanent and minor.

8.12.2.5.1.6 Residential

There are no residential or commercial areas within 200 feet of the GTP Associated Infrastructure. No impacts would be anticipated because of the permanent footprint of the GTP Associated Infrastructure.

8.12.2.5.1.7 Planned Residential and Commercial Areas

There are no planned developments within 0.25 mile of the GTP Associated Infrastructure. No impacts to planned residential or commercial areas would be anticipated as a result of operations of the GTP Associated Infrastructure.

8.12.2.5.2 Zoning

The GTP Associated Infrastructure would cross lands within the NSB that are zoned for resource development. It is not anticipated that operation of the GTP Associated Infrastructure would impact existing zoning in the area.

8.12.2.5.3 Land Ownership and Special Management Areas

The permanent footprint of the GTP Associated Infrastructure would not intersect federal land. The acres of state-owned land that would be impacted by the GTP Associated Infrastructure are shown in Table 8.5-1. While authorization from the ADNR would allow the state lands to be occupied for the purpose of operation of the GTP Associated Infrastructure, the underlying surface and subsurface land status would not change. Therefore, there would be no direct or indirect effects to the existing land status from operation of the GTP Associated Infrastructure.

Development of the GTP Associated Infrastructure would be consistent with CL 618 (see Table 8.5.2-3), which does not prohibit any specific uses for the lands in the Project area. The GTP Associated Infrastructure would be subject to the North Slope Management Plan, once that plan is developed and adopted by the ADNR. Because the GTP Associated Infrastructure would be located at the terminus of an existing energy transportation corridor and within an industrial area of the NSB that has already been considered during development of the plan, no impacts to ADNR's planning in the North Slope Borough would be anticipated.

8.12.2.5.4 Recreation and Special Use Areas

The permanent footprint of the GTP Associated Infrastructure would not cross any identified recreation or special use land, including National WSRs, National Historic Trails, or scenic byways. No impacts to recreation or special use areas would be anticipated as a result of operation of the GTP Associated Infrastructure.

8.12.2.5.5 Hazardous Waste Sites, Contamination, and Landfills

A review of the ADEC CSD and LUST database indicates that there would be listed contaminated sites located in the permanent footprint of the GTP Associated Infrastructure that may be encountered during maintenance and repair activities (see Section 8.7.2 and Appendix E). Potential impacts associated with Project maintenance and repair activities and potential mitigation measures would be similar to those described in Section 8.11.1.6 for the Liquefaction Facility.

8.12.2.5.6 Dredged Material Placement Areas

The permanent footprint of the GTP Associated Infrastructure would not cross or be near any existing dredge material placement areas. No impacts to existing dredge material placement areas would be anticipated as a result of operation of the associated GTP infrastructure.

8.12.2.5.7 ROWs

A summary of the ROWs that would be within the construction footprint of the GTP Associated Infrastructure is provided in Appendix F. No railroads or utility ROWs would be crossed by

construction of the GTP. No direct impacts to existing railroad or utility ROWs would be anticipated as a result of construction of the GTP Associated Infrastructure. See Resource Report No. 5 for additional information on potential indirect effects related to the transport of Project-related materials.

Project representatives would coordinate with any ROW owner prior to any maintenance or repair activities. Impacts would be anticipated to be similar to those from Project construction.

8.12.2.5.8 Coastal Management Program

The Applicant would work closely with local governments using the Borough Coastal Zone Management Plans where applicable to plan operations activity and mitigate or avoid potential impacts.

8.12.3 Non-Jurisdictional Facilities

Potential operational impacts from the PBU MGS project and PTU Expansion project and the relocation of the KSH would be similar to those for construction.

8.13 VISUAL RESOURCES

8.13.1 Existing Visual Environment

The Project Planning Area is defined as the Liquefaction Facility, the Mainline ROW, associated facilities, PBTL, PTTL, and the area where the GTP would be constructed. The Project Planning Area includes a variety of landscapes, including the Beaufort Coastal Plain Ecoregion, the Brooks and Alaska mountain ranges, the Tanana Flats, the Nenana River Valley, and the Susitna River Valley. A variety of land cover and vegetation types comprise the landscape including tundra, wetlands, waterways, dwarf scrub/shrub vegetation, and boreal forest.

Visual analysis studies were conducted within 15 miles of the Project Planning Area. For the purposes of this analysis, the Project Planning Area includes the locations of all Project facilities as well as locations off the ROW where material storage or construction access is required. The visibility of Project features from these areas was confirmed through a line-of-sight analysis using available Digital Elevation Model (DEM) information considering the topography and distance to the Project features. The results of the DEM analysis include the locations of parks, refuges, trails, historic sites, communities, and other areas with visual/aesthetic resources currently identified through the background research in the Project Planning Area, and is included in Appendix L. The DEM visual analysis study concluded that of the 113 potentially sensitive visual resources, 54 were potentially visible from the Project corridor (see Table 8.13.1-1). The visual resource analysis completed in 2015 and 2016 (Appendix L) concluded that, during construction, 18 Key Observation Points (KOPs) would have moderate visual contrasts and three would have strong to moderate contrasts. In the long term, 11 KOPs have the potential for long-term moderate contrast and would occur where the proposed pipeline would cross a road, at locations of material sites or camps, and at river crossings. KOPs were evaluated for current scenic quality and viewer sensitivity, were selected based on the presence of more visually intrusive Project features in sensitive areas identified throughout the background research process and stakeholder consultation, and are located on major access roads and publicly accessible routes with views of the Project Planning Area.

Analyzing characteristics of the Project features in the context of the general land character of the proposed location can provide the degree of visual impact that may result from the Project. Engineering plans for construction and typical construction features were reviewed, including tall elements such as communication towers. Several federal agencies, including the U.S. Forest Service (USFS) and BLM, have developed methodologies for assessing visual impacts. In the absence of a standard plan, the BLM Visual Resource Management (VRM) system was used to establish baseline conditions, provide recommended visual resource management objectives, and assess potential impacts. The BLM VRM methodology served as a guideline for this study because (1) the BLM manages the largest amount of federal land in the Project Planning Area, and (2) the BLM has an established VRM methodology. The BLM VRM method examines landform, water, vegetation, and structure in terms of form, line, color, and texture. This technique enables analysis of how proposed pipeline facilities would present contrast to the viewshed. The VRM technique is further discussed in Appendix L.

To the extent practicable, Project features would be collocated with existing infrastructure (i.e., TAPS, Dalton Highway, Tesoro Refinery) to reduce potential visual effects. One of the main contrasts the Project facilities would create to the landscape is the introduction of new forms, lines, colors, and textures in the viewshed. Locating proposed buildings near existing buildings would reduce the amount of structural contrast, because similar buildings are already located in the viewshed.

TABLE 8.13.1-1

Sensitive Areas within 15 miles of the Project Area

Sensitive Visual Resource	Description	Borough or Census Area	Project Facility Visible from Designated Visual Resource	Visible from Project Footprint[1 2]	MP	Approximate Distance to Project Feature
Arctic National Wildlife Refuge	National Wildlife Refuge	NSB	Mainline, GTP	Yes	144	4.3
Denali National Park & Preserve	National Park and Preserve	DB	Mainline	Yes	536	0.1
Denali State Park	State Park	DB	Mainline	Yes	609	0
Gates of the Arctic National Park & Preserve	National Park and Preserve	NSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	188	1.21
Iditarod National Historic Trail	National Historic Trail	MSB	Mainline	Yes	723.5	0
James Dalton Highway Corridor	Scenic Byway	NSB	Mainline, GTP	Yes	0-406	0
Kanuti National Wildlife Refuge	National Wildlife Refuge	YKCA	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	298	9.61
Kenai National Wildlife Refuge	National Wildlife Refuge	KPB	Mainline, LTP	Yes	794	5.1
Kenai River Special Management Area	State Special Management Area	KPB	Mainline, LTP	No - blocked by topography	LTP	9.4

TABLE 8.13.1-1

Sensitive Areas within 15 miles of the Project Area

Sensitive Visual Resource	Description	Borough or Census Area	Project Facility Visible from Designated Visual Resource	Visible from Project Footprint[1 2]	MP	Approximate Distance to Project Feature
Minto Flats State Game Refuge	State Game Refuge	YKCA	Mainline	Yes	432	0
Parks Highway	Scenic Byway	DB	Mainline	Yes	471	0
Petersville Recreational Mining Area	State Recreational Mining Area	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	652	15.5
Redoubt Bay Critical Habitat	State Critical Habitat Area	KPB	Mainline	No - blocked by topography	800	12.2
Susitna Flats State Game Refuge	State Game Refuge	MSB	Mainline	Yes	737	0
Tanana Valley State Forest	State Forest	FNSB	Mainline	Yes	409	0
Trading Bay State Game Refuge	State Game Refuge	KPB	Mainline	No - blocked by topography	784	11.4
Willow Mountain Critical Habitat	State Critical Habitat Area	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	692	13.3
Yukon Flats National Wildlife Refuge	National Wildlife Refuge	YKCA	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	365	1.7
Nancy Lake State Recreation Area	State Recreation Area	MSB	Mainline		710	7.4
Little Susitna Recreation River	State Rec River	MSB	Mainline		721	11.4
Willow Creek State Recreation area	State Recreation Area	MSB	Mainline	No - blocked by topography	704	4.8
Alexander Creek State Recreation River	State Recreation River	MSB	Mainline	Yes	727	0
Talkeetna Recreation River	State Recreation River	MSB	Mainline	Possibly	663	4.2
Kroto Creek and Moose Creek SRR	State Recreation River	MSB	Mainline	Yes	703	0
Prudhoe Bay	City/Community	NSB	Mainline, GTP	Possibly	1	4.4
Deadhorse	City/Community	NSB	Mainline, GTP	Possibly	7	4.1
Wiseman	City/Community	YKCA	Mainline	No - blocked by topography	230	0.7
Livengood	City/Community	YKCA	Mainline	Possibly - DEM not complete from Project feature to community	401	4.3

TABLE 8.13.1-1

Sensitive Areas within 15 miles of the Project Area

Sensitive Visual Resource	Description	Borough or Census Area	Project Facility Visible from Designated Visual Resource	Visible from Project Footprint[1 2]	MP	Approximate Distance to Project Feature
Old Minto	City/Community	YKCA	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	450	12.5
Standard	City/Community	YKCA	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	453	7.2
Nenana	City/Community	YKCA	Mainline	Yes	474	0.7
Anderson	City/Community	DB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	489	3.2
Ferry	City/Community	DB	Mainline	No - blocked by topography	520	1.2
Lignite	City/Community	DB	Mainline	No - blocked by topography	522	1.3
Healy	City/Community	DB	Mainline, Camp/PSY	Yes	529	1.9 (to mainline), 0.5 (to Camp/PSY)
Garner	City/Community	DB	Mainline	Yes	530	0.3
Suntrana	City/Community	DB	Mainline	No - blocked by topography	533	4.3
McKinley Park	City/Community	DB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	539	3.6
Cantwell	City/Community	DB	Mainline, Camp/PSY	Yes	568	1.1
Summit	City/Community	MSB	Mainline	Yes	575	0.3
Broad Pass	City/Community	MSB	Mainline	Possibly	586	1.6
Colorado	City/Community	MSB	Mainline	No - blocked by topography	592	1.4
Curry	City/Community	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	640	7.5
Chase	City/Community	MSB	Mainline	No - blocked by topography	655	5.3
Talkeetna	City/Community	MSB	Mainline	No - blocked by topography	666	5.0
Trapper Creek	City/Community	MSB	Mainline	No - blocked by topography	670	5.2
Sunshine	City/Community	MSB	Mainline/ PSY/Workpad	Yes to PSY/Workpad	677	4.2
Montana	City/Community	MSB	Mainline	No - blocked by topography	683	4.3

TABLE 8.13.1-1

Sensitive Areas within 15 miles of the Project Area

Sensitive Visual Resource	Description	Borough or Census Area	Project Facility Visible from Designated Visual Resource	Visible from Project Footprint[1 2]	MP	Approximate Distance to Project Feature
Willow	City/Community	MSB	Mainline	No - blocked by topography	708	9.4
Tyonek	City/Community	KPB	Mainline	No - blocked by topography	766	4.7
Kustatan	City/Community	KPB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	801	11.8
Nikiski	City/Community	KPB	Mainline, LTP	Yes	813	0.4
Kenai	City/Community	KPB	Mainline, LTP	Possibly	818	9.3
Ridgeway	City/Community	KPB	Mainline, LTP	Possibly	818	13.8
Salamatof	City/Community	KPB	Mainline, LTP	Yes	818	4.5
Susitna	City/Community	MSB	Mainline	No - blocked by topography		
Revised Statute 2477 Trail (RST) 450 Hickel Highway	Trail	YKCA	Mainline	Yes - crosses pipeline	63	0.0
RST 254 Wiseman-Chandalar	Trail	YKCA	Mainline	Yes - crosses pipeline	219	0.0
RST 1966 Caro-Coldfoot: West Fork Route	Trail	YKCA	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	221	13.4
RST 899 Hammond River Trail	Trail	YKCA	Mainline	Possibly	227	0.7
RST 262 Caro-Coldfoot	Trail	YKCA	Mainline	Yes - crosses pipeline	242	0.2
RST 591 Coldfoot-Junction Trail 49 (east route)	Trail	YKCA	Mainline	Yes - crosses pipeline	242	0.2
RST 9 COLDFOOT-CHANDALAR LAKE TRAIL	Trail	YKCA	Mainline	Yes - crosses pipeline	242	0.2
RST 9 Coldfoot-Chandalar Lake Trail	Trail	YKCA	Mainline	Yes - crosses pipeline	242	0.2
RST 209 Bettles-Coldfoot	Trail	YKCA	Mainline	Yes	250	0.2
RST 1611 Bergman - Cathedral Mountain	Trail	YKCA	Mainline	Yes	251	0.4
RST 412 Slate Creek	Trail	YKCA	Mainline	Yes - crosses pipeline	256	0.0
RST 38 Tramway Bar	Trail	YKCA	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	257	2.9

TABLE 8.13.1-1

Sensitive Areas within 15 miles of the Project Area

Sensitive Visual Resource	Description	Borough or Census Area	Project Facility Visible from Designated Visual Resource	Visible from Project Footprint[1 2]	MP	Approximate Distance to Project Feature
RST 468 Hunter Creek-Livengood	Trail	YKCA	Mainline	Yes - crosses pipeline	401	0.2
RST 70 Ester-Dunbar	Trail	YKCA	Camp/pipe storage yard (PSY)	Yes	454	1.7
RST 66 Dunbar-Brooks Terminal	Trail	YKCA	Mainline	Yes - crosses pipeline	455	0.0
RST 1595 Dunbar-Minto-Tolovana	Trail	YKCA	Mainline	Yes - crosses pipeline	456	0.3
RST 152 Nenana-Tanana (serum run)	Trail	YKCA	Mainline	Yes	472	0.2
RST 264 Old Mail Trail (Nenana-Minto)	Trail	YKCA	Mainline	Yes	472	0.2
RST 346 Nenana-Kantishna	Trail	YKCA	Mainline	Yes - crosses pipeline	474	0.4
RST 119 Kobi-Bonnifield Trail to Tatlanika Crk	Trail	DB	Mainline	Yes	498	1.4
RST 345 Kobi-McGrath (via Nikolai & Big River)	Trail	DB	Mainline	Yes - crosses pipeline	498	0.2
RST 343 Kobi-Kantishna	Trail	DB	Mainline	Yes - crosses pipeline	499	0.3
RST 491 Rex-Roosevelt	Trail	DB	Mainline	Yes - crosses pipeline	499	0.3
RST 340 Lignite-Stampede	Trail	DB	Mainline	Yes - crosses pipeline	524	0.2
RST 344 Lignite-Kantishna	Trail	DB	Mainline	Yes - crosses pipeline	524	0.2
RST 709 Healy-Diamond Coal Mine Dirt Road	Trail	DB	Mainline	Yes - crosses pipeline	528	0.1
RST 625 Cantwell Small Tracts Road (Lovers Lane)	Trail	DB	Mainline	Yes - crosses pipeline	566	0.2
RST 707 Windy Creek Trails (Cantwell)	Trail	DB	Camp/PSY	Yes	569	1.3
RST 52 Chulitna Trail	Trail	MSB	Mainline	No - blocked by topography	606	2.3
RST 100 Indian River-Portage Creek Trail	Trail	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	608	4.3
RST 469 McWilliams-Gold Creek Trail	Trail	MSB	Mainline	No DEM available but based upon distance	613	8.6

TABLE 8.13.1-1

Sensitive Areas within 15 miles of the Project Area

Sensitive Visual Resource	Description	Borough or Census Area	Project Facility Visible from Designated Visual Resource	Visible from Project Footprint[1 2]	MP	Approximate Distance to Project Feature
				Project features are not anticipated to be visible		
RST 1509 Curry Landing Strip - Lookout	Trail	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	639	4.1
RST 1608 Youngstown-Home Lake	Trail	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	643	11.4
RST 516 Black Creek Winter Trail	Trail	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	662	14.9
RST 331 Talkeetna-Iron Creek	Trail	MSB	Mainline	Possibly	667	5.3
RST 1691 Herning Trail-Question Creek	Trail	MSB	Mainline	Possibly	677	4.4
RST 1506 Goose Creek Road	Trail	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	684	3.7
RST 536 Montana Loop Trail	Trail	MSB	Mainline	No - blocked by topography	684	4.8
RST 1721 Kashwitna River Trail	Trail	MSB	Mainline	No - blocked by topography	689	7.0
RST 149 Nancy Lake-Susitna	Trail	MSB	Mainline	Possibly	724	1.0
RST 198 Susitna-McDougal	Trail	MSB	Mainline	Yes - crosses pipeline	721	0.4
	Trail	MSB	Mainline	Yes - crosses pipeline	723	0.0
RST 126 Lakeview-McDougal	Trail	MSB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	728	13.6
RST 1862 Beluga Indian Trail	Trail	KPB	Mainline	Yes - crosses pipeline	750	0.5
RST 200 Susitna-Tyonek	Trail	KPB	Mainline	Yes - crosses pipeline	764	0.0
RST 338 White River Trail	Trail	KPB	Mainline	No - blocked by topography	788	10.8
Blair Lake State Recreation Site	ILMA Park	MSB	Mainline	No - blocked by topography	648	1.5
Dry Creek Site	ILMA Park	MSB	Mainline	Yes	525	1.0
Montana Creek State Recreation Site	ILMA Park	MSB	Mainline	No - blocked by topography	682	4.7
Nancy Lake State Recreation Site	ILMA Park	MSB	Mainline	No - blocked by topography	709	11.3
The Pillars - Kenai River Special Management Area	ILMA Park	MSB	LTP	Yes	818	13.3

TABLE 8.13.1-1

Sensitive Areas within 15 miles of the Project Area

Sensitive Visual Resource	Description	Borough or Census Area	Project Facility Visible from Designated Visual Resource	Visible from Project Footprint[1] [2]	MP	Approximate Distance to Project Feature
Tokositna River State Recreation Area	ILMA Park	MSB	Mainline	No - blocked by topography	646	6.2
Nenana River Gorge & McKinley Village Special Use Area	Special Use Land	DB	Mainline	No - blocked by topography	545	2.2
Nenana River Gorge & McKinley Village Special Use Area	Special Use Land	DB	Mainline	Yes - area overlaps pipeline	533-538	0
DNR Dmlw Realty Services Osl L Sh Esc	Special Use Land	KPB	Mainline	No DEM available but based upon distance Project features are not anticipated to be visible	754	11.2
North Slope Area Special Use Lands	Special Use Land	NSB	Mainline, GTP	Yes - area overlaps pipeline	0-183	0

[1] Visibility based on DEM (Digital Elevation Model) does not account for vegetation present that may reduce visibility.

[2] Visibility from Project footprint determined with line-of-sight analysis with ESRI ArcGIS desktop analysis in areas with sufficient DEM availability.

8.13.1.1 Liquefaction Facility

The Liquefaction Facility would be constructed on the eastern shore of Cook Inlet in the Nikiski area of the Kenai Peninsula. The areas adjacent to Cook Inlet, including the Nikiski area, are industrialized with existing infrastructure related to marine transport and oil and gas processing. Views of Mount Redoubt and other mountains in the Aleutian Range are present to the west across Cook Inlet. To the east, the Kenai Mountains are visible. Areas with sensitive resources identified within 15 miles of the Liquefaction Facility include:

- Residential areas in Nikiski;
- Views from the water in Cook Inlet;
- The Kenai NWR;
- The Kenai River Special Management Area; and
- The East Foreland Lighthouse Reserve.

Contrasts to viewsheds in the area around the Liquefaction Facility expected from the Project are discussed in Tables 4a and 4b of Appendix L. KOPs identified near the Liquefaction Facility include locations associated with the Nikiski/North Star Community School, Kenai NWR, Kaleidoscope Charter School in Kenai, and the Pillars Boat Launch in the Kenai Rivers Special Management Area.

Table 8.13.1-1 includes dimensions of the equipment at the Liquefaction Facility, as provided in Appendix D of Resource Report No. 9.

TABLE 8.13.1-1

Approximate Size of Equipment and Modules at the Liquefaction Facility

STACKS	
Description	**Height (feet)**
Compressor Turbines (6)	210.0
Power Generated Turbines (4)	150.0
Essential Generators (7)	50.0
Firewater Pumps	10.0
Diesel Auxiliary Air Comp	10.0
Thermal Oxidizer	47.0
Ground Flares (3)	0.0
Low Pressure (LP) Flare	209.0
LNGC Main Stacks (2)	148.0
Tug Stacks	35.0
BUILDINGS	
Description	**Modeled Height (feet)**
LNG Train Buildings (6)	42.0
LNG Tanks (2)	140.0
Power Generation Building Tier 1	30.0
Power Generation Building Tier 2	42.0
Firewater Pump Structure	26.2
Air Compressor Structure	26.2
Diesel Storage Tank	52.4
Condensate Storage Tank	24.4
Offspec Condensate Storage Tank	26.3
LNGCs (2) Tier 1	55.8
LNGCs (2) Tier 2	75.5
LNGCs (2) Tier 3	92.1
LNGCs (2) Tier 4	111.6
LNGCs (2) Tier 5	124.7

Source: Resource Report No. 9, Appendix D, Liquefaction Facility Preliminary Air Quality Modeling Report, Figure 4-4: Liquefaction Facility Modeled Layout.

8.13.1.2 Interdependent Project Facilities

8.13.1.2.1 Pipelines

8.13.1.2.1.1 Mainline

The Mainline would cross a variety of landscapes, from the Beaufort Coastal Plain Ecoregion in the north to the central Susitna River Valley and Cook Inlet in the south. A variety of land cover and vegetation types constitute the landscape, including boreal forest, wetlands, waterways, dwarf

scrub/shrub vegetation, and tundra. Landform ranges from mountain ranges to steep river valleys and plains.

The Mainline would cross 9 of Alaska's 32 ecoregions, as defined by Nowacki et al. (2001). A map and descriptions of these ecoregions can be found in Appendix L. The Mainline would start near Deadhorse, a few miles south of the Arctic Ocean, and end approximately 807 miles to the south, near the coastal town of Nikiski. The northern portion of the Mainline would parallel the Dalton Highway Scenic Byway, a scenic byway that begins a few miles from Prudhoe Bay and ends approximately 414 miles to the south, at its intersection with Elliot Highway. The Dalton Highway Scenic Byway was constructed in 1974 to support construction of and provide access to the TAPS and was originally known as the Haul Road. The highway, which is used by an estimated 20,000 to 25,000 recreational visitors annually, traverses a diversity of landscapes and provides views of numerous significant natural features.

The following depictions of the environment along the Dalton Highway, listed north to south, are adapted from the Dalton Highway Scenic Byway Corridor Partnership Plan (ADNR, 2010):

- Beaufort Coastal Plain Ecoregion (Deadhorse to Last Chance Wayside) – In the Beaufort Coastal Plain Ecoregion, permafrost seals the ground and creates ice features including layers of ice (aufeis), ice-wedge polygons up to 100 feet in diameter, ice-core mounds (palsas), and conical ice-cored hills (pingos) up to 1,450 feet wide and 230 feet high. The landscape also includes vast wetlands and thaw lakes. The copper-colored Franklin Bluffs can be seen in the northern reach of this section. Buildings and oilfield infrastructure are also visible at the northern end at Prudhoe Bay;

- North Slope (Last Chance Wayside to Galbraith Lake) – The remote North Slope is a treeless coastal plain characterized by a vast expanse of low-lying tundra plants. Key natural features in this section are the Sagavanirktok River and Slope Mountain (located at the southern edge of the North Slope). Visible to the south are the mountains of the Brooks Range;

- Brooks Range (Galbraith Lake to Coldfoot) – The landscape in this section of the Mainline along the Dalton Highway Scenic Byway is dominated by mountain peaks and river valleys. The Gates of the Arctic NPP and the Arctic NWR are visible from the Dalton Highway Scenic Byway. Natural features in this section include Sukakpak Mountain (a recognizable marble rock peak in the Brooks Range), Atigun Pass (elevation 4,739 feet, where the Dalton Highway Scenic Byway crosses the Great Continental Divide), Atigun River Valley, and Galbraith Lake; and

- Boreal Forest (Coldfoot to Livengood) – This section of the Mainline along the Dalton Highway Scenic Byway proceeds through the hills and valley bottoms of the Yukon-Tanana uplands. Vegetation includes spruce and birch forests, bogs, and creeks, as well as signs of wildfire. This section of the Mainline includes a crossing of the Yukon River, views of the Yukon Flats NWR, the Arctic Circle, Kanuti NWR, Finger Mountain (rock pinnacles rising straight from the tundra), and Grayling Lake (glacially carved). Two small communities, Coldfoot and Wiseman, are located along this section of the Dalton Highway Scenic Byway, with residential and commercial buildings providing a visual contrast to the undeveloped surroundings.

South of Livengood, the Project Planning Area traverses minor travel routes and follows the Tolovana River through the Tanana Lowlands, an alluvial plain that slopes gently upward to the Alaska Range. In this portion of the Project Planning Area, the permafrost is discontinuous and the predominate vegetation consists of boreal forests with numerous species, including black spruce, white spruce, balsam poplar, white birch, and trembling aspen. This section of the Mainline also includes a crossing of the Tanana River, where the corridor begins to parallel the George Parks Highway. The environment is more developed in this region and southward. Visual contrast is created by buildings, paved highways, and other infrastructure in Nenana and Healy, as well as other populated but unincorporated areas adjacent to the George Parks Highway. In these populated areas, the landscape adjacent to the proposed pipeline route includes existing linear utility and road corridors.

Between Fairbanks and Nenana, the Mainline parallels the Alaska Railroad, passing through rolling hills or domes covered by dwarf scrub vegetation and open spruce stands. Developed features include a freight and passenger railroad and several roads. The Nenana River is visible to the west, and the Alaska Range is a prominent feature within the viewshed. The landscape of the Alaska Range that is visible in this portion of the Project Planning Area includes predominately rocky slopes, ice fields, and glaciers.

South of Cantwell, significant features in the landscape include Broad Pass, with views of nearby valleys, Byers Lake, and the Alaska Range peaks. The Alaska Range includes Denali, the highest mountain peak in North America, previously known as Mount McKinley. Significant areas to the south include the Middle Fork of the Chulitna River and Denali State Park. From much of Denali State Park, the summit of Denali can be viewed on a clear day. As the Mainline nears the DNPP and the town of Cantwell, the landscape of the Alaska Range is visible. The Alaska Range is characterized by rock slopes, ice fields, and glaciers, and little to no vegetation is visible at higher elevations. Dwarf scrub communities are common in these higher areas and may contribute color and texture to the viewshed but follow the basic form and line of the topography.

Along the southern portion of the Mainline, the landscape is relatively flat compared to the rest of the route, with vegetation dominated by spruce and hardwood forests. Natural features present include the Talkeetna Range to the east and numerous lakes, including Nancy Lake, Rock Lake, Big Lake North, and Big Lake South. Settlements include Trapper Creek and Willow. Along the Susitna and Little Susitna river valleys, the Mainline passes to the west of Anchorage before reaching Cook Inlet. The corridor crosses Cook Inlet just north of the town of Tyonek and reaches the opposite shore northeast of Nikiski. The proposed Liquefaction Facility is located on the coast to the south of Nikiski.

Sensitive visual resource areas within 15 miles of the Project Planning Area and in the vicinity of the Mainline include wildlife refuges, reserves, byways, National Parks, game refuges, and recreation areas. Key areas with sensitive visual resources within 15 miles of the Mainline include:

- Arctic NWR;
- Dalton Highway Scenic Byway;
- Denali State Park;
- Willow Creek State Recreation Area;

- Susitna SRR;
- Minto Flats SGR;
- Kanuti NWR;
- Yukon Flats NWR;
- Gates of the Arctic NPP;
- DNPP;
- George Parks Highway Scenic Byway;
- East Foreland Lighthouse Reserve; and
- Kenai NWR.

A complete list of sensitive visual resources within 15 miles of the Project is included as Attachment A of Appendix L. Maps of sensitive visual resource areas are in Appendix K. These areas were considered in the selection of KOPs and are incorporated into analysis and description where applicable.

8.13.1.2.1.2 PBTL

The PBTL would be constructed in a developed area within the NSB. Oil pipelines and granular pads currently dominate the visual landscape. The surrounding terrain is generally flat with microhabitat relief, and is covered with snow throughout much of the year. Sensitive visual resources within 15 miles of the pipeline include the Arctic NWR and Dalton Highway Scenic Byway. KOP 1 shows the closest view attainable from the publicly accessible Dalton Highway and is detailed in Section 5.79 of Appendix L. Additional details pertaining to any changes to the visual character of the area during construction and operation are provided in Sections 8.14.2.1.2 and 8.15.2.1.2.

8.13.1.2.1.3 PTTL

The PTTL would be constructed in an area of open land. The terrain is generally flat with microhabitat relief, and is covered with snow throughout much of the year. KOP 1 shows the closest view attainable from the publicly accessible Dalton Highway and is detailed in Section 5.79 of Appendix L.

8.13.1.2.2 Pipeline Aboveground Facilities

Engineering plans for construction and typical construction features for Pipeline Aboveground Facilities (e.g., compressor stations, heater stations, meter stations, MLBVs) were reviewed during the visual aesthetics study (see Section 5.0 of Appendix L). There were two KOPs identified associated with compressor stations and MLBVs (KOPs 4 and 11).

8.13.1.2.3 Pipeline Associated Infrastructure

Pipeline Associated Infrastructure includes access roads, ATWS, contractor yards, pipe and storage yards, construction camps, disposal sites, material sites, railroad spurs, and railroad work pads. There are 2 KOPs associated with material sites, 15 KOPs associated with camps and storage yards, and 3 KOPs associated with railroad spurs and/or work pads. These KOPs are in a variety of locations, including schools, visitor centers, hotels, and scenic byways.

8.13.1.2.4 GTP

The GTP would be constructed in the Prudhoe Bay area near the Beaufort Sea coast. Oil pipelines and granular pads dominate the visual landscape. The surrounding terrain is generally flat with microhabitat relief, and is covered with snow throughout much of the year. Sensitive visual resources within 15 miles of the GTP include the Dalton Highway Scenic Byway and Arctic NWR.

The GTP would be sited in an area of extensive industrial development. In addition, the original Prudhoe Bay discovery well (ARCO No. 1) is located immediately adjacent to the proposed GTP. The KOP selected for its proximity to the proposed GTP site is located at the culmination of the Dalton Highway in Deadhorse. The highway ends at Airport Road and has a view northwest across Lake Colleen toward the proposed PTTL, PBTL, and GTP facilities. KOP 1 shows the closest view attainable from the publicly accessible Dalton Highway and is detailed in Section 5.79 of Appendix L. Additional details pertaining to any changes to the visual character of the area during construction and operation are provided in Section 8.14.2.1.2.

8.13.1.2.5 GTP Associated Infrastructure

To operate the GTP facility, additional facilities would be built and maintained on site. GTP Associated Infrastructure includes: access roads, associated transfer pipelines, a material site, a material site pad, a module staging area, an operations center pad, a reservoir pad, a reservoir pipeline ROW, a reservoir pump road, a water reservoir and pump facilities, and West Dock modifications. Due to their proximity to the GTP and their distance from public spaces, the GTP Associated Infrastructure are considered in conjunction with the GTP from KOP 1, which is located at the end of the Dalton Highway. An additional KOP that encompasses the view from West Dock or nearshore waters will be considered for future data collection.

TABLE 8.13.1-2

Size of GTP Associated Infrastructure Equipment and Modules

STACKS

Description	Height (feet)	Diameter (feet)
Trains (3)	240.2	9.8
Compressor Turbine Stacks (6)	240.2	9.8
Power Generated Turbines (6)	240.2	9.8
Essential Diesel Generators (1)	100.1	2.6
LP Carbon Dioxide (CO_2) Flares (2)	220.0	1.3

High Pressure (HP) CO_2 Flares (2)	220.0	0.9
HP Hydrocarbon Flares (2)	220.0	1.6
LP Hydrocarbon Flares (2)	220.0	0.7
Common Utility Heater (3)	231.9	12.1

8.13.1.3 Non-Jurisdictional Facilities

Non-jurisdictional facilities include the PBU MGS project, PTU Expansion project, and the relocation of the KSH. More-specific information, including associated visual resources and KOPs for non-jurisdictional facilities are discussed in Sections 8.14.3 and 8.15.3.

8.13.2 Federal, State, and Local Visual Resources Management Objectives

Federal and state agency management plans include guidelines and objectives for managing visual resources. Management plans can be from national, state, and locally specific groups, including the BLM, NPS, and State of Alaska Scenic Byways. They are detailed in the following section from national to state to local scale.

8.13.2.1 Bureau of Land Management (BLM)

The FLPMA mandates that the BLM manage its scenic resources to protect visual quality for present and future generations. Proposed activities that require modification of the landscape must make a reasonable attempt to reduce effects to visual resources. The BLM uses the VRM methodology to identify and evaluate scenic resources under its jurisdiction and to establish management objectives for those resources (BLM, 1980). Resources are assigned a classification based on scenic quality, viewer sensitivity to visual change, and viewing distance (BLM, 1984). The BLM's VRM Manual defines the following classifications and their management objectives:

- Class I Objective – The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention;

- Class II Objective – The objective of this class is to retain the existing character of the landscape. The level of the change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape;

- Class III Objective – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape; and

- Class IV Objective – The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of the viewer's attention. However, every attempt should be made to reduce the effect of these activities through careful location, minimal disturbance, and repetition of the basic elements of the characteristic landscape.

The majority of the lands in the Project Planning Area do not have an established VRM class rating. Summarized in the following sections are the VRM guidelines for the BLM lands in the Project Planning Area as described in the applicable BLM RMPs.

8.13.2.1.1 Arctic Field Office and Central Yukon Field Office

In 1991, the BLM issued a Record of Decision on the Utility Corridor RMP/EIS (BLM, 1991a). The Utility Corridor was established in 1971 by Public Land Order 5150 and is dedicated to long-term utility and transportation needs. According to the RMP/EIS, the inner corridor lands are to be managed according to Class IV VRM objectives. This RMP also identified the following resource management areas (RMAs):

- The Dalton Highway RMA is classified as VRM IV; sightseeing is considered a primary recreational use related to visual resources; and

- The Dalton Corridor RMA, which generally corresponds to the remainder of the Utility Corridor, is classified as VRM Class III.

8.13.2.1.2 Eastern Interior Field Office

8.13.2.1.2.1 Central Yukon Resource Management Plan (RMP)

Currently, the Central Yukon RMP provides for management of 9.5 million acres in west-central Alaska (BLM, 1986a). The BLM is currently developing an RMP for the Eastern Interior Planning Area to replace the White Mountain National Recreation Area RMP (1986), Steese National Conservation Area RMP (1986), and Fortymile Management Framework Plan RMP (1980). These existing RMPs specify that visual resources will be managed where practicable to retain the existing character of the landscape, but no VRM inventory or analysis has been conducted in this planning area.

8.13.2.1.2.2 East Alaska RMP

The BLM established VRM inventory classes in the East Alaska Planning Area in 2003. This land is managed to protect and enhance vegetative communities, fish and wildlife resources, recreational opportunities, and natural, cultural, and geological resources under the East Alaska RMP/Final EIS (BLM, 2006). The majority of lands in the Project Planning Area are primarily classified as Class IV although small portions are classified as Class III.

8.13.2.1.2.3 Anchorage District Office

The INHT Comprehensive Management Plan identified scenic quality classes for portions of the INHT based upon the Natural and Scenic Resources Inventory conducted in 1982 (BLM, 1986b, 2008b). This inventory identified resources in the plan areas with scenic quality ratings. The recommendations of the inventory included developing a management plan for each of these areas.

8.13.2.2 National Park Service (NPS) and National Parks

The Organic Act of 1916 directs how the NPS will govern the National Parks within the United States. The NPS's mission is "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations" (NPS, 2015). There are two National Parks in proximity to the proposed pipeline, the DNPP and Gates of the Arctic NPP. Both are managed based on national regulations and their own individual management plans.

8.13.2.2.1 DNPP

The Consolidated General Management Plan for the DNPP guides the management of both the Park and the Preserve. The plan stipulates that visitor centers and other facilities will reflect the wild setting and reduce visual effects to park visitors by considering scale, materials, color, texture, and continuity with the existing visual environment. The plan notes that incompatible uses in the National Park include surface-disturbing activities that "unduly change the visual character of the park and preserve" (NPS, 2011).

8.13.2.2.2 Gates of the Arctic National Park and Preserve (NPP)

Management of the Gates of the Arctic NPP is outlined in the 1986 General Management Plan. This management plan focuses on maintaining the wild and undeveloped character of the area, providing opportunities for recreation, protecting park resources and values, and providing opportunities for subsistence living for local residents in traditional areas. A General Management Plan Amendment is currently underway (NPS, 1986).

8.13.2.3 Federal Highway Administration

8.13.2.3.1 National Scenic Byways Program

The National Scenic Byways Program is part of the Federal Highway Administration, under the U.S. Department of Transportation (U.S. Department of Transportation, 2011). The program's intent is to recognize, preserve, and enhance roads selected for their archaeological, cultural, historic, natural, recreational, and/or scenic qualities. The George Parks Highway is one of three federally recognized scenic byways in Alaska. The George Parks Highway Scenic Byway is 230 miles long and connects Anchorage and Fairbanks (Federal Highway Administration, nd).

8.13.2.4 State Agencies

8.13.2.4.1 State of Alaska Scenic Byways

The State of Alaska Scenic Byways Program recognizes routes that provide access to significant scenic, cultural, and recreational resources. Scenic byways in the Project Planning Area include the Dalton Highway and the George Parks Highway. In an effort to promote certain features, including scenic viewpoints, Corridor Partnership Plans have been developed for the Dalton and George Parks highways (ADNR, 2008, 2010). However, these plans do not provide regulations for the viewshed, or guidance for the use of areas along the byways for pipelines or other infrastructure.

8.13.2.5 Local Government

An outline of local government guidelines and objectives for managing visual resources includes:

- KPB – The KPB Comprehensive Plan notes among its key issues the importance of visual effects, stating "unattractive uses, such as certain junkyards, gravel pits and storage areas adjacent to highways and residential areas can affect land values and tourism" (KPB, 2005);

- MSB – The Borough-wide comprehensive plan for the MSB does not address management of sensitive visual resources (MSB, 2005);

- DB – The Comprehensive Plan for the DB does not address visual resources (DB, 2009);

- FNSB – The FNSB Comprehensive Plan does not provide specific restrictions on visually sensitive areas, but adopts the following principles for industrial development: "buffering to minimize potential effects on surrounding land use" and ensuring "the use is compatible with surrounding development and uses, and is sensitive to natural systems in the area" (FNSB, 2005); and

- NSB – The NSB Comprehensive Plan is currently under revision and does not contain guidance related to management of sensitive visual resources (NSB, 2005).

8.13.3 Key Visual Components of the Project

8.13.3.1 Visual Descriptions and Dimensions

8.13.3.1.1 Liquefaction Facility

The proposed Liquefaction Facility includes the LNG Plant with storage and processing facilities and the Marine Terminal with a trestle, piping, and berthing facilities. The preliminary design calls for two LNG storage tanks that would be approximately 150 feet tall. Other prominent features proposed for the Liquefaction Facility include a wet and dry multipoint ground flare, a low-pressure flare, and elevated telecommunications equipment. Prominent features proposed for the Marine Terminal include two loading berths, one LNG trestle, cryogenic pipelines from the LNG tanks to the loading berths and vapor return lines, and a MOF. Temporary communications would require installation of a telecommunications tower (estimated to be approximately 150 feet in height) and radio base station,

which would also include the associated fiber optics cabling. More information on the size and design for the tanks and other features such as aircraft and marine navigation lighting would be provided as the design is finalized in a later stage of the Project.

8.13.3.1.2 Interdependent Project Facilities

8.13.3.1.2.1 Pipelines

Mainline

The majority of the Mainline would be buried during operations. Prominently visible features would be limited to temporary pipeline construction activities and permanent pipeline markers. Most of the Mainline would be located within an existing utility corridor, and based upon the information currently available, the Mainline would be similar in scale to the other features in the surrounding area.

PBTL

The GTP and associated facilities, located in the PBU, would receive natural gas from the PBU by way of the PBTL. The PBTL would be an approximately 1-mile, 60-inch-diameter aboveground pipeline to transport natural gas from the PBU Central Gas Facility (CGF) to the GTP. The PBTL would be installed on horizontal support members connected to a steel pile or vertical support members (VSMs) and would cross public lands managed by the State of Alaska. Based on the information currently available, it would be similar in scale to the other features in the surrounding area.

The PBTL route would begin at the edge of the PBU CGF pad and proceed west to the tie-in point at the GTP. The new pipeline would maintain a minimum of 7 feet from the tundra to the bottom of the pipe.

PTTL

The GTP and associated facilities, located in the PBU, would receive natural gas from the PTU by way of the PTTL. The PTTL would be an approximately 62.5-mile, 32-inch-diameter aboveground pipeline. The new pipeline would maintain a minimum of 7 feet from the tundra to the bottom of the pipe. The surrounding terrain is generally flat with microhabitat relief, and is covered with snow throughout much of the year.

8.13.3.1.2.2 Pipeline Aboveground Facilities

Pipeline Aboveground Facilities (e.g., compressor stations, heater stations, meter stations, MLBVs) would have maximum length and width dimensions of 1,400 feet by 800 feet, and the communication towers would have a maximum height of approximately 75 feet.

8.13.3.1.2.3 Pipeline Associated Infrastructure

The Pipeline Associated Infrastructure includes access roads, ATWS, contractor yards, pipe and storage yards, construction camps, disposal sites, material sites, railroad spurs, and railroad work pads. All Pipeline Associated Infrastructure would require removal of vegetation. Vegetation removal would introduce contrasting form, line, color, and texture to the viewsheds, particularly at pipe and storage

yards, construction camps, disposal sites, and material sites when placed close to public roads. Linear contrast would be created by vegetation clearing and grading for railroad spurs and access roads. Pipeline Associated Infrastructure would introduce contrasts in structure in the viewshed, including materials and machinery at pipe and storage yards, construction camps, and material sites. These materials and machinery would introduce a contrast in form, color, and texture to the viewshed.

8.13.3.1.2.4 GTP

The GTP would be sited within an area of extensive industrial development. In addition, the original Prudhoe Bay discovery well (ARCO No. 1) is located immediately adjacent to the proposed GTP site.

The GTP is designed to treat natural gas received from the PBU and the PTU. The GTP pad would be a greenfield location, built up using a granular pad to protect the permafrost. Prominent features proposed for the GTP include the GTP pad and the operations center pad (including three parallel processing trains, control building, flares, and metering). The stacks associated with the waste heat recovery units would be approximately 240 feet tall and are likely to be the tallest buildings at the GTP. Based upon the information currently available, these features would be similar in scale to the other features in the surrounding area.

The GTP communication tower would be located on the GTP pad and is estimated to be approximately 150 feet tall, similar to the communication tower at Point Thomson. A path study would be required to determine the proper height for the GTP tower, which would be conducted during a later stage of the Project.

8.13.3.1.2.5 GTP Associated Infrastructure

GTP Associated Infrastructure includes access roads, associated transfer pipelines, a material site, a material site pad, a module staging area, a reservoir pad, a reservoir pipeline ROW, a reservoir pump road, a water reservoir and pump facilities, and West Dock modifications.

8.13.3.1.3 Non-Jurisdictional Facilities

Key visual components of the PBU MGS project and PTU Expansion project would be similar to those for the GTP.

8.13.3.2 KOPs

8.13.3.2.1 Liquefaction Facility

The Liquefaction Facility would be located near the communities of Nikiski and Kenai, and within 15 miles of the Kenai NWR, the Kenai River Special Management Area, and the Trading Bay SGR. As such, KOPs were selected in each of these communities and special areas. Within the communities, KOPs were established at Nikiski/North Star Community School in Nikiski and Kaleidoscope Charter School in Kenai. The schools would be 1.6 and 6.1 miles, respectively, from the Liquefaction Facility (see Appendix L for details). KOPs were located at Holt Lamplight Road near Kenai NWR, the Pillars Boat Launch in the Kenai River Special Management Area, and Trading Bay Beach within the Trading Bay SGR. These KOPs would be 3.8, 10, and 13.6 miles, respectively, from the Liquefaction Facility. The KOP at Trading Bay Beach is located across Cook Inlet from the Project and was not accessible at

the time of survey (see Section 5.10.2 of Appendix L) and may be completed at a future date depending on Project decisions.

8.13.3.2.2 Interdependent Project Facilities

8.13.3.2.2.1 Pipelines

Mainline

Although most of the Mainline would be buried, the vegetative clearing (e.g., forest removal) for the ROW may be visible in areas with sensitive visual resources or transportation corridors used by motorists or other sensitive viewers. Visual effects to KOPs would be reduced in locations where the proposed pipeline could be collocated with the TAPS, because adding linear vegetation clearing and buildings creates less contrast in locations where there are existing industrial facilities in the vicinity.

A number of KOPs were identified in consultation with the NPS, BLM, USFS, and ADNR and include locations along the full length of the pipeline. These locations include recreational and tourist areas such as campgrounds, viewpoints, hotels, and visitor centers; public areas such as schools, highways, and trails; and sensitive areas including scenic byways, historic trails, wildlife refuges, and special management areas.

KOPs were located at a number of recreational and tourist areas including the following campgrounds: Galbraith Campground (KOP 4), Marion Creek Campground (KOP 9), Upper and Lower Troublesome Creek Campgrounds (KOPs O and P), Arctic Circle Campground (KOP C), and Denali RV Park and Motel (KOP J). KOPs located at viewpoints and pullouts include the 355 Mile Wayside on the Dalton Highway (KOP 2), the pullout below Atigun Pass (KOP 7), the George Parks Highway Rest Area and Observation Deck (KOP 38), Hess Creek Bridge, Pull-out, and Overlook (KOPs G, H, and I), 86 Mile Overlook on the Dalton Highway (KOP F), Finger Mountain Wayside (KOP E and D), and Gobblers Knob (KOP B). KOPs were located at the Mt. McKinley Princess Lodge (KOP 37 and KOP L), the Denali Park Wilderness Access Center (KOP 30) and the Arctic Interagency Visitor Center (KOP 11). Other KOPs were located at the Denali State Park Visitor Center (KOP R), the Grande Denali Lodge (KOP M), and the Denali South Viewpoint (KOP Q). All of these KOPs are discussed in depth in Appendix L, which includes photographs, field notes, and tables and descriptions based on the BLM VRM system.

PBTL

The PBTL would be sited within an area of extensive industrial development; the pertinent KOPs were identified from the Dalton Highway at Deadhorse. In addition, the original Prudhoe Bay discovery well (ARCO No. 1), which is a national historic site, is located immediately adjacent to the proposed GTP site; the ability to view the site from the CGF pad or West Dock access road must be maintained. Siting of Project facilities considered visual contrasts, particularly for national historic sites, in order to maintain the view. KOP 1, which has a viewshed looking toward the proposed facilities (approximately 8.5 miles from ARCO No. 1), is located at the culmination of the Dalton Highway in Deadhorse. The highway ends at the intersection with Airport Road and has a view northwest across Lake Colleen toward the PBTL, PTTL, and GTP facilities. This KOP is detailed in Appendix L in Section 5.79.

PTTL

Because a portion of the PTTL footprint would be situated within an area with extensive industrial development, a KOP for this pipeline facility was identified from the Dalton Highway at Deadhorse. KOP 1, with a viewshed looking toward the proposed pipeline, is located at the culmination of the Dalton Highway in Deadhorse. The highway ends at Airport Road and has a view northwest across Lake Colleen toward the proposed PTTL, PBTL, and GTP facilities. This KOP provides the closest view attainable from the publicly accessible Dalton Highway. This KOP is detailed in Section 5.79 of Appendix L.

8.13.3.2.2.2 Pipeline Aboveground Facilities

Five KOPs are associated with the Pipeline Aboveground Facilities (e.g., compressor stations, heater stations, meter stations, MLBVs). Details on these KOPs can be found in Appendix L.

8.13.3.2.2.3 Pipeline Associated Infrastructure

Pipeline Associated Infrastructure includes access roads, ATWS, contractor yards, pipe and storage yards, construction camps, disposal sites, material sites, railroad spurs, and railroad work pads. Five KOPs are associated with material sites: KOP 25 at Tri-Valley School is 0.7-mile north of a proposed material site; KOPs 40, N, and J on the George Parks Highway can view proposed material sites; and KOP G is approximately 0.25 miles east of a proposed material site on the Dalton Highway. KOP A is lodging at Coldfoot Camp and is adjacent a pipe storage yard and facility camp. The Lower Troublesome Creek Campground (KOP P) is adjacent an access road. Details on these KOPs can be found in Appendix L. There are 15 KOPs associated with work camps and storage yards (see Tables 4a and 4b Appendix L).

8.13.3.2.2.4 GTP

The GTP would be sited within an area of extensive industrial development. In addition, the original Prudhoe Bay discovery well (ARCO No. 1) is located immediately adjacent to the proposed GTP site. The KOP selected for its proximity to the proposed GTP site is located at the culmination of the Dalton Highway in Deadhorse. The highway ends at Airport Road and has a view northwest across Lake Colleen toward the proposed PTTL, PBTL, and GTP facilities. KOP 1 shows the closest view attainable from the publicly accessible Dalton Highway and is detailed in Appendix L.

8.13.3.2.2.5 GTP Associated Infrastructure

GTP Associated Infrastructure includes access roads, associated transfer pipelines, a material site, a material site pad, a module staging area, an operations center pad, a reservoir pad, a reservoir pipeline ROW, a reservoir pump road, a water reservoir and pump facilities, and West Dock modifications. Due to their proximity to the GTP and their distance from public spaces, GTP Associated Infrastructure are considered in conjunction with the GTP from KOP 1.

8.13.3.2.3 Non-Jurisdictional Facilities

Key visual components of Non-Jurisdictional Facilities would be similar to those for the Liquefaction Facility and GTP. Visual component identification and analysis of non-jurisdictional facilities is not required and would be completed by third parties responsible for those facilities.

8.14 POTENTIAL CONSTRUCTION IMPACTS AND MITIGATION MEASURES ON VISUAL RESOURCES

Impacts to visual resources were analyzed using the BLM's VRM methodology. The VRM method establishes sensitivity of existing views and determines the level of contrast the Project would introduce to the existing viewshed. This analysis technique divides the landscape into landform, water, vegetation, and structure. Each of these categories is described in terms of form, line, color, and texture, using a set vocabulary established by the BLM for describing landscapes. The analysis further describes the forms, lines, colors, and textures that the proposed activity would introduce to landform, water, vegetation, and structure. For this study, separate tables were created to show short-term and long-term contrasts when applicable. For example, ATWS and ice roads are part of the construction phase but would not be needed for long-term operation of the pipeline, so would introduce short-term contrasts to the viewshed. Facilities that would be part of the Project's permanent footprint, such as the GTP and Liquefaction Facility, would create long-term contrast.

Mitigation of potential visual resource impacts involves maximizing Project collocation with existing infrastructure and locating nonessential features (e.g., storage areas, work camps) away from KOPs. Locating proposed features near existing features would result in less potential contrast to a given viewshed because changes in form, line, color, and texture through vegetation clearing, grading, and the addition of buildings have already been introduced by previous construction.

Recommendations for mitigation also include maintaining vegetative screens between Project sites and public spaces such as roads, and angling entry roads to camps and other sites so equipment and associated materials are not visible from public roads. Construction during times when recreational use is minimal would reduce visual effects. Seasonal construction would depend on the schedule and design criteria.

For a majority of the BLM lands within 15 miles of the Project area, the BLM has not assigned VRM classes. Thus, consistency with VRM classes is not applicable to most of the Project area. VRM classes are detailed in the individual KOP discussions in which they apply (see Appendix L). All other applicable visual resource management plans are also outlined and discussed in Appendix L.

8.14.1 Liquefaction Facility

Due to distance, topography, and dense vegetation, the Project would present no contrast to the viewsheds at the KOPs at Holt Lamplight Road and Pillars Boat Launch. The KOP at Trading Bay Beach is located across Cook Inlet from the Project and was not accessible at the time of survey (see Section 5.10.2 of Appendix L).

Construction activities would have temporary effects to the visual quality for viewers in the vicinity of the construction site. Temporary effects would be created by work crews and camps, construction

equipment and materials, machinery, lighting, and associated infrastructure. These effects include grading land and clearing vegetation.

Two KOPs were selected at local schools, because these are high-traffic community areas. The KOP located at Kaleidoscope Charter School in Kenai would be 6.1 miles from the Liquefaction Facility. Due to the distance, dense vegetation, and topography, the facility would introduce no contrast to the views from Kaleidoscope Charter School during construction. The KOP located at Nikiski/North Star Community School in Nikiski would be 1.6 miles from the Liquefaction Facility. The distance and dense vegetation between the KOP and facility mean that there would be no contrast to the views from Nikiski/North Star Community School.

A KOP was identified at the intersection of Holt Lamplight Road and Escape Route Road to obtain a view near the Kenai NWR. Due to access constraints, this KOP is closer to the proposed Liquefaction Facility; however, due to the distance (the KOP would be 3.8 miles from the Liquefaction Facility) and intervening dense vegetation, there would be no contrast introduced to this viewshed from construction of the Liquefaction Facility.

One KOP was located at Pillars Boat Launch to provide a view from the Kenai River Special Management Area. This KOP would be 10 miles south of the Liquefaction Facility and, due to the distance, dense vegetation, and topography, construction would introduce no contrast to this view.

A KOP was located at Trading Bay Beach. This KOP would provide a view across the 13.6 miles of Cook Inlet to the proposed Liquefaction Facility from Trading Bay SGR. The KOP at Trading Bay Beach was not accessible at the time of survey (see Section 5.10.2 of Appendix L).

Short-term impacts are generally considered to be directly or indirectly related to construction. Direct impacts may be created by the presence of camps, storage areas, machinery, and equipment. Indirect impacts include the period of vegetation regrowth, which may create contrast to the view for a period of time following construction. Vegetation regrowth would create lighter greens and patchy textures. As such, short-term impacts are largely limited to the time of construction but may include a vegetation recovery period.

The sensitive areas near the Liquefaction Facility such as the Kenai River Special Management Area are under management plans; however, as no contrast would be created to views from these areas during construction, the management plans are not applicable.

Because no contrast is anticipated at the selected KOPs near the Liquefaction Facility, general mitigation measures proposed would not be applicable to these areas. However, because the Liquefaction Facility would be located on a public road, mitigation should be considered for any locations where construction would be visible from passing cars. Recommended mitigation includes maintaining or creating vegetative screens between construction locations and public roads, and angling access roads to decrease the visibility from public roads into locations such as camps and storage areas. Depending on construction methods and timing, mitigation may also include the use of downcasted lighting at night or during the winter season.

8.14.2 Interdependent Project Facilities

8.14.2.1 Pipelines

8.14.2.1.1 Mainline

Vegetative clearing for the ROW may be visible in areas with sensitive visual resources or transportation corridors used by motorists or other sensitive viewers. The analysis in this section, and detailed analysis at each KOP in Appendix L, took into consideration impacts to significant historic sites, such as the INHT, and associated management plans. Most of the land in the Project Planning Area is under federal or state management. Management plans have been prepared for many of these areas. Some of these plans, such the George Parks Highway Scenic Byway Corridor Partnership Plan (ADNR, 2008) and the INHT Comprehensive Management Plan (BLM 1986b) include a scenic inventory and specific goals for management of aesthetic and associated cultural resources. Other plans have guidelines for the management of sensitive recreation, cultural, and habitat areas that include goals of maintaining visual quality. A discussion and table of applicable management plans is located in Tables 3, 4a, and 4b of Appendix L

Visual impacts to KOPs would be reduced in locations where the proposed pipeline could be collocated with the TAPS, because adding linear vegetation clearing and buildings creates less contrast in locations where there are existing industrial facilities in the vicinity.

A number of KOPs were determined in consultation with the NPS, BLM, USFS, and ADNR and include locations along the full length of the pipeline. These locations include recreational and tourist areas such as campgrounds, viewpoints, hotels, and visitor centers; public areas such as schools, highways, and trails; and sensitive areas including scenic byways, historic trails, wildlife refuges, and special management areas.

During construction, contrast would be created along the Mainline by construction crews, equipment, materials, vegetation clearing, land grading, access roads, and other associated facilities required in the construction phase. Short-term impacts would be directly or indirectly related to construction. Direct short-term impacts would be created by the presence of work crews and camps, machinery, equipment, and materials, lighting, and associated infrastructure, which would create a strong contrast in structure in the viewshed. Facilities associated with the pipeline, such as work camps, are covered more thoroughly in the Pipeline Aboveground Facilities and the Pipeline Associated Infrastructure sections. Indirect short-term impacts include the vegetation regrowth period following construction. New vegetation may be lighter green, short, and patchy in texture compared to other vegetation in the viewshed. Nighttime activities and activities in the winter season may introduce light, which would create contrast to immediate views.

Future KOPs may be obtained from waterways to assess views that would be seen by recreationists or others in these areas. No KOPs have been obtained from the water at this time. A majority of the Mainline would not be located near waterbodies. Most water crossings would be below ground and would have minimal to no visibility from public areas.

The Visual Aesthetics Analysis (Appendix L) analyzes potential viewshed impacts at designated KOPs. Between MP 610 and MP 647, seven KOPs were assessed. Of these, visual impacts from the Pipeline

Associated Infrastructure were only identified from one KOP on the George Parks Highway due to development of a proposed material site. The other six were assessed to not be visible from the KOP locations due to intervening topography and vegetation.

Recommended mitigation includes maintaining or creating vegetative screens between construction locations and public roads, and angling access roads to decrease the visibility from public roads into locations such as camps and storage areas. Depending on construction methods and time, mitigation may also include the use of downcasted lighting at night or during the winter season.

8.14.2.1.2 PBTL

The PBTL would be sited within an area of extensive industrial development, and the KOPs for the facilities would be from the Dalton Highway at Deadhorse. In addition, the original Prudhoe Bay discovery well (ARCO No. 1) is located immediately adjacent to the proposed GTP site. This well location is a national historic site and the ability to view the site from the CGF pad or West Dock access road must be maintained. The KOP with a viewshed looking toward the proposed facilities is located at the culmination of the Dalton Highway in Deadhorse. The highway ends at the intersection with Airport Road and has a view northwest across Lake Colleen toward the PBTL, PTTL, and GTP facilities. This KOP (KOP 1) is detailed in Appendix L.

Construction activities would have temporary effects to the visual quality for viewers in the vicinity of the construction site. Temporary effects would be created by work crews and camps, construction equipment and materials, machinery, lighting, and associated infrastructure. These effects include grading land and clearing vegetation. Due to the distance between KOP 1, which is located at the culmination of the Dalton Highway Scenic Byway in Deadhorse, and the PBTL, direct and indirect impacts to the viewshed created by construction would be minimal. The distance is approximately 7.5 miles and the anticipated height of the PBTL is 7 feet. The presence of equipment, machinery, and materials would cause direct impacts to a closer viewer, but would not be visible from KOP 1.

Because the PBTL is not located near any public waterways, KOPs were not located on waterbodies to obtain views of the PBTL location.

The applicable management plans within 15 miles of the PBTL are the Utility Corridor Resource Management Plan, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor Resource Management Plan from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development and a draft plan has not yet been issued for public review. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Appendix L.

Because no contrast is anticipated at KOP 1 due to the construction of the PBTL, general mitigation measures proposed would not be applicable to these areas. However, mitigation should be considered to reduce potential impacts. Recommended mitigation includes angling access roads to decrease the visibility from public roads into locations such as camps and storage areas. Depending on construction methods and time, mitigation may also include the use of downcasted lighting at night or during the winter season.

8.14.2.1.3 PTTL

Because a portion of the PTTL footprint is situated within an area with extensive industrial development, the KOPs for this part of the pipeline would likely be from the Dalton Highway Scenic Byway at Deadhorse. The KOP with a viewshed looking toward the PTTL is located at the culmination of the Dalton Highway Scenic Byway in Deadhorse. The Highway ends at Airport Road and has a view northwest across Lake Colleen toward the proposed PTTL, PBTL, and GTP facilities. This KOP provides the closest view attainable from the publicly accessible Dalton Highway Scenic Byway. This KOP (KOP 1) is detailed in Section 5.79 of Appendix L.

Construction activities would have temporary effects to the visual quality for viewers in the vicinity of the construction site. Temporary effects would be created by work crews and camps, construction equipment and materials, machinery, lighting, and associated infrastructure. Due to the distance between KOP 1 at the Dalton Highway Scenic Byway, and the PTTL, direct and indirect impacts to the viewshed created by construction would be minimal. The distance is approximately 7.5 miles and the anticipated height of the PTTL is 10 feet. The presence of equipment, machinery, and materials would cause direct impacts to a closer viewer, but would not be visible from KOP 1. The applicable management plans within 15 miles of the PTTL are the Utility Corridor RMP, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor RMP from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Appendix L.

Because no contrast is anticipated at KOP 1 due to the construction of the PTTL, general mitigation measures proposed would not be applicable to these areas. However, mitigation should be considered to reduce potential impacts. Recommended mitigation includes using downcasted lighting, selecting the same color to paint new facilities to reduce offsite visual effect, and coating pipelines to reduce glare.

8.14.2.2 Pipeline Aboveground Facilities

Engineering plans for construction and typical construction features for Pipeline Aboveground Facilities (e.g., compressor stations, heater stations, meter stations, MLBVs) were reviewed during the visual aesthetics study (see Section 5.0 of Appendix L). There were two KOPs identified associated with compressor stations and MLBVs (KOPs 4 and 11); detailed analysis of KOPs associated with specific Pipeline Aboveground Facilities can be found in Sections 5.69 and 5.76 of Appendix L. The GTP and the PTU meter stations are covered from KOP 1, located at the end of the Dalton Highway Scenic Byway in Deadhorse, looking northwest.

Construction activity temporary effects are covered under the GTP and PTTL sections for the PTU and GTP meter stations.

8.14.2.3 Pipeline Associated Infrastructure

The Pipeline Associated Infrastructure includes access roads, ATWS, contractor yards, pipe and storage yards, construction camps, disposal sites, material sites, railroad spurs, and railroad work pads.

Construction activities would have temporary effects to the visual quality for viewers in the vicinity of the construction sites. Temporary effects would be created by work crews and camps, construction equipment and materials, machinery, lighting, and associated infrastructure. These effects include grading land and clearing vegetation.

Short-term impacts would be directly or indirectly related to construction. Direct short-term impacts would be created by the presence of machinery, equipment, and materials, which will create a strong contrast in structure in the viewshed. Indirect short-term impacts include the vegetation regrowth period following construction. Nighttime activities and activities in the winter season may introduce light, which would create contrast to immediate views. Assessment of visual impacts within waterways has not been conducted at this time.

A variety of visual resource and land use management plans are applicable for the Pipeline Associated Infrastructure. Most of the land in the Project Planning Area is under federal or state management. Management plans have been prepared for many of these areas. Some of these plans, such the George Parks Highway Scenic Byway Corridor Partnership Plan (ADNR, 2008) and the INHT Comprehensive Management Plan (BLM, 1986b) include a scenic inventory and specific goals for management of aesthetic resources. Other plans have guidelines for the management of sensitive recreation, cultural, and habitat areas that include goals of maintaining visual quality. The complete list of applicable management plans is located in Table 3 of Appendix L.

Proposed access roads that intersect with the ADOT&PF highways would be aligned to meet the standards published by ADOT&PF for Driveways. In order to be permitted under ADOT&PF driveway permits they must be designed to meet line of sight criteria. Intersection radii will be designed to meet the turning radius of the critical vehicle expected to use the roads. The Project team may angle access roads to reduce visual impacts only within these design criteria. Depending on construction methods and time, mitigation may also include the use of downcasted lighting at night or during the winter season.

8.14.2.4 GTP

The GTP would be sited within an area of extensive industrial development. In addition, the original Prudhoe Bay discovery well (ARCO No. 1) is located immediately adjacent to the proposed GTP site. The KOP selected for its proximity to the GTP site is located the culmination of the Dalton Highway Scenic Byway in Deadhorse. The highway ends at Airport Road and has a view northwest across Lake Colleen toward the proposed PTTL, PBTL, and GTP facilities. This KOP shows the closest view attainable from the publicly accessible Dalton Highway Scenic Byway. This KOP (KOP 1) is detailed in Appendix L.

Construction activities would have temporary effects to the visual quality for viewers in the vicinity of the construction site. Temporary effects would be created by work crews and camps, construction equipment and materials, machinery, lighting, and associated infrastructure. These effects include grading land and clearing vegetation. Due to the distance between KOP 1, which is located at the culmination of the Dalton Highway Scenic Byway in Deadhorse, and the GTP, direct and indirect impacts to the viewshed created by construction would be minimal. The presence of equipment, machinery, and materials would cause direct impacts to a closer viewer, but will not be visible from

KOP 1. The GTP facility itself would bring minimal contrast to the horizon line by the introduction of rectangular forms.

Because the GTP is not located near any publicly accessible waterways, KOPs were not located on water bodies to obtain views of the GTP facility location.

The applicable management plans within 15 miles of the GTP facility are the Utility Corridor RMP, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor RMP from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Appendix L.

Because minimal contrast is anticipated at KOP 1 from the construction of the GTP facility, general mitigation measures proposed would not be applicable to these areas. However, mitigation should be considered to reduce potential impacts. Recommended mitigation includes angling access roads to decrease the visibility from public roads into locations such as camps and storage areas. Depending on construction methods and time, mitigation may also include the use downcasted lighted at night or during the winter season.

8.14.2.5 GTP Associated Infrastructure

GTP Associated Infrastructure includes access roads, associated transfer pipelines, a material site, a material site pad, a module staging area, an operations center pad, a reservoir pad, a reservoir pipeline ROW, a reservoir pump road, a water reservoir and pump facilities, and West Dock modifications. Due to their proximity to the GTP and their distance from public spaces, GTP Associated Infrastructure is considered in conjunction with the GTP from KOP 1, located at the end of the Dalton Highway. An additional KOP that encompasses the view from West Dock or near shore waters would be considered.

Construction activities would have temporary effects to the visual quality for viewers in the vicinity of the construction site. Temporary effects would be created by work crews and camps, construction equipment and materials, machinery, lighting, and associated infrastructure. These effects include grading land and clearing vegetation.

Due to the distance between KOP 1, which is located at the culmination of the Dalton Highway Scenic Byway in Deadhorse, and the GTP facility, direct and indirect short-term impacts to the viewshed created by construction would be minimal. The GTP and the associated infrastructure, including the module staging pad and activity at West Dock, are more than 7 miles from the nearest public access road, the Dalton Highway. The presence of equipment, machinery, and materials would cause direct impacts to a closer viewer, but will not be visible from KOP 1.

Short-term impacts would be directly or indirectly related to construction. In general, direct short-term impacts would be created by the presence of machinery, equipment, and materials, which would create a strong contrast in structure in the viewshed. Indirect short-term impacts include the vegetation regrowth period following construction. Due to the distance between KOP 1 and the GTP, most of these impacts would not be applicable. Nighttime activities and activities in the winter season may introduce light, which would create contrast to immediate views.

Because the GTP is not located near any public waterways, KOPs were not located on waterbodies to attain views of the GTP location.

The applicable management plans within 15 miles of the GTP are the Utility Corridor RMP, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor RMP from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Appendix L.

As minimal contrast is anticipated at KOP 1 from the construction of the GTP facility, general mitigation measures proposed would not be applicable to these areas. However, mitigation should be considered to reduce potential impacts. Recommended mitigation include angling access roads to decrease the visibility from public roads into locations such as camps and storage areas. Depending on construction methods and time, mitigation may also include the use of downcasted lighting at night or during the winter season.

8.14.3 Non-Jurisdictional Facilities

Non-Jurisdictional Facilities include the PBU MGS project, PTU Expansion project, and the relocation of the KSH. Key visual components of Non-Jurisdictional Facilities would be similar to those for the Liquefaction Facility and GTP. Visual component identification and analysis of non-jurisdictional facilities is not required and would be completed by third parties responsible for those facilities.

In general, the presence of equipment, machinery, and materials during construction would cause direct impacts to a closer viewer, but would be consistent with the current viewshed for Non-Jurisdictional Facilities. Impacts to visual resources from Project construction would be anticipated to be short-term and minor.

The PBU MGS project would be located in the North Slope oil and gas fields. There would be temporary and minor impacts to visual resources from construction because the area is designated for industrial uses.

The PTU Expansion project would be an incremental increase in the PTU development facilities within and an area of low-lying tundra wetlands, small streams, and thaw lakes. The impacts to visual resources from construction of the PTU modifications/new facilities would be temporary and minor.

The relocation of the KSH would impact visual resources during the process of modifying existing land uses in the area of the relocation and would be temporary and minor.

8.15 POTENTIAL OPERATIONAL IMPACTS AND MITIGATION MEASURES ON VISUAL RESOURCES

Impacts to visual resources were analyzed using the BLM's VRM methodology. The BLM's VRM method of describing the Project is explained in 8.14 and in Appendix L, Section 2.0.

8.15.1 Liquefaction Facility

Due to the location of the Liquefaction Facility in an area with existing industrial facilities, there would be minimal additional visual impacts. This would decrease the introduction of overall contrast in landform, vegetation, and buildings due to similar grading, clearing, and built facilities already in the immediate environment. Other mitigation efforts that could reduce visual impacts include maintaining vegetative screens between long-term facilities and public spaces like roads, replanting vegetation following the construction phase, and locating access roads at angles to the main roads to decrease visibility into facility areas. Mitigation may also include the use of downcasted lighting. Mitigation is recommended to avoid long-term lighting that will impact nearby viewers, particularly in the winter months when Alaska is dark much of the day.

The sensitive areas near the Liquefaction Facility such as the Kenai River Special Management Area present management plans; however, because no contrast would be created to views from these areas during operations, the management plans are not applicable. This excludes Trading Bay SGR, the KOP at Trading Bay Beach is located across Cook Inlet from the Project and was not accessible at the time of survey (see Section 5.10.2 of Appendix L) and may be completed at a future date depending on Project decisions.

8.15.2 Interdependent Project Facilities

8.15.2.1 Pipelines

8.15.2.1.1 Mainline

Mainline siting efforts that would reduce visual effects during operations include collocating new construction with the TAPS and facilities already in the surrounding environment to reduce introduced contrasts. Mitigation should also include maintaining vegetative screens, particularly where the Mainline and associated facilities are near or visible from sensitive public spaces like scenic byways.

Should any lighting be associated with mainline operations, mitigation should include limiting lighting use and using lighting in ways that direct light toward the needed area, such as downcast lighting, without creating excess light in surrounding areas, particularly at nighttime and during the winter months.

The Mainline crosses a number of sensitive areas with management plans. Most of the land in the Project area is under federal or state management. Management plans have been prepared for many of these areas, some of which include a scenic inventory and specific goals for management of aesthetic resources (for example, the George Parks Highway Scenic Byway Corridor Partnership Plan [ADNR, 2008]). Other plans have guidelines for the management of sensitive recreation, cultural, and habitat areas that include goals of maintaining existing visual quality. A discussion and table of all applicable sensitive areas and management plans is located in Appendix L in Tables 4a and 4b.

8.15.2.1.2 PBTL

The PBTL siting efforts that will reduce visual effects during operations include collocating new construction with existing facilities already in the surrounding environment to reduce introduced contrasts. In locations where lighting is used in association with the PBTL, mitigation should include

limiting lighting use and using lighting in ways that direct light toward the needed area without creating excess light in surrounding areas, particularly at nighttime and during the winter months.

Most of the land in the Project area is under federal or state management. The state authorizes oil and gas exploration in areas designated and managed for oil and gas exploration and development. Management plans have been created for many of the sensitive areas. The applicable management plans within 15 miles of the PBTL are the Utility Corridor RMP, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor RMP from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Appendix L.

8.15.2.1.3 PTTL

The PTTL siting efforts that will reduce visual effects during operations include collocating, where possible, new construction with existing facilities already in the surrounding environment to reduce introduced contrasts.

Most of the land in the Project area is under federal or state management. The state authorizes oil and gas exploration in areas designated and managed for oil and gas exploration and development. Management plans have been created for many of the sensitive areas. The applicable management plans within 15 miles of the PTTL are the Utility Corridor RMP, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor RMP from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Appendix L.

Due to the distance between KOP 1 and the meter stations, direct and indirect impacts to the viewshed created by operation would be minimal. The distance is approximately 7.5 miles and the anticipated height of the PTTL is 10 feet. The presence of equipment, machinery, and materials would cause direct impacts to a closer viewer, but will not be visible from KOP 1.

8.15.2.2 Pipeline Aboveground Facilities

The Pipeline Aboveground Facilities' long-term impacts would be directly or indirectly related to operation. Direct long-term impacts would be created by the presence of new facilities, which would create a contrast in structure in the viewshed. Indirect long-term impacts may include vegetation and lighting changes. There were two KOPs identified associated with compressor stations and MLBVs (KOPs 4 and 11); detailed analysis of KOPs associated with specific Pipeline Aboveground Facilities can be found in Sections 5.69 and 5.76 of Appendix L. In the case of KOP 1 and the GTP and the PTU meter stations, most of these impacts would not be applicable due to distance. Nighttime activities and activities in the winter season may introduce light, which would create contrast to immediate views.

The GTP and the PTU meter stations are not located near any publicly accessible waterways; therefore, KOPs were not located on waterbodies to obtain views of their locations.

The applicable management plans within 15 miles of meter stations associated with the GTP and the PTU meter stations include the Utility Corridor RMP, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor RMP from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Appendix L.

Siting efforts that would reduce visual effects during operations include collocating new construction with existing facilities already in the surrounding environment to reduce introduced contrasts. Recommended mitigation includes maintaining or creating vegetative screens between Pipeline Aboveground Facilities and public roads, and angling access roads to decrease the visibility from public roads into locations such as camps and storage areas. For example, in certain situations such as the Coldfoot Compressor Station and the Healy Compressor station, the Project would consider planting trees along the highway or fenced boundary of the station to provide a visual screen. In addition, where applicable (i.e., Coldfoot Compressor Station, Ray River Compressor Station), facility design would consider use of external materials and color treatments to reduce contrast with the existing environment.

8.15.2.3 Pipeline Associated Infrastructure

Pipeline Associated Infrastructure includes access roads, ATWS, contractor yards, pipe and storage yards, construction camps, disposal sites, material sites, railroad spurs, and railroad work pads; however, the only Pipeline Associated Infrastructure to be used during operations would be some Mainline access roads.

Long-term impacts would be directly or indirectly related to operation. Direct long-term impacts would be created by the presence of facilities and equipment related to operation. Indirect long-term impacts include contrast in vegetation, including the vegetation regrowth period following construction. Nighttime activities and activities in the winter season may introduce light, which would create contrast to immediate views. Assessment of visual impacts within waterways has not been conducted for the Pipeline Associated Infrastructure because a majority of the infrastructure is not located near water. If applicable, water views in Cook Inlet would include Pipeline Associated Infrastructure.

A variety of visual resource and land use management plans are applicable for the Pipeline Associated Infrastructure. Most of the land in the Project Planning Area is under federal or state management. Management plans have been prepared for many of these areas. Some of these plans, such the George Parks Highway Scenic Byway Corridor Partnership Plan (ADNR, 2008) and the INHT Comprehensive Management Plan (BLM, 1986b), include a scenic inventory and specific goals for management of aesthetic resources. Other plans have guidelines for the management of sensitive recreation, cultural, and habitat areas that include goals of maintaining visual quality. The complete list of applicable management plans is located in Table 3 of Appendix L.

Siting efforts that would reduce visual effects include collocating new construction with existing facilities already in the surrounding environment to reduce introduced contrasts. Depending on the use of lighting during operation, mitigation may also include the use of downcasted lighting at night or during the winter season.

8.15.2.4 GTP

The GTP siting efforts that would reduce visual effects include collocating new construction with existing facilities already in the surrounding environment to reduce introduced contrasts. In locations where lighting is used in association with the GTP facility, mitigation should include limiting lighting use and using lighting in ways that direct light toward the needed area without creating excess light in surrounding areas, particularly at nighttime and during the winter months. The GTP will be sited within a designated area for oil and gas development and therefore the viewshed would be similar to the other facilities nearby.

Most of the land in the Project area is under federal or state management. The state authorizes oil and gas exploration in areas designated and managed for oil and gas exploration and development. Management plans have been created for many of the sensitive areas. The applicable management plans within 15 miles of the GTP are the Utility Corridor RMP, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor RMP from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Table 3 of Appendix L.

8.15.2.5 GTP Associated Infrastructure

GTP Associated Infrastructure siting efforts that would reduce visual effects include collocating new construction with existing facilities already in the surrounding environment to reduce introduced contrasts. In locations where lighting is used in association with GTP Associated Infrastructure, mitigation should include limiting lighting use and using lighting in ways that direct light toward the needed area without creating excess light in surrounding areas, particularly at nighttime and during the winter months.

Most of the land in the Project area is under federal or state management. The state authorizes oil and gas exploration in areas designated and managed for oil and gas exploration and development. Management plans have been created for many of the sensitive areas. The applicable management plans within 15 miles of the GTP are the Utility Corridor RMP, the Dalton Highway Scenic Byway Corridor Partnership Plan, and the North Slope Management Plan (ADNR, nd; BLM, 1991a). The Utility Corridor RMP from the BLM identifies the Dalton Highway Corridor/Dalton Highway RMA. The ADNR North Slope Management Plan is currently under development. The Dalton Highway Scenic Byway Corridor Partnership Plan does not provide viewshed recommendations (ADNR, 2010). More details can be found in Table 3 of Appendix L.

8.15.3 Non-Jurisdictional Facilities

Non-Jurisdictional Facilities include the PBU MGS project, PTU Expansion project, and the relocation of the KSH. Key visual components of Non-Jurisdictional Facilities would be similar to those for the Liquefaction Facility and GTP. Visual component identification and analysis of non-jurisdictional facilities is not required and would be completed by third parties responsible for those facilities. General impacts are included below.

The PBU MGS project would be located in the North Slope oil and gas fields. Although permanent, there would be minor impacts to visual resources from operations.

The PTU Expansion facilities would be located in an area of primarily open land that is jurisdictional wetlands. The impacts to visual resources from operations of the PTU Expansion facilities would be permanent and minor.

The relocation of the KSH would impact visual resources by modifying existing land uses in the area of the relocation as well permanent operational visual impacts such as a new ROW, and lights and signs in the area.

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