

ALASKA LNG

**DOCKET NO. CP17-____-000
RESOURCE REPORT NO. 4
CULTURAL RESOURCES
PUBLIC**

DOCUMENT NUMBER : USAI-PE-SRREG-00-000004-000

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RESOURCE REPORT NO. 4 SUMMARY OF FILING INFORMATION ¹	
Filing Requirement	Found in Section
1. Initial cultural resources consultation and documentation, and documentation of consultation with Native Americans. (18 C.F.R. § 380.12(f)(1)(i) & (2)) <ul style="list-style-type: none"> See 18 C.F.R. § 380.14 for specific procedures. 	4.2.3 Table 4.2.3-1 Appendix C
2. Overview/Survey Report(s). (18 C.F.R. § 380.12(f)(1)(ii) & (2)) <ul style="list-style-type: none"> See 18 C.F.R. § 380.14 for specific procedures. For the offshore area, this will usually require completion of geophysical and other underwater surveys before filing. 	4.4 Appendix B
Additional Information Often Missing and Resulting in Data Requests	
Provide a Project map with mileposts (MP), clearly showing boundaries of all areas surveyed (ROW, extra work areas, access roads, etc.) and to be surveyed with corridor widths clearly specified.	Appendix A
Provide documentation of consultation with SHPOs, THPOs, and applicable land-managing agencies regarding the need for and required extent of cultural resource surveys.	4.2 Appendix C
Provide a narrative summary of overview results, cultural resource surveys completed, identified cultural resources and any cultural resource issues.	4.4 4.5 4.7
Provide a Project specific Ethnographic Analysis (can be part of Overview/Survey Report).	Ethnographic Report included in Appendix B
Identify by mileposts any areas requiring survey for which the landowner denied access.	Appendix D
Provide written comments on the Overview and Survey Reports, if available, from the SHPOs or THPOs, as appropriate, and applicable land-managing agencies.	Appendix C
Provide a Summary Table of completion status of cultural resource surveys, and SHPO or THPO and land-managing agency comments on the reports.	Tables 4.7.1-1, 4.7.1-2 Appendix D
Provide a Summary Table of identified cultural resources, and SHPO or THPO and land-managing agency comments on the eligibility recommendations for those resources.	Table 4.7.2-1 Appendix E
Provide a brief summary of the status of Native American consultation, including copies of all related correspondence and records of verbal communications.	4.2.3 Table 4.2.3-1 Appendix C
Provide a schedule for completing any outstanding cultural resource studies.	Remaining areas requiring survey will be completed prior to the issuance of the DEIS
Provide an Unanticipated Discoveries Plan for the Project area, referencing appropriate state statutes.	Appendix F

¹ Guidance Manual for Environmental Report Preparation, Volume I (FERC, 2017). Available online at: <https://www.ferc.gov/industries/gas/enviro/guidelines/guidance-manual-volume-I.pdf>.

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Additional Information Sometimes Requested	
Identify the project APE in terms of direct or indirect effects to known cultural resources.	To be completed prior to the initiation of the DEIS

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Resource Report No. 4			
Agency Comments and Requests for Information Concerning Cultural Resources			
Agency	Comment Date	Comment	Response/Resource Report Location
EPA	9/30/2016	Area of Potential Effect (APE) – We recommend that the Reports include a map depicting the spatial area of the APE for archaeological resources and historic archaeological properties, etc. and project component.	See Section 4.5 and Appendix A.
EPA	9/30/2016	Cultural Resource Surveys - We recommend including interested Tribal Government Representatives to participate in the field surveys and/or review of the Cultural Resource Surveys for the AK LNG Project, as appropriate.	The opportunity to participate in field surveys has been extended to Alaska Natives through the Cultural Resource Advisor (CRA) program as described in Section 4.2.3.2. FERC has initiated government-to-government consultation with tribes as described in Section 4.2. and Table 4.2.3-1. During consultation, Tribes have requested, and subsequently received, survey reports and copies of the FERC application. Consultation summaries are included in Appendix C.
EPA	9/30/2016	Survey Results - Table 4.5-1 provides the cultural resources identified in the Direct APE by Project Component and NRHP status. We recommend that the Reports include a table that describes, in general, the type of resource – cultural, paleontological, prehistoric, historic, modern, house and cache pits, camp sites, lithic scatters, etc. for each project component that would not considered confidential and privileged and be available to for public disclosure.	In the Environmental Impact Statement (EIS), FERC would include information regarding cultural resource sites found in the Area of Potential Effect (APE) in a format that can be disseminated to the public.
EPA	9/30/2016	Dunbar-Brooks Terminal Trail - This trail is eligible for listing in the NRHP and connects the Happy Creek Station on the Alaska Railroad to Livengood via Moose Creek Summit and Minto Flats. We recommend that the mainline pipeline be routed away from the Minto Flats and the Trail to avoid impacts to the historic resource.	The pipeline is generally routed along Summer Ridge east of the Minto Flats in order to avoid impacts to wetlands and Native Allotments located in the Flats. The pipeline will be buried beneath the trail preserving access along the trail and mitigation measures such as leaving a vegetative buffer, provided one already exists, between the trail edges and the operational ROW will be employed. With regard to cultural resources it is AGDC's mission to avoid, minimize, and mitigate impacts where practicable. Since the Dunbar-Brooks Terminal Trail is a historic property (eligible for listing in the National Register of Historic Places), the Project will consult with the FERC, the OHA/SHPO, and other appropriate parties to develop a treatment plan for the trail if FERC determines that the Project would cause an adverse effect to the property.
EPA	9/30/2016	LIV-00749 is one of the few archaeological sites located in the Minto Flats. We recommend that the mainline pipeline be routed	See Section 4.1.2. FERC has not yet made a final eligibility

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		away from the Minto Flats to avoid impacts to the cultural resource.	determination for site LIV-00749, which is required because FERC is responsible for National Environmental Policy Act (NEPA) compliance. When the final eligibility determination has been made, the Project would develop a treatment plan, if necessary, for the site. The treatment plan would be reviewed by FERC in consultation with the Alaska State Historic Preservation Office (SHPO) and other agencies to ensure that appropriate mitigation or protective measures are in place prior to the initiation of construction.
EPA	9/30/2016	Non-Jurisdictional Facilities – We recommend that the Reports include the results of cultural resource surveys for the PBU MGS Project and the Kenai Spur Highway. We note that cultural resource surveys have not been completed for these non-jurisdictional facilities.	The third parties that will permit and build these facilities will complete the necessary surveys for permitting. The information has not been made available to Alaska LNG at this time.
EPA	9/30/2016	Ethnographic Study. We recommend that a public version of the ethnographic study be included in the Appendix of the Reports.	In the EIS, FERC will include ethnographic information in a format that can be disseminated to the public.
EPA	9/30/2016	Cultural Resource Treatment Plans (Appendix G) – We recommend that a general outline/template of these plans be included in the Reports even if no formal coordination or consultation has been undertaken with state or federal agencies regarding proposed mitigation measures for any of the cultural resources that are listed or determined to be eligible for listing in the NRHP. At a minimum, we recommend that the Reports include a detailed data recovery plan.	When the Project footprint is finalized and FERC and consulting agencies have made eligibility determinations, necessary treatment plans would be developed prior to construction.
EPA	9/30/2016	Cultural Resources Mapping. We recommend that the Reports include a public map version that is not privileged and confidential and made available for public disclosure.	In the EIS, FERC would include information regarding cultural resources in a format that can be disseminated to the public.
EPA	9/30/2016	Cultural Resources Reports - We recommend that the Reports include a summary version of the Reports that are not privileged and confidential and made available for public disclosure.	In the EIS, FERC would include information regarding cultural resources in a format that can be disseminated to the public.
EPA	9/30/2016	Agency Correspondence. We recommend that the Reports include a public summary version of the Correspondences that are not privileged and confidential, and made available for public disclosure.	In the EIS, FERC would include information regarding cultural resources in a format that can be disseminated to the public.
EPA	9/30/2016	Table of Survey Coverage. We recommend that the Reports include a public summary version of the Tables that are not privileged and confidential and made available for public disclosure.	In the EIS, FERC would include information regarding cultural resources in a format that can be disseminated to the public.
EPA	9/30/2016	Cultural Resources within the Preliminary APE and Study Area. We recommend including in the Reports a public summary	In the EIS, FERC would include information regarding cultural

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		version of the information that is not privileged and confidential and made available for public disclosure.	resources in a format that can be disseminated to the public.
FERC	10/26/2016	All material filed with the Commission containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION – DO NOT RELEASE."	Comment acknowledged.
FERC	10/26/2016	1. 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	10/26/2016	a. Updated Project-specific Ethnographic Analysis. (Summary of Filing Information table, page 4-l; Agency Comments and Requests for Information Concerning Project Description table, page 4-viii; appendix B)	A final ethnographic study is included in Appendix B.
FERC	10/26/2016	b. Reports for additional areas where surveys have been completed but not yet included in existing reports. (Summary of Filing Information table, page 4-i)	All reports for all surveyed areas of the Project, including surveys conducted in 2016, are provided in Appendix B.
FERC	10/26/2016	c. Additional Phase II reports.	All reports for Phase II investigations completed to date, including investigations conducted in 2016, are provided in Appendix B.
FERC	10/26/2016	d. Updates on Project impacts on Alaska Native tribes based on additional and continued consultation. (Scoping Comments table, page 4-x)	No additional updates are available at this time. As consultation continues, the Applicant will provide FERC with copies of any correspondence and/or meeting summaries.
FERC	10/26/2016	e. Subsistence Impact Analysis. (Summary of Filing Information table, page 4-xii)	A final Subsistence Impact Analysis is included in Resource Report No. 5, Appendix D.
FERC	10/26/2016	f. Site Cultural Resource Data Recovery/Treatment Plans (as applicable). (appendix G)	Since cultural resource studies are not complete and FERC has not finalized determinations of eligibility, no treatment plans have been developed. The placeholder for Appendix G has been removed and treatment plans will be filed as completed prior to construction.
FERC	10/26/2016	g. Table 4.2.3-1. (section 4.2.3, page 4-9)	See Table 4.2.3-1
FERC	10/26/2016	h. Information on Kenai Spur Highway Relocation. (section 4.5.4, page 4-41)	The Applicant will address this comment prior to the issuance of the DEIS
FERC	10/26/2016	i. Operational protocols or mitigation measures to be implemented for operation and maintenance activities. (section 4.8, page 4-47)	See section 4.10

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FERC	10/26/2016	2. In addition to summary reports and site forms, include complete cultural resources reports that follow the FERC guidelines, Guidelines for Reporting on Cultural Resources Investigations for Pipeline Projects (2002).	All reports completed for cultural resource investigations for the Project through 2016 are included in Appendix B.
FERC	10/26/2016	3. Include a schedule for completing outstanding terrestrial and marine archaeological surveys, aboveground resource surveys, site evaluations, and preparation of associated reports.	Phase I surveys are currently scheduled to be completed in the summer of 2018. Reports will be provided by the end of 2018.
FERC	10/26/2016	4. Update correspondence (including any enclosures/attachments, in color if originally provided in color), relevant meeting notes, phone logs, etc., to and from SHPO; the BLM and other consulting federal agencies; federally recognized Indian tribes, local and regional corporations as defined in the Alaska Native Claims Settlement Act, and non-profit Alaska Native organizations; and parties that have an interest in cultural resources that may be affected by the Project. Include SHPO's and other appropriate agencies' comments on cultural resources reports.	See Tables 4.2.1-1, 4.2.2-1, 4.2.3-1 and Appendix C
FERC	10/26/2016	5. As this is Alaska LNG's Application and not a FERC document, revise sections 4.2.3, and 4.2.3.1 to delete FERC activities.	Sections 4.2.3 and 4.2.3.1 have been revised to remove FERC activities.
FERC	10/26/2016	6. Clarify how the request for direct involvement by the Knik Tribe (see letter dated October 6, 2015) in assessing the potential impact of the Project on the Tribe was addressed. Discuss whether the Knik tribal representatives participated in the Cultural Resource Advisor program and identify their role in the cultural resources effort. (section 4.2.3, page 4-9; section 4.2.3.1, page 4-10)	Members of the Knik tribe participated in the CRA program and provided participants in the 2016 Phase II cultural resource investigations. See 4.2.3.2 for a list of all Tribes who participated in the program.
FERC	10/26/2016	7. Clarify whether information gathered from tribal members participating in the Cultural Resource Advisor program is shared with other teams preparing related studies (ethnography, subsistence, etc.) and how the information provided by the advisors would be incorporated into the cultural resources reports. (section 4.2.3.2, pages 4-10; appendix B)	The Applicant will address this comment prior to the issuance of the DEIS
FERC	10/26/2016	8. Include a timeline for initiating consultation with SHPO, the BLM, and other land-managing agencies, as appropriate, to define the indirect area of potential effect (APE). (section 4.3, page 4-15)	The Applicant will begin the consultation process shortly after submittal of this application.
FERC	10/26/2016	9. Update Resource Report 4 to identify which sites Alaska LNG intends to avoid and the means by which avoidance would be accomplished (e.g., HDD/boring, realignment, reducing the right-of-way, etc.).	Treatment plans will be developed once determination of eligibility is complete for sites that cannot be developed prior to construction.
FERC	10/26/2016	10. In section 4.3.2, address the goals and methods of the geomorphology /geoarchaeological investigation. In addition to the Minto Flats area, identify specific areas that are recommended for deep testing. (section 4.3.2, page 4-18)	Section 4.6.2 discusses the deep testing conducted during the 2015 field season. Results of deep testing efforts are provided in Appendix B of the report titled Alaska LNG 2015 Phase I Cultural Resources Report: Archaeological Site Survey and Site Determination (cited in Section 4.8.2 as Proue et al., 2016 a; Appendix F) found in Appendix F. The methodology and goals of the

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			deep testing studies are included in that report.
FERC	10/26/2016	11. In section 4.7 (page 4-42) paragraph 1, 53 cultural resource sites are noted as eligible while section 4.5.2 notes 54 are eligible. Please clarify the discrepancy.	The numbers of cultural resource sites within the direct APE have been reconciled between Sections 4.7.2 and 4.9.
FERC	10/26/2016	12. In section 4.7 (page 4-42) delete the second paragraph as this does not identify construction impacts or mitigation measures.	The second paragraph of Section 4.9 has been removed.
FERC	10/26/2016	13. On page 4-43, first full paragraph, delete the final two sentences as this pertains to a FERC action.	The final two sentences of the next-to-last paragraph in Section 4.9 have been removed.
FERC	10/26/2016	14. In sections 4.7.1.1 and 4.7.2.1.2, revise the text as follows: "Should it be impossible to avoid adversely affecting a cultural resource, a detailed data recovery plan will be developed for concurrent review by FERC, state, and federal agencies". (section 4.7.1.1, page 4-43; section 4.7.2.1.2, page 4-44)	Text has been revised in the second paragraph of Section 4.9
FERC	10/26/2016	15. In section 4.8 (page 4-46), in the first sentence change "the Order" to "any Order."	See the first sentence in Section 4.10
FERC	10/26/2016	16. Section 4.8.2.1 states that during operation of the pipeline, cultural resources may be marked by fencing/signage. Clarify that the information to be included on the signage for cultural resource sites would not specifically identify the resource as cultural (e.g., sensitive environmental area). (section 4.8.2.1, page 4-48)	See Section 4.10. No signage indicating the presence of cultural sites would be present during operation.
FERC	10/26/2016	17. The Project crosses federal, state, local, native corporation lands, and private lands. Ensure that the processes outlined in the Plan for Unanticipated Discovery of Cultural Resources and Human Remains are consistent with any existing protocols for each applicable agency. (appendix F)	Text revised in Section 3.1 of Appendix F.
FERC	10/26/2016	18. In the Plan for Unanticipated Discovery of Cultural Resources and Human Remains, section 3.2.3, paragraph 4, line 2, revise "Notice to Proceed (NTP)" to "authorization to proceed." In line 3, change "NTP" to "authorization to proceed." In the paragraph 5, line 1, change "NTP" to "authorization to proceed." In line 2, change "written NTP" to "authorization to proceed." In section 4.0, insert "Protection" after "Graves."	See revised Appendix F, Sections 3.2 and 4.0
FERC	10/26/2016	19. Include a milepost reference on all archaeological site plan maps. Currently this is not consistent as some of the site plan maps provide a milepost reference and others do not.	The Applicant will compile a report of the sites within the Project footprint after the 2018 field season to address this issue.
FERC	10/26/2016	20. In the 2014 Phase I Cultural Resource Report Archaeological Survey and Site Documentation (January 2015; USAI-UR-SRZZZ-00-000022-000), clarify the information identified below. (appendix B.2)	See below
FERC	10/26/2016	a. Section 4.2 identifies 20 potential historic trails that cross the study area. Include maps that depict these trails, including the historic and current alignments, if available. Address whether these trail maps were provided to participants in the Traditional Knowledge study to assess their possible use as transportation routes for subsistence purposes or other uses.	The Applicant will address this comment prior to the issuance of the DEIS.

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FERC	10/26/2016	b. Section 5.3.1 states that Northern Land Use Research modified survey methods late in the season to include 600-foot by 1,000-foot target areas at stream crossings. Confirm whether this method was applied to all stream crossings and whether additional survey is needed at previously surveyed stream crossings.	The Applicant will address this comment prior to the initiation of the EIS process.
FERC	10/26/2016	21. Address the items identified below regarding archaeological districts.	See below
FERC	10/26/2016	a. The 2013 Phase I Cultural Resource Report(USAKE-UR-SRZZZ-00-0021) states that the Rosehill Knob Archaeological District is proposed as a district. Clarify if this district has been assigned an Alaska Heritage Resources Survey (AHRs) number and is listed on the NRHP. Assess the NRHP-eligibility of the sites affected by the Project within the district individually and whether they contribute to the district. (appendix B.11)	The Rosebud Knob Archaeological District has been assigned Alaska Heritage Resources Survey (AHRs) number LIV-00284 and has been determined eligible for listing on the NRHP by the OHA. Because the entire district is eligible, the Project would treat the direct APE within the district as proceeding through an eligible site. See Section 4.7.2.2.3 and Appendix E, Table 2.
FERC	10/26/2016	b. Clarify the meaning of the term "NHRP nomination closed." (page 4-27)	See Section 4.5.1, which has been revised for clarity.
FERC	10/26/2016	c. The 2015 Phase I Cultural Resource Report: Archaeological Survey and Site Documentation on BLM Lands (USAI-P1-SRZZZ-00-000009-000) mentions the Atigun Archaeological District. Clarify if this district has been assigned an AHRs number and is listed on the NRHP. Also, identify where the Project would cross the district by providing a map that depicts the limits of the district, sites within the district, and whether the district would be expanded to include previously or newly identified sites in the Project APE (e.g., site PSM-00049). (appendix B.7)	The Atigun Archaeological District has been assigned AHRs PSM-00204 (Section 4.5.1). The district has been nominated for listing on the NRHP; however, the nomination did not go through the complete evaluation process and was never forwarded to the Keeper of the NRHP. The district, and several sites within the district, are located within the 2,000-foot study area for the Project but no part of the district is located within the direct APE (Appendix E, Table 1 and Section 4.5.1).
FERC	10/26/2016	22. The Traditional Knowledge interim report included as appendix D to Resource Report 5 notes that several community respondents in the Minto Flats area and south commented that the Project could impact culturally important areas, including possible archaeological sites. Describe how these comments were considered during the archaeological survey.	The Applicant will address this comment prior to the initiation of the EIS process.
FERC	10/26/2016	23. Include a copy of the following report: Rogers, Jason with shipwreck analysis by Evguenia Anichtchenko 2016. Alaska LNG Submerged Cultural Resources Review and Assessment, Cook Inlet, Alaska. (USAI-PI-SRZZZ-00-000021-000). Report prepared by Northern Land Use Research Alaska, LLC, Fairbanks.	See Appendix B.
NPS	9/26/2016	The review is based on the SHPO's database, but site location info in the SHPO's database may not be accurate.	It is standard procedure, and part of the Project's protocols, to conduct a search of the AHRs database prior to planning a field effort to determine the number and

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			nature of sites that may have been recorded in the vicinity of the Project. While the AHRS database may include some inaccuracies, particularly for sites evaluated prior to the common use of GPS to record site locations, it is the most comprehensive database available for pre-field review.
NPS	9/26/2016	Was the sensitivity model tested for validity before being used to prioritize the survey?	As stated in Section 4.6.2, the Project survey approach was based on survey approaches tested during earlier projects as discussed in Section 4.6.1. In the spring of 2014 the Project met with the Bureau of Land Management (BLM) and OHA to discuss field study protocols. The Project submitted field study protocols to BLM and the OHA in conjunction with survey permit applications. Investigation permits were granted by both agencies (Tables 4.2.1-1 Table 4.2.2-1). Correspondence and meeting summaries are included in Appendix C.
NPS	9/26/2016	No plan was identified to complete survey or Phase II work.	Phase II surveys were conducted in 2015 and 2016. Reports of those investigations can be found in Appendix B. Any sites still recommended for Phase II investigations would be addressed in upcoming field seasons.
NPS	9/26/2016	Should a route through Denali National Park be proposed, NPS requests access to all Report 4 appendices, as well as the CRM reported listed in Appendix b for complete review of available documentation.	Comment acknowledged
NPS	9/26/2016	The report addresses archaeology very well, and talks about the limited number of historic structures along the route, but has not completed the ethnographic survey and does not address place names. Cultural landscapes are not specifically addressed in Report 4.	The finalized Ethnographic Report is provided in Appendix B. No previously recorded Cultural Landscapes were found in the 2,000-foot study area or in the direct APE during background research (Section 4.4).
NPS	9/26/2016	Formal NHPA consultation with the NPS needs to take place for NHLs and if a Denali route is proposed.	Comment acknowledged
NPS	9/26/2016	If any portion of a new Denali alignment is surveyed or if the sites on page 4-34 under 4.5.2.2.5- are these sites on park land, how will Phase II evaluations be conducted?	No sites included in the direct APE are located on National Park Service land. Phase II investigations for all sites are conducted per the protocols agreed upon with the OHA and FERC, which are provided in the Phase II reports in Appendix B.

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NPS	9/26/2016	Appendix F seems to combine S106 and NAGPRA responsibilities. NPS recommends treating these laws separately for clarity.	The format and content of the Unanticipated Discoveries Plan is consistent with FERC requirements and SHPO needs. It is required to combine all regulatory requirements into one plan for implementation in pre-construction and during construction
NPS	9/26/2016	This comment does not seem to be addressed in the response. Have tribes been consulted on sacred areas in the project area that may not manifest as archaeological sites?	FERC has initiated government-to-government consultation with Tribes in the Project area. As those consultations unfold, FERC would provide the findings and results of the consultation.
NPS	9/26/2016	Is there an APE for cultural landscapes? This does not appear to be addressed in this report and needs to be. For example the pipeline has the potential to effect the cultural landscape of the Denali Park Road in Denali National Park as it will cut across an important view from mile post 3 of the road.	Cultural landscapes would be identified during government-to-government consultation and traditional cultural properties studies conducted by Tribes.
NPS	9/26/2016	APE for indirect impacts should take into consideration views or other potentially significant features of historic properties that may be located miles away from the project footprint.	The indirect APE has not yet been defined for the Project. The parameters of the indirect APE would be determined in consultation with FERC as discussed in Section 4.3.
NPS	9/26/2016	Ground penetrating radar, magnetic susceptibility, or other remote sensing techniques could assist in the location of deeply buried sites.	The Applicant is using investigation techniques, including techniques for identifying deeply buried sites, as discussed and developed with the OHA and the BLM. See Table 4.2.2-1, Sections 4.2.1.1, 4.2.2.1, and Appendix C.
NPS	9/26/2016	1 mile research area may be too small for assessing some effects to cultural resources (i.e. views from cultural landscapes).	The 1-mile research area parameter was determined in consultation with the OHA and BLM. See Table 4.2.2-1 and Appendix C
NPS	9/26/2016	If a Denali variation is proposed this and other tables will need to be updated with new survey data.	Comment acknowledged.
NPS	9/26/2016	Please clarify how sites whose eligibility has not been assessed (close to half of those in the APE) are being treated. AK SHPO guidance is generally they are treated as eligible unless determined to not be eligible. Please provide information on sites that have not been evaluated for the register.	FERC and consulting agencies would make eligibility determinations for all sites as part of its NEPA mandate to assess impacts to cultural resources. See Sections 4.2.1.1 and 4.2.2.1.
NPS	9/26/2016	Twelve CR were identified at the LF at Nikiski, but then goes on to say that 1 is prehistoric, 1 multicomponent, and 8 are historic or modern- what are the other two. Please distinguish those that are modern from those that are historic.	See Section 4.9.2.1.1. The 12 sites' types are also provided in Appendix E, Table 3.
NPS	9/26/2016	Where can the submerged cultural resources report be found?	See Appendix B

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NPS	9/26/2016	Unless determined ineligible, AK SHPO guidance is that sites are treated as eligible until they are determined so. Note that recommendation does not equal determination.	FERC and consulting agencies would make eligibility determinations for all sites as part of its NEPA mandate to assess impacts to cultural resources. See Sections 4.2.1.1 and 4.2.2.1.
NPS	9/26/2016	For each of these geographic areas on the mainline please note how many of the sites have not been evaluated for the NRHP and therefor are being treated as eligible.	FERC and consulting agencies would make eligibility determinations for all sites as part of its NEPA mandate to assess impacts to cultural resources. See Sections 4.2.1.1 and 4.2.2.1.
NPS	9/26/2016	According to the map it appears that the mainline goes over the Nenana River Gorge Site, please clarify.	The direct APE currently impacts the portion of the Nenana Gorge Site (HEA-00062) southwest of Highway 3. Section 4.7.2.2.4 and Appendix E, Table 2, include descriptions of the site. Also, see Appendix A.
NPS	9/26/2016	Please provide Table E-3.	Table "E-3" has been revised as Table 3 within Appendix E.
NPS	9/26/2016	First sentence on page is unclear.	The section addressing additional temporary workspace (ATWS), has been incorporated into Section 4.7.2.2. All sites discussed in the sentence are discussed in Section 4.7.2.2.
NPS	9/26/2016	Will this study also identify potential traditional cultural properties? How are these being addressed?	The Project's study will not identify traditional cultural properties (TCP). FERC's government-to-government consultation with Tribes would determine whether the Project would affect TCPs. FERC would address TCPs in the EIS.
NPS	9/26/2016	There are discrepancies between number of cultural sites in this section (n=245 total) from those in sec.4.5.2 (n= 207). 4.5.2 also notes that, "eligibility for listing in NRHP has been assessed from more than half of the sites...", but in section 4.7, after listing the number of sites found in the direct APE for the mainline, liquefaction plant, and other facilities the report says. "These resources were evaluated applying the"- how many were actually evaluated? More than half or all? Please clarify. Will all of the sites be evaluated?	Sections 4.7.2 and 4.9 have been revised to reconcile total cultural resource sites identified by the Project (158). Table 4.7.2-1 provides the determination (or recommended determination) status for all sites by component. The determination (or recommended determination) for each site is provided in Appendix E, Tables 2 and 3. All sites would be evaluated and their NRHP status determined.
NPS	9/26/2016	Please provide more detail and information regarding cumulative direct and indirect effects that may affect historic properties	See Section 4.5 for a discussion of direct effects. Also, as noted in Section 4.5, when the indirect APE is defined, the Applicant would address potential indirect effects to historic properties.

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NPS	9/26/2016	NPS encourages FERC to consult with other parties, such as federally recognized tribes in regards to adverse effects, especially when considering indirect effects to properties such as TCP's.	Comment acknowledged.
NPS	9/26/2016	Will applicant provide treatment plans for other historic properties (other than archaeological sites) that would be impacted?	See Section 4.9.
NPS	9/26/2016	Again, as not all sites were evaluated for the NR please clarify.	FERC, in consultation with agencies, would make eligibility determinations for all sites as part of its NEPA mandate to assess impacts to cultural resources. See Sections 4.2.1.1 and 4.2.2.1.
NPS	9/26/2016	Please detail what type of cultural resource investigation would be undertaken in these areas.	While it is unclear to which areas the commenter is referring, Section 4.6 provides the survey methodology for the entire direct APE.
NPS	9/26/2016	The Pipeline Associated Infrastructure could have long term indirect effects of historic properties (such as construction camps on historic viewsheds for Cultural landscapes). How are these being addressed? Will temporary infrastructure be rehabilitated?	Most associated infrastructure (such as construction camps and ATWS) is temporary as noted in Section 4.7.2.3, associated with a period of construction along the Project footprint, and would not create a long-term or permanent impact on historic properties. Site rehabilitation would be addressed with the landowner or land manager and would meet their requirements.
NPS	9/26/2016	The GTP and associated infrastructure areas should be surveyed.	The majority of the proposed Gas Treatment Plant (GTP) and associated infrastructure direct APE has been surveyed (Tables 4.7.1-2 and 4.7.2-1). No cultural resources have been identified within the GTP or associated infrastructure survey area to date (Section 4.7.2). The results of those surveys are included in Table 4.7.2-1 and the survey reports in Appendix B.
NPS	9/26/2016	Please provide access to these appendices to subject matter experts at reviewing agencies.	All appendices have been filed with FERC, who then makes them available to consulting agencies.
NPS	9/26/2016	These plans should be separate; one plan for human remains and another for section 106 inadvertent discoveries.	The format and content of the Unanticipated Discoveries Plan is consistent with FERC filings. It is common to have both components in one plan so all parties are addressed appropriately.
NPS	9/26/2016	Tribes should also be consulted in the event of an inadvertent discovery.	See Appendix F, Section 3.1

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NPS	9/26/2016	Please provide detail on when an archaeological monitor will be in place; for all ground disturbing activities? For only those activities near identified historic properties?	Decisions regarding cultural resource monitors would be made prior to construction as part of the development of treatment plans and FERC's government-to-government consultation.
NPS	9/26/2016	The land managing agency of where the inadvertent discovery was found should also be contacted	See Appendix F, Section 3.1
NPS	9/26/2016	Federally recognized tribes should also be notified of unanticipated discoveries.	See Appendix F, Section 3.1
NPS	9/26/2016	NPS recommends revising 2nd and 3rd sentences to read: "Gallagher flint Station National Historic Landmark (NHL) is a Paleoafrican site (PSM-00050) considered to be one of the oldest on the North Slope. As the NHL boundary is close to the proposed footprint of the Project, consultation per Section 106, will need to take place (including with the National Park Service who administers the NHL program) to avoid direct and indirect impacts to this NHL.	While National Historical Landmark (NHL) site PSM-00050 lies within the 2,000-foot study area, it is not within the Project APE for direct effects (Appendix E, Table 1) and would not be directly affected by the Project. When the APE for indirect effects has been defined, the Applicant would evaluate potential indirect impacts to the site.
NPS	9/26/2016	Note: In looking at the current project map on-line and comparing with our documentation, the proposed route (and Area of Potential Effect for direct or indirect effects under Section 106) may include the Gallagher Flint Station National Historic Landmark. For NHL information and boundary map, please contact: Rhea Hood, National Park Service Archaeologist at : rhea_hood@nps.gov	While NHL site PSM-00050 lies within the 2,000-foot study area, it is not within the Project APE for direct impacts (Appendix E, Table 1) and would not be directly affected by the Project. When the APE for indirect impacts has been defined, the Applicant would evaluate potential indirect impacts to the site.
NPS	9/26/2016	General comment: I would like to see a Cultural Resources treatment plan and to be able to review mitigation measures should they be necessary. This will be an important part of the future consultation, however, it is too early in the process perhaps for it to be included.	As discussed in Section 4.9, when FERC, the BLM, the OHA, and appropriate consulting agencies have determined which cultural resources are eligible for the NRHP and the Applicant has determined which, if any, of those cultural resources cannot be avoided and would be affected by the Project, treatment plans would be developed for those cultural resources. The treatment plans would be reviewed by FERC, the BLM, the OHA and appropriate consulting agencies and tribes. If sites are found on land under the management of the NPS, the NPS will be consulted and included in the treatment plan review process.
NPS	9/26/2016	The report cites GIS data from federal and state agencies - what kind of GIS data, and how accurate is it?	Section 4.4 notes that data were obtained from many federally regulated projects and the State of Alaska OHA/SHPO AHRS inventory.

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NPS	9/26/2016	In 2013, they asked for 2002 GIS data. Is this data out of date?	The Applicant evaluated data from past cultural resources studies in the vicinity of the Project to determine site locations and types that could be expected to be found during the Project's survey efforts. The data may help the Applicant to develop a cultural context for newly recorded sites.
NPS	9/26/2016	Having a gas pipeline close to a site increase the risk of contamination through leaks or spills and fire.	This is a natural gas pipeline, not a liquids pipeline, so there is no contamination risk from a leak. The risks of a fire are dependent upon the presence of a spark or ignition source as methane is not combustible without an ignition source. Resource Report No. 19 addresses the potential risks of a fire or leak and the mitigation measures to prevent same.
NPS	9/26/2016	A map showing where the project has surveyed on the ground, or previous surveys that they rely upon for data should be included.	The mapbooks in Appendix A depict all locations that have been subjected to cultural resources surveys. Appendix D provides the extent of survey coverage by milepost and facility in tabular format.
NPS	9/26/2016	Results of consultations with tribes seems to be insufficient. Did the Tribal consultations result in the identification of areas or sites that are culturally significant to them?	Any information regarding cultural resources provided to FERC during government-to-government consultation with Tribes or provided to Project representatives during outreach to Tribes has been incorporated into this Resource Report. Table 4.2.3-1 provides a summary of consultations and interactions with federally recognized Tribes.
SOA / ADNR / OHA / SHPO	9/25/2016	In TOC and the section headers themselves, can sections 4.4 and 4.5 be differentiated more somehow? The header titles seem to convey the same thing... "Research and Survey Results" vs "Background and Survey Results." We assume 4.4 is intended to address past projects and 4.5 is intended to address the current undertaking, but that is not clear from the headers.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Came across AWOIS in the document and did not know what it referred to. Can it be added to Acronyms and Abbreviations please? Also, should British Petroleum be added as another "BP?"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Add compliance with Section 106 of the NHPA and the Alaska Historic Preservation Act to the Purpose of this Resource Report	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.

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SOA / ADNR / OHA / SHPO	9/25/2016	The third bullet, which mentions the project “survey corridor” should reference the APE or explain the difference between the “survey corridor” and the APE.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	The fifth bullet discusses assessing project effects, but it should be made very clear, up front that at present, we are only able to preliminarily address direct effects as the indirect APE has yet to be defined at all and no identification efforts have been completed within the indirect APE. This is critical when thinking about what type of Section 106 agreement document will be able to adequately address the current unknowns for the project.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	11th bullet: change “archaeological” to “heritage resource” or “cultural resource” database. The AHRs does not just have information on archaeological sites.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Here and GLOBAL change: Second sentence of first paragraph on this page says “Appendix A shows the results of the archaeological surveys...” Change to “cultural resources.” The surveys were conducted for all cultural resources – not just archaeological resources.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Third paragraph last sentence, “The AHPA, administered by SHPO [change to OHA of OHA/SHPO]...”	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It would be very helpful if this section also explained the SHPOs role in Section 106.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Why does this say that the BLM “would be” a cooperating agency? Can’t it just say “is?” This tense appears similarly elsewhere in the document and seems confusing (e.g., beginning of section 4.2.2.1 as well).	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	See comment immediately above. Also, add “key” or “automatic” in front of consulting party.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second paragraph, first sentence, change “historical” to “existing” if that doesn’t change the meaning of what you’re trying to convey.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It may be appropriate to clarify that consultation with Tribes under Section 106 can involve formal G2G consultation, but that it is not always the same thing. The second sentence might be more accurate if it stated “In May 2015, FERC initiated formal consultation with federally recognized Indian Tribes...” It could then go on to explain when G2G occurs under Section 106 or other legal frameworks.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	GLOBAL: The regulations refer to the area of potential effects (APE) (plural). Might be appropriate to correct throughout because the project may have discontinuous APEs, given its scope.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.

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SOA / ADNR / OHA / SHPO	9/25/2016	Important! We strongly recommend that if you divide up the APE, you do so using "direct" and "indirect" as opposed to by resource type like it is described here. It is not appropriate to have an APE for archaeological resources and one for historic architectural resources, especially for a project of this scope. The way this is described would be impossible to map/show visually as there is so much overlap in resource type. What about remnants of historic linear resources such as trails (archaeological or built?); what about multi-component sites? Please change to direct and indirect and clarify.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Throughout this section, it should be made clear that all current references to the APE are for the "direct" APE as consultation has yet to occur on the definition of the "indirect" APE.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Bulleted descriptions: The APE definition cannot just be the project footprint itself. Within each of these bulleted descriptions, the text should explain exactly how the APE is defined (e.g., "the APE encompasses XYZ facility footprint, plus a XXX-foot buffer to account for potential relocation"). Preference would be for this section to refer specifically to the APE and then, if needed, to explain where within the APE cultural resource inventory was/will be conducted. The use of the terms 'cultural study area' and 'cultural survey corridor' is confusing – how does this compare/contrast with the APE and the actual pedestrian inventory. It is not clear. Also, in a couple places, the narrative states that the 'survey encompassed the APE.' If defined appropriately, the APE should encompass the survey.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It may be appropriate to explain in this section the plans and timeline for initiating consultation on the indirect APE and a preliminary explanation of what it might look like (or at least a clear description of the types of effects an indirect APE is intended to address)	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	In paragraph that starts "Indirect impacts....", second sentence (and elsewhere in the document), the text should be changed to use the actual definition of an APE as provided at 36 CFR 800.16(d). Indirect effects can include atmospheric effects, change in use/character as well.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First sentence in first paragraph: Not sure if ASAP has been clearly introduced or defined before appearing as an acronym here. Disregard this comment if so. (Noted however that it is introduced later in section 4.4.1. Perhaps that should be moved up in the narrative?)	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First full paragraph, middle: Explain if/when testing exceeded 100 cm in depth and why/why not. More detail is needed to address our office's ongoing comments and recommendations regarding deep testing.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First full paragraph, last sentence: "A deed of gift would be obtained...?" What does this mean?	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR /	9/25/2016	Second full paragraph, third sentence: can't we just say 'artifacts' instead of 'items or tools?'	The Applicant will address State of Alaska agency comments during

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OHA / SHPO			the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Extra "A" in the "AND" in the header.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	The organization of the document is somewhat confusing as it discusses "Current Project Field Studies" in section 4.3.2.2 before it introduces baseline data gathered from other/past projects such as ASAP and APP later in 4.4.1. The organization and flow seems off. Not sure how to address this...	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It would be appropriate to note that the Corps completed their Section 106 review and consultation on the PT project and executed a PA.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last paragraph, first sentence: see later general comments, but we believe that this sentence "The status of cultural resource surveys along the Project footprint is varied" demonstrates the need for a PA to address and resolve adverse effects for the AK LNG project. We believe an MOA is not the appropriate Section 106 agreement document for this undertaking, given its scope, scale, time depth, and the unknowns that remain, both for construction and operations.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last paragraph to end of section: Clarify that the percentages of survey coverage refer only to the direct APE.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Up front and throughout, please emphasize that none of this considers historic properties located within the as-yet undefined indirect APE.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Header: See previous comment (re: TOC) on the titles of this header compared to 4.4. The don't seem differentiated enough. Also, this title uses "Background" and 4.4 uses "Research." Is the intent to convey the same thing or something different?	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First paragraph, first sentence, Table E-1 does NOT just list archaeological sites. Change to cultural resources and conduct a global search of this RR to ensure that this error is not repeated elsewhere.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First paragraph, second sentence, change to "...AHRs database maintained by OHA/SHPO."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First paragraph, fourth sentence, change to "cultural resources." Important! Be clear and consistent in your use of terms. We suggest using and defining clearly "cultural resources" and "historic properties" (as defined at 36 CFR 800.16[l]). Use of terms like "historic resources," confuses the reader regarding status (is it NRHP eligible/listed or not?). Also, it is worth noting that under Section 106, the project only is legally-obligated to avoid/minimize/mitigate effects to "historic properties" but if the preference is still to use "cultural resources" here, that is fine. Keep in mind that planning pipeline/facility placement around	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.

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		cultural resources that may or may not be “historic properties” may be costly and unnecessary. Just a caution. We believe that the document would be improved with further explanation about how DOEs are needed to appropriately craft avoidance, minimization, and mitigation measures under Section 106. Under Section 106, the FERC and AK LNG are only legally-required to consider their effects upon “historic properties.” Other laws may direct the consideration of the broader term “cultural resources,” but that distinction should be made and explained herein.	
SOA / ADNR / OHA / SHPO	9/25/2016	First paragraph, fifth sentence, change “recorded” to “located”	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second paragraph, Seems odd to call out WIS-00426 and LIV-00719 specifically here....?	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Third paragraph, is there a reason why we don't name the NHL here? For site protection reasons? If so, that's fine.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Fourth paragraph, first sentence: why are they noteworthy?	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last paragraph on page, second sentence, re: 48 rectangular house pits: This number is approximate and may have changed since this was researched.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	At the beginning of this section and each similar section that follows, are you referring to new, previously-recorded, or total number of sites? Might help to clarify.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second sentence, not sure if AHRS has been clearly introduced or defined before appearing as an acronym here. Disregard this comment if so.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Table 4.5.-1 GLOBAL: In general, the Alaska SHPO does not prefer to use the word “ineligible.” Please consider a global change to “not eligible.” The reason for this is that eligibility can sometimes change.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Do we have a copy of the submerged cultural resources report? Just curious.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Since this section references different “Phases” a great deal, it may be useful to explain/define up front what is meant by Phase I, Phase II, etc. for the purposes of this undertaking.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR /	9/25/2016	End of first paragraph, add “to determine eligibility.”	The Applicant will address State of Alaska agency comments during

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OHA / SHPO			the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Third paragraph, second sentence: change “few” to “scant”	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second paragraph, first sentence: Were these sites “identified” or “revisited?” Also see comment above about clarifying whether you are referring to new, previously-recorded, or total number of sites.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Throughout this section, where specific sites are mentioned, the text sometimes notes their eligibility status and in other places does not. It would be helpful, especially for those sites that are called out specifically, to note their eligibility status (i.e., listed, eligible, not eligible, or unevaluated).	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First full paragraph on page, last paragraph in section. It should be noted that the final product that was developed for the Iditarod Dog Sledding area is a Multiple Property Document. It is available on AHRs. Suggest revising and updating this to include that MPD.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	What is AWOIS? Not in acronym list.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Please explain that more work is needed and planned with respect to the associated infrastructure APE.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last sentence of paragraph. Just a note, there are also State burial laws that protect known (and unknown) gravesites, so it would not just be eligibility to the NRHP that would protect this particular burial.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First sentence, please change to “Thirty-seven cultural resources were located within the surveyed ATWS areas.” This should be applied to all other areas where some, but not all survey has been completed. Also, these areas may end up having indirect APEs as well, so clarification that all survey conducted to date has been in the direct APE may also be helpful.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second paragraph, third sentence, change to: “...PTU facilities to support the NEPA and NHPA review....” Also, it would be appropriate to note that the Corps completed their Section 106 review and consultation on the PT project and executed a PA.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	This section still needs a great deal of work, which will follow after the indirect APE has been defined and DOE's are completed for all identified cultural resources within the direct and indirect APEs. It may be helpful to just state this up front, recognizing the limitations on assessing effects and developing avoidance/minimization/mitigation measures at this time. Change title to POTENTIAL CONSTRUCTION IMPACTS AND AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR /	9/25/2016	First sentence, end with (“historic properties” as defined at 36 CFR 800.16[l]).	The Applicant will address State of Alaska agency comments during

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OHA / SHPO			the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Start third sentence with "Some of..." or somehow indicate that not all 245 as-yet identified resources have been evaluated for the NRHP. Or have they? This is unclear. It may be appropriate to clarify that several cultural resources remain unevaluated.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Fifth sentence, change to "Iditarod-related trails...."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second paragraph, first sentence, change to "...makes an assessment of effects on..."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second paragraph, it is inaccurate to imply that FERC only consults in the event of an adverse effect. Consultation occurs throughout the process and during the assessment of effect. This needs clarification here and elsewhere in the document.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Third paragraph, first sentence, change to: "In general, any ground-disturbing activity, including activities such as removal..."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Third paragraph, last sentence, Technically, we haven't even begun consultation on the indirect APE.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last paragraph on page, second sentence, change "resource" to "historic property"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last paragraph on page, fourth sentence, list FERC first in this list.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First text at top of page, change to "...options are not practical, data recovery might be suitable mitigation for archaeological sites."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Are we suggesting that data recovery/treatment plans are going to be developed on a site-by-site basis? OHA/SHPO commented on this during the last round of RR reviews. The cost of this could end up being significant. Case-by-case / site-specific data recovery plans do not seem practical for this project. This section needs much more info regarding the range of possible mitigation/treatment options, such as project-wide mitigation, creative mitigation (interpretation and education), mitigation on a representative sample of sites, etc. It should explain that some site-specific mitigation may be appropriate, but that it is unlikely that every eligible archaeological site that will be affected by the project will be excavated.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR /	9/25/2016	First full paragraph, second sentence, change to: "A list of potentially affected historic properties and treatment plans	The Applicant will address State of Alaska agency comments during

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OHA / SHPO		would be developed in consultation amongst FERC, OHA/SHPO, BLM, other appropriate state and federal agencies, federally recognized Indian Tribes, and other consulting parties on the Project.	the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First full paragraph, last sentence: We believe an MOA is not the appropriate Section 106 agreement document for this undertaking, given its scope, scale, time depth, and the unknowns that remain, both for construction and operations.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last paragraph, first sentence: change to "cultural resources" instead of "historic resources"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Third sentence, change to "If a historic property could not be avoided...."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Third sentence, the mention of "matting or construction during the winter" here is just vague and confuses the reader. Why were these potential minimization options called out as examples? If they must be used, more explanation is warranted. What is "matting" and how does it minimize effects? Also, winter construction can sometimes minimize and sometimes worsen potential effects to historic properties. Just end the sentence after "Project."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second to last paragraph in section, regarding temporary impacts, specify what the limit is on "temporary" with respect to consideration of historic properties. For example, temporary was described at the recent FERC RR workshop as possibly up to 10 years in some areas. For historic properties, these impacts would not be considered temporary.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It is inaccurate to imply that FERC only consults in the event of an adverse effect. Consultation occurs throughout the process and during the assessment of effect. This needs clarification here and elsewhere in the document.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It is inaccurate to imply that FERC only consults in the event of an adverse effect. Consultation occurs throughout the process and during the assessment of effect. This needs clarification here and elsewhere in the document.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It is inaccurate to imply that FERC only consults in the event of an adverse effect. Consultation occurs throughout the process and during the assessment of effect. This needs clarification here and elsewhere in the document.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It is inaccurate to imply that FERC only consults in the event of an adverse effect. Consultation occurs throughout the process and during the assessment of effect. This needs clarification here and elsewhere in the document.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	What about Kenai Spur as a Non-Jurisdictional Facility? This warrants discussion here even if it is just acknowledging the unknowns.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR /	9/25/2016	Change title to POTENTIAL OPERATION IMPACTS AND AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES	The Applicant will address State of Alaska agency comments during

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OHA / SHPO			the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	This section needs to address the feasibility and practicality of long-term cultural resource management plans for the project. We conduct extensive, ongoing consultation with BLM, Alyeska, the State, and other parties on TAPS maintenance and operations projects. These include multiple projects a year. This section does not seem to adequately capture what is involved in project facilities operations and maintenance and the long-term monitoring and management of potential future impacts to historic properties.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	What is meant by "i.e., graveled" and how is this "undeveloped?"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Change to "...human remains are..."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Fourth sentence, list FERC first in this list.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Both in this section and within the plan itself, more detail should be provided on how AK LNG and FERC will ensure compliance with the plan and also training of personnel on the ground. Will the procedures for Discoveries be incorporated into and become a condition of construction contracts? This is a good way to ensure that the right people know of the appropriate procedures to follow.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	We were pleased to see the integration of the Cultural Resources Advisor program for the Project, which includes Tribal representatives in the surveys along with qualified cultural resource professionals. However, RR #4 appears to use the acronym "CRA" to refer to qualified archaeologists (e.g., monitors or field supervisors) and does not explain that CRA's may also be Tribal representatives? Perhaps a definition or explanation of who is who would help clarify this.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	As noted within our official concurrence letters on March 21 and February 11 2016, while some sites may not be individually eligible for the NRHP, as the identification and evaluation of sites proceeds, we encourage the ongoing consideration of the potential for archaeological and historic districts that may be present in (or intersected by) the project area. When evaluated individually, sites may not rise to the level of NRHP eligibility on their own, but when considered within the context of a district, they may be 'contributing resources,' which would make them eligible for the NRHP.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Additionally, moving forward, we request that the project give greater attention to the need for professional geoarchaeological and stratigraphic expertise at some of the buried prehistoric sites identified (e.g., BET-00206 and other similar sites). Site geomorphology and stratigraphy – established through the use of qualified professionals and targeted deep testing – are	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.

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		exceptionally important to arriving at an accurate age, establishing the relevant historic contexts, and assessing integrity for these types of sites. Specifically, an advanced understanding of post-depositional disturbances such as cryoturbation, load casting, and redeposition on slopes will inform whether a site lacks integrity due to churning of sediments or the destruction of contextual information like cultural features and paleoenvironmental evidence. Geomorphologic expertise is especially important for assessing the age of sites that do not immediately yield carbon or OSL samples for dating. An advanced understanding of stratigraphy is one of the most important elements in evaluating information contained in multi-component sites. Incorporating accurate geoarchaeological information into early survey reports and site cards and specifically, providing relevant details such as the depth and thickness of cultural horizons can provide a much-improved basis on which to make a determination of eligibility (DOE). This can potentially eliminate sites with little potential to yield important information earlier in the process, saving valuable project time and money. Importantly, it can also provide much better guidance for subsequent assessments of effects and for planning appropriate mitigation strategies. We have attached a simple guidance document on Deep Testing for your reference. In addition, cross-checks/references to RR 6 and 7 may be appropriate in an effort to identify additional areas within the direct and indirect APE that warrant deeper testing.	
SOA / ADNR / OHA / SHPO	9/25/2016	As noted previously, many of the documented sites have yet to undergo a formal determination of eligibility for the National Register. Keep in mind that planning pipeline/facility placement around cultural resources that may or may not be "historic properties" may be costly and unnecessary. Just a caution. We believe that the document would be improved with further explanation about how DOEs are needed to appropriately craft avoidance, minimization, and mitigation measures under Section 106. Under Section 106, the FERC and AK LNG are only legally-required to consider their effects upon "historic properties." Other laws may direct the consideration of the broader term "cultural resources," but that distinction should be made and explained herein.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It is our position that consultation on the definition of the indirect APE is overdue and should be initiated immediately. Depending on how it is defined, the project may need to undertake additional identification efforts that could end up to be considerable.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It is important to explain clearly up front that all survey results presented so far in RR 4 are for the direct APE only.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	RR 4 needs to cross-reference other, related resource reports, including but not limited to as RR 5, RR 8 (for visual), and RR 6.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR /	9/25/2016	So far, RR 4 does not substantially address direct or indirect effects to historic linear resources, such as historic trails, railroads, roads, etc. How, if at all, will the project result in a	The Applicant will address State of Alaska agency comments during

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OHA / SHPO		change in use for these resources? Visual impacts? Increased access? Induced development and transportation impacts?	the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	This appendix needs page numbers	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	In anticipation of the FERC workshop held on August 25, the project team asked the participants to comment on the sufficiency Appendix F. Specifically, whether it addresses each agency's protocols for the project, etc. At this time, we do not believe that it does. This plan needs a great deal of work. More detail is needed in nearly each section. Very clear and specific roles and responsibilities, timeframes, and consultation procedures are required for discoveries. To avoid confusion, costly project delays, and unnecessary impacts to significant cultural resources and especially human remains, a high level of detail is needed in a plan like this. Also, the plan needs much more emphasis on the importance of consultation throughout the discovery-management process – identifying who, when, how, and frequency thereof.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First sentence, remove "archaeological." The plan should be applied to any cultural resources discovered (while likely archaeological, discoveries aren't always).	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	"Project entity personnel" is awkward. Perhaps it would help if the introduction narrative defined specifically what is meant by "Project entity." An alternative is to state that this protocol is to be adhered to by all Project personnel, including contractors, subcontractors, etc. etc...	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First sentence, change to "...or Alaska LNG Project (Project) personnel during ground-disturbing activities located outside..."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Define what is meant by "qualified archaeologist"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Middle of paragraph seems to reference only Criterion D of the National Register (i.e., potential to yield important information), however, it would be more accurate to state, "If assessment of the discovery reveals that it meets one or more of the National Register criteria and retains integrity, it is considered eligible for the National Register and therefore a historic property." Or something to that effect. All NRHP criteria and integrity should be examined during an evaluation of a site's eligibility – archaeological or other.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It's somewhat odd that the end of the introduction simply references 36 CFR 800 instead of an agreement document and associated treatment / mitigation plans. The assumption is that we would be consulting on avoidance, minimization, and mitigation/treatment in advance, developing a plan, and incorporating that plan or plans into the resulting agreement document, as opposed to going back to the standard regulatory process for site-by-site mitigation, which is what is implied here.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.

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SOA / ADNR / OHA / SHPO	9/25/2016	Last sentence, change to "This plan identifies the key individuals and agencies, their roles and responsibilities, applicable timeframes, consultation protocols, specific contact information, and legal requirements that apply in the event of a discovery of cultural resources or human remains." Or something to that effect.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	This section and entire plan needs to better emphasize the importance of consultation. Consultation with FERC, SHPO, and other appropriate parties must occur upon the discovery of cultural resources or human remains, regardless of their perceived significance. It is not appropriate for the cultural resource monitor to determine, without consultation, that a discovered cultural resource is not eligible for the NRHP. This must be done in consultation with the SHPO (and others, as appropriate)	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	The Workforce Cultural Resources Briefing needs much more development. Specifics such as when the briefing will be provided, how often, to whom specifically. Who specifically is responsible for providing the briefing? Will there be formal training in cultural resources sensitivity as well? We understand that a monitoring plan has yet to be developed, but it is unclear at present where monitoring will occur. The last sentence references G&G work. What about project-related construction activities? Second sentence should emphasize that it is illegal for project-personnel to destroy/remove any cultural resources from the project area at any time, in any location (not just in the area of a discovery).	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First sentence, change to "...its employees and contractors keep all discovery details confidential."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	It is unclear what the 'non-disclosure agreements' specifically stipulate.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last sentence of first paragraph, change to "In the event of a discovery..."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Specify whether the 30-foot area around a discovery site is a buffer or radius.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Complete Work Stoppage Log should be Step 5.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Table 1 Shina duVall's phone number is 907-269-8720. Recommend providing email addresses here as well.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR /	9/25/2016	Change "archaeological" to "cultural"	The Applicant will address State of Alaska agency comments during

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OHA / SHPO			the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	The initial documentation and evaluation of a discovery must involve consultation with the SHPO. This needs to be emphasized more clearly here and throughout the document.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Take out "(i.e., one that could be NRHP-eligible)." This decision is made in consultation with the SHPO and other appropriate parties. It is not appropriate to only consult on discoveries that the field personnel deem potentially eligible. Eligibility is determined through consultation.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Change "archaeological" to "cultural resource"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Change "constituents" to "components"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	SHPO needs to be involved in consultation on appropriate avoidance approaches	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Item 1 is not acceptable. You cannot adequately mitigate a site that is only assumed eligible. If mitigation is the only option, we must know if and why the site is eligible (why is it significant). How would one craft a defensible research design to mitigate a site for which we have no substantial information? If not avoidable, a site must be evaluated for eligibility to the NRHP.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Item 2 should mention the National Register specifically when talking about evaluating a site.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last paragraph of section, change "considered" to "determined"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last paragraph of section, this section needs to be re-worded. The consultation should come before the final determination regarding a site's eligibility. FERC, SHPO, and others should be consulted on eligibility AND effect, as well as appropriate resolution of adverse effects (mitigation/treatment). Also, it is important to note that there may be cases where data recovery / archaeological excavation is not the most appropriate mitigation approach.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	SHPO consultation is not mentioned at all in this section.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Third paragraph, first sentence. Important! Consult with the appropriate parties BEFORE any site treatment, not after. Also, these timeframes are highly unrealistic and SHPO and others	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.

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		cannot be bound by them unless they are incorporated into an agreement document.	
SOA / ADNR / OHA / SHPO	9/25/2016	In the main body of RR 4, the project states that individual, site-specific data recovery plans/research designs would be developed for the sites needing treatment, in consultation with the appropriate parties and built into the agreement document. But here, there is no mention of that and the implication is that any unavoidable site would simply be excavated, at the direction of the CRA, and that consultation with some of the key consulting parties, including FERC and SHPO, wouldn't occur until after the treatment is completed.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second paragraph, "effected" should be "affected"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Second sentence, change to "If the discovery is determined, in consultation with FERC and SHPO, not to be significant (not eligible for the NRHP), additional work at the site is not required, and work may resume..."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Change "judged" to "determined"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	This section has good methodological information that might help add clarity if it were moved up in the document (appearing earlier)	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	The curation agreement should be in place prior to the start of construction activities (or even well before that) and be appended to the agreement document.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Change "he intended repository" to "the intended repository"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Reminder that SHPO should be consulted throughout and should not just be receiving copies of the technical reports at the end of fieldwork.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	This seems slightly out of place here. Can it be moved up in the document (appearing earlier)?	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Remove "found or potential" and just say "any cultural resources or human remains confidential."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Step 3, first paragraph, change "and discoveries of human remains" to "any discoveries of human remains"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.

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SOA / ADNR / OHA / SHPO	9/25/2016	Step 3, end of first paragraph, change to "...would comply with Alaska State laws and NAGPRA and its implementing regulations, depending on the land status at the location of the discovery."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Step 4, change to "Office of History and Archaeology / State Historic Preservation Office (OHA/SHPO)"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Step 4, change "potentially-effected" to "potentially-affected"	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Step 4, Confirm that you indeed need to contact the Bureau of Vital Statistics at this stage.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Step 4, last sentence on page, change to "...a clear and explicit statement as to whether the discovery is on State, Federal, or private land, an opinion as to whether the find is archaeological."	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Table 2 May be appropriate to provide a list of appropriate contacts by Region. It seems odd that the Kenai Police Department is specifically listed here and no other region-specific contacts. For example, who would one contact in the event of a discovery near Livengood?	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Table 1 and 2 Richard VanderHoek is the State Archaeologist (no longer acting)	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First sentence, change to "If human remains are found..." The tense is inconsistent throughout this Appendix. In some places, it uses "would be, were to be, etc." Just use will, is, are (present tense) as this IS the guiding document that will be used when then project is implemented.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	Last sentence on first page of section. Where will the location be mapped and how? Who will be responsible for this information? This statement needs much more information.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	First paragraph on last page, what is a burial record? Is this the first mention of this?	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	This whole section needs much more detail on how the process would differ depending on land ownership. Suggest possibly having a section for private, State, and Federal lands.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	This appendix ends abruptly and seems to be unfinished.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
SOA / ADNR /	9/25/2016	Please ensure that the Visual Resource Analysis (RR8) section addresses potential viewshed impacts to significant historic	The Applicant will address State of Alaska agency comments during

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Resource Report No. 4			
Agency Comments and Requests for Information Concerning Cultural Resources			
Agency	Comment Date	Comment	Response/Resource Report Location
OHA / SPCO		properties, such as the Iditarod Trail, and associated trails, and that it appropriately cross-references to the RR #4.	the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	The Visual Resources Analysis section (RR8) 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 agency comments during the State permitting processes and timeframes.
SOA / ADNR / OHA / SHPO	9/25/2016	RR 4 and the Subsistence/TEK section of RR 5 may need to be cross-checked/referenced, especially with respect to Changes over Time.	The Applicant will address State of Alaska agency comments during the State permitting processes and timeframes.
USACE	9/26/2016	12. The Cultural Resource report (RR4) describes the APE for the PTTL as potentially having an airport and helipad, construction camps, pipe storage, and rail work pads (The Corps believes this may be an error as there is no rail in this area of Alaska). Plan and elevation drawings would be needed for all infrastructure for the PTTL and PT expansion areas.	The reference to Point Thomson Gas Transmission Line (PTTL) rail work pads has been removed from revised Section 4.3. Plan and elevation drawings are provided in other sections of the FERC application.

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ACRONYMS AND ABBREVIATIONS

ABBREVIATION	DEFINITION
AAC	Alaska Administrative Code
ACGP	Alaska Construction General Permit
ACHP	Advisory Council on Historic Preservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
AGI	Apex Gas Injection
AGPPT	Alaska Gas Pipeline Producers Team
AHPA	Alaska Historic Preservation Act
AHRS	Alaska Heritage Resources Survey
Applicant's Plan	Applicant's Upland Erosion Control, Revegetation, and Maintenance Plan
Applicant's Project Procedures	Applicant's Wetland and Waterbody Construction, and Mitigation Procedures
ANGTS	Alaska Natural Gas Transportation System
ANCSA	Alaska Native Claims Settlement Act
APE	Area of Potential Effect
APP	Alaska Pipeline Project
Applicant	The Alaska Gasline Development Corporation
ARPA	Archaeological Resources Protection Act
ARRC	Alaska Railroad Corporation
ASAP	Alaska Stand Alone Pipeline
ATWS	additional temporary workspace
AY	Atigun Pass to Yukon River
BIA	United States Bureau of Indian Affairs
BLM	United States Department of the Interior, Bureau of Land Management
BOEM/MMS	United States Department of the Interior, Bureau of Ocean Energy Management/Minerals Management Service
BP	Before Present
C.F.R.	Code of Federal Regulations
CGF	Central Gas Facility
CLG	Certified Local Government
CRA	Cultural Resource Advisor
CVTC	Chickaloon Village Traditional Council
DOE	Determination of Eligibility
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
GIS	Geographic information system
GPS	Global Positioning System
GTP	Gas Treatment Plant
HT	Healy to Trapper Creek
IN	Marine crossing of Cook Inlet to Kenai Peninsula, and Kenai Peninsula to the Liquefaction Plant in Nikiski
IPS	Initial Production System

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ABBREVIATION	DEFINITION
LH	Livengood to Healy
Liquefaction Facility	natural gas liquefaction facility
LNG	liquefied natural gas
LNGC	liquefied natural gas carrier
Mainline	an approximately 807-mile-long, large-diameter gas pipeline
MGS	Major Gas Sales
MLBV	Mainline block valve
MMPA	Million metric tons per annum
MOF	Material Offloading Facility
MP	milepost
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
NHPA	National Historic Preservation Act
NLURA	Northern Land Use Research Alaska, LLC
NOAA	National Oceanic and Atmospheric Administration
NOAA AWOIS	National Oceanic and Atmospheric Administration Office of Coast Survey's Automated Wreck and Obstruction Information System
North Slope	Alaska North Slope
NPS	United States Department of Interior, National Park Service
NRHP	National Register of Historic Places
OHA	Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, Office of History and Archaeology
PA	Prudhoe Bay to Atigun Pass
PBTL	Prudhoe Bay Gas Transmission Line
PBU	Prudhoe Bay Unit
PL	Public Law
Project	Alaska LNG Project
PTTL	Point Thomson Gas Transmission Line
PTU	Point Thomson Unit
ROW	right-of-way
SHPO	Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, Office of History and Archaeology, State Historic Preservation Office
SPCS	Alaska State Pipeline Coordinator's Section
TAPS	Trans-Alaska Pipeline System
TCC	Tanana Chiefs Conference
THPO	Tribal Historic Preservation Office
TI	Trapper Creek to Cook Inlet
U.S.	United States
UAMN	University of Alaska, Museum of the North
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USFWS	United States Department of the Interior, Fish and Wildlife Service
USGS	United States Department of the Interior, United State Geological Survey
VSM	vertical support member
YL	Yukon River to Livengood

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4.0 RESOURCE REPORT NO. 4 – CULTURAL RESOURCES

4.1 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.

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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:

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- 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.

4.1.1 Purpose of Resource Report

As required by 18 C.F.R. § 380.12, Resource Report No. 4 has been prepared in support of an application under Section 3 of the NGA to construct and operate the Project facilities. The purpose of this Resource Report is to:

- Provide information to aid the FERC in complying with Section 106 of the National Historic Preservation Act (NHPA);
- Comply with the Alaska Historic Preservation Act of 1972 (AHPA);
- Describe consultations with regulatory agencies and federally recognized Indian Tribes with land or other interests in reasonable proximity to the Project;
- Identify the area of potential effects (APE), both direct and indirect, and cultural resource survey methodologies for each;
- Describe the status of cultural resource investigations conducted within the direct APE;
- Identify historic properties and cultural resources within the direct APE;
- Identify potential Project direct and indirect effects to cultural resources and present potential mitigation measures; and
- Address management of unanticipated cultural resources identified during construction and operations.

The data for this Resource Report were compiled from:

- Pre-front-end engineering design (FEED) information, to the extent available;
- United States Geological Survey (USGS) topographic maps;
- Recent aerial photography;
- Field survey data;
- Office of History and Archaeology/State Historic Preservation Officer's (OHA/SHPO's) cultural resource database, the Alaska Heritage Resources Survey (AHRs);
- Review of studies and survey reports pertinent to the proposed Project that have been produced by other projects;

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- Communication and consultation records from tribal communities;
- Agency-supplied comments and data;
- Scientific literature; and
- Geographic information system (GIS) data from public sources.

The results of the cultural resource investigations are presented in Appendices A and B. Appendix A provides the results of the cultural resources surveys on USGS topographic maps and on aerial mapping. Appendix B provides the technical survey reports for all cultural resource investigations to date as well as the ethnographic study for the Project. Because these appendices contain information on the location, character, and ownership of cultural resources, they are marked as privileged and confidential and are not for public release in accordance with FERC guidance for environmental report preparation (FERC, 2002). Cultural resources information is restricted and confidential under state and federal laws including AS 40.25.120(a)(4), Alaska State Parks Policy and Procedure No. 50200, the NHPA [Public Law (PL) 89-665, 54 United States Code (U.S.C.) 300101], and the Archaeological Resources Protection Act (ARPA)[PL 96-95].

4.1.2 Project Regulatory Context

The National Environmental Policy Act (NEPA) requires federal agencies to assess the environmental impacts of proposed federal actions, including impacts to cultural resources. FERC, as the lead federal agency for this Project responsible for compliance with NEPA, is required to assess potential impacts to all cultural resources.

In addition, Section 106 of the NHPA of 1966 and its implementing regulations (36 C.F.R. Part 800) requires federal agencies to take into consideration the effects of their undertakings upon historic properties and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on such undertakings. Historic properties are cultural resources that are listed or eligible for listing in the National Register of Historic Places (NRHP) (36 C.F.R. Part 60). The Section 106 process seeks to balance historic preservation concerns with the requirements of the federal undertaking through consultation among the responsible lead federal agency (in this case, FERC) and other parties, including the SHPO, federal land-managing agencies, federally recognized tribes and other Alaska Native groups, representatives of local government, and other potentially interested parties (36 C.F.R. § 800.2). The goal of such consultation is to identify cultural resources potentially affected by the undertaking, assess the effects of the undertaking, and seek measures to avoid, minimize, or mitigate adverse effects to historic properties (those cultural resources listed in or eligible for listing in the NRHP).

Legislation addressing cultural resources and historic properties in the State of Alaska includes the AHPA (Alaska Statute 41.35.010-41.35.240). The AHPA establishes state policy to preserve and protect the historic, prehistoric, and archaeological resources of Alaska from loss, desecration, and destruction so that the scientific, historic, and cultural heritage embodied in those resources may pass undiminished to future generations. The AHPA, administered by the OHA under the authority of the Alaska Historical Commission, affords protection to cultural resources on lands owned and administered by the state.

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The Alaska SHPO is housed within the Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, OHA, and administers historic preservation programs pursuant to the Alaska Administrative Code (AAC) (11 AAC 16.010-16.090). The OHA/SHPO is responsible for the issuance of Alaska Cultural Resource Permits authorizing the investigation, excavation, gathering, or removal of cultural resources from state-owned or state-administered lands (Alaska Statute 41.35.080 and 11 AAC 16.030). Professional qualifications and the structure for cultural resource surveys and reporting are established through the permitting process.

4.2 AGENCY AND ORGANIZATION CONSULTATION

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

4.2.1 Consultation with Federal Agencies

Discussions were held with multiple federal agencies regarding various Project details. Table 4.2.1-1 includes meetings and correspondence (through December 2016) with federal agencies who manage land potentially crossed by the Project and federal agencies who may not have land management responsibilities but have NHPA Section 106 responsibilities related to the Project.

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.

4.2.1.1 Bureau of Land Management (BLM)

The Bureau of Land Management (BLM) would be a cooperating agency for the Project under NEPA and a consulting party for the Project throughout the NHPA Section 106 process. The BLM manages a large portion of the land traversed by the Project. Informal consultation with the BLM for the Project was initiated in October 2014; however, discussions and meetings with the BLM regarding cultural resources have been ongoing since 2013. The discussions focused on obtaining permits under the ARPA, the Antiquities Act of 1906, and the BLM's specific statutory and regulatory authority over lands that it manages along the proposed Project route. The consultation efforts are summarized in Table 4.2.1-1 and are provided with additional detail in Appendix C. Also, included in Appendix C are copies of correspondence associated with archaeological permit applications, discussion of survey protocols, and date of permit issuance for the 2013 and 2014 summer archaeological field sessions. An informal discussion was held with the BLM in December, 2014 to discuss sites recorded on BLM-managed land during cultural resource investigations prior to the Project. The BLM staff offered preliminary unofficial recommendations and comments on the eligibility of the sites for listing in the NRHP. Prior to the 2015 field season, consultation regarding cultural resources on BLM property continued as survey and site evaluation protocols were further developed. The 2015 Desktop Determination of Eligibility (DOE) and Phase II Cultural Resource Evaluation reports were submitted to the BLM on January 26, 2016.

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TABLE 4.2.1-1 Summary of Consultation with Federal Agencies		
Agency	Date Contacted	Summary
U.S. Army Corps of Engineers (USACE), U.S. Coast Guard (USCG), Bureau of Land Management (BLM), National Park Service (NPS), U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS)	2/25–2/27/2014 and 3/4/2014	Multi-agency meeting to discuss Project right-of-way (ROW) and permitting with state and federal agencies (also included Alaska Department of Natural Resources (ADNR), Office of History and Archaeology (OHA)/State Historic Preservation Office (SHPO), State Pipeline Coordinator's Section (SPCS), Alaska Railroad Corporation (ARRC), and the Alaska Department of Fish and Game (ADF&G)
BLM, USACE	6/9/2014	Discussion regarding historical field survey data and protocols (also included OHA/SHPO and ADF&G)
BLM	6/3/2013 6/21/2013 7/3/2013 4/22/2014 5/23/2014	Discussions regarding archaeological permit
	06/14/2013 06/21/2013	Discussion with the BLM regarding status of ARPA permit application Discussion with BLM regarding Archaeological Collection Permit
	6/27/2013	Letter to the BLM regarding request for 2002 cultural resources GIS data
	12/10/2013	Discussion regarding 2014 field study scope
	2/18/2014	Submittal of Project 2013 Phase I Cultural Resource Report
	10/3/2014	Discussion of FERC, OHA/SHPO, and SPCS regarding pre-filing schedule and Section 106 consultation
	12/16/2014	Discussion of preliminary recommendations for sites located with the preliminary Area of Potential Effect (APE); planning for 2015 fieldwork
	8/13/2014	Letter to the BLM requesting review of cultural resources reports
	8/28/2014	Discussion regarding cultural resource data
	5/15/2015	Letter providing the BLM (Mr. Hedman and Dr. King) a copy of site-specific plans for National Register of Historic Places (NRHP) eligibility evaluations
	5/20/2014	Submittal of Cultural Resource Field Study Protocol
	10/27/2014	Letter to the BLM (Dr. King) requesting informal consultation under Section 106 of the NRHP
	06/10/2015	Meeting to review proposed methodology for NRHP Determinations of Eligibility (DOEs) at specific sites in the Project corridor
	07/13/2015	Letter providing the BLM (Nichelle Jacobson) a copy of site-specific plans for NRHP eligibility evaluations
	10/23/2015	Letter from the BLM (Nichelle Jacobson) regarding concurrence on proposed Phase II Site-specific Methodology for Evaluation
	01/26/2016	Desktop DOE report submitted to the BLM.
	01/26/2016	2015 Evaluation Report submitted to the BLM.

4.2.1.2 Other Federal Agencies

Other federal agencies with NHPA Section 106 responsibilities related to the Project include the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE), the U.S. Coast Guard

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(USCG), the U.S. Bureau of Indian Affairs (BIA), and the National Park Service (NPS). No formal consultations have been initiated with any of the agencies, but informal meetings and discussions about the Project were held with agency representatives in 2013, 2014, 2015 and 2016. A comprehensive summary of the informal Project discussions is included in Appendix D of Resource Report No. 1. A multi-agency kick-off meeting was held on February 25–27, 2014, and on March 4, 2014, to discuss the 2014 summer field season, the proposed Project right-of-way (ROW), and permitting.

4.2.2 Consultation with State Agencies

4.2.2.1 Office of History and Archaeology (OHA)/State Historic Preservation Officer (SHPO)

The OHA/SHPO would provide input regarding compliance with all relevant state historic preservation laws and would act as a key consulting party throughout the Section 106 process. Although formal consultation with the OHA/SHPO under Section 106 of the NHPA was initiated in October 2014, informal discussions and meetings with the OHA/SHPO have been ongoing since 2013. In addition, applications for Field Archaeology Permits were submitted to and approved by the OHA/SHPO for summer field studies in 2013, 2014, 2015, and 2016. The applications, associated permit numbers, and other permit correspondence with the OHA/SHPO are listed in Table 4.2.2-1 and included in Appendix C. Other meetings and informal discussions with OHA/SHPO are also summarized in Table 4.2.2-1.

Meetings with OHA/SHPO have focused on determining existing field survey data (data gathered by other projects) that would be acceptable for Project use and appropriate survey protocols for the Project; discussions regarding cultural resources data; and discussion of the FERC pre-filing schedule and Section 106 consultation. The OHA/SHPO and other state and federal agencies were included in a kick-off meeting for the 2014 summer field season held in Anchorage on February 25–27, 2014. The meeting provided an introduction to the Project and discussed permitting for the upcoming field studies. Project representatives met with the OHA/SHPO in December 2014 and January 2015 to discuss the results of the cultural resources surveys and plan for the 2015 field season. The OHA/SHPO provided preliminary comments on the eligibility of sites located within the direct APE. In March 2015, Project representatives met with the OHA/SHPO to discuss methods for evaluating the presence of submerged cultural resources in Cook Inlet and later provided a letter outlining the proposed approach. In June 2015, Project representatives met again with the OHA/SHPO to further discuss determinations of eligibility and explore avoidance and mitigation measures used by other projects in the state.

The 2015 Desktop and Phase II Cultural Resource Evaluation reports were submitted to the OHA/SHPO on January 26, 2016. The OHA/SHPO provided comments on the evaluation reports in two letters. A letter dated February 11, 2016, provided comments on 70 cultural resources and another dated March 21, 2016, provided comments on another 24 cultural resources. The OHA/SHPO provided comments on the eligibility for another three sites in September, 2016.

TABLE 4.2.2-1 Summary of Meetings and Communication with State of Alaska and Local Agencies		
Agency Contact	Date Contacted	Summary
ADNR, SPCS, ARRC, ADF&G	2/25–2/27/2014 and 3/4/2014	Multi-agency kick-off meeting to discuss the 2014 summer field season, Project ROW and permitting (also included USACE, USCG, BLM)
ADNR	6/27/2014	Pre-application meeting

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TABLE 4.2.2-1 Summary of Meetings and Communication with State of Alaska and Local Agencies		
Agency Contact	Date Contacted	Summary
OHA/SHPO	4/10/2014	Submittal of GIS geodatabase accompanying 2013 Resource Report
OHA/SHPO	5/20/2014	Submittal of cultural resource field study protocol
OHA/SHPO, ADF&G	6/9/2014	Discussion regarding historical field survey data and protocols (also included BLM and USACE)
SPCS, OHA/SHPO, ADNR Office of Project Management and Permitting	6/10/2014	Discussion regarding cultural resources survey protocols and data
OHA/SHPO, SPCS	8/27/2014	Discussion regarding cultural resource data
OHA/SHPO, SPCS	10/3/2014	Discussion of FERC pre-filing schedule and Section 106 consultation (also included BLM)
OHA/SHPO, SPCS	12/17/2014 01/07/2015	Discussion of preliminary recommendations for sites located within the preliminary APE; planning for 2015 fieldwork
OHA/SHPO	6/21/2013, 4/22/2014, 6/2/2014, 8/25/2014	Discussions regarding archaeological permits (see Appendix C)
	2/18/2014	Submittal of Project 2013 Phase I Cultural Resource Report
	4/15/2014	OHA/SHPO review of ADNR Temporary Land Use Permit (see Appendix C)
	5/15/2014	Discuss 2014 Cultural Resource survey program with OHA/SHPO
	8/13/2014	Letter requesting review of cultural resource reports
	8/27/2014	Meeting to discuss prior cultural data north of Livengood
	10/27/2014	Letter request for informal consultation under Section 106 of NHPA
	11/11/2014	Letter to OHA/SHPO regarding cultural resource evaluation for proposed 2014 Ambient Air Quality Station
	11/12/2014	Letter from OHA/SHPO regarding cultural resource evaluation for proposed 2014 Ambient Air Quality Station
	12/17/2014	Meeting to discuss prior cultural data north of Livengood
	2/3/2015	Letter to OHA/SHPO submitting 2014 Phase I Cultural Resources Inventory report
	2/5/2014	Meeting to discuss 2014 Phase I Cultural Resources Inventory Report, Nikiski, Alaska, report and recommendations.
	2/12/2015	Letter from OHA/SHPO indicating concurrence on eligibility for the Nikiski LNG Facility
	4/17/2015	Discussion regarding a methodology for evaluating the presence of submerged cultural resources in Cook Inlet
	4/27/2015	Letter to OHA/SHPO providing methodology for evaluating the presence of submerged cultural resources in Cook Inlet
	5/15/2015	Letters to OHA/SHPO and SPCS with Phase II site-specific plans for NRHP Eligibility Evaluations
	05/27/2015	Meeting to review proposed methodology for NRHP DOEs at specific sites in the Project corridor
	5/29/2015	Letter to OHA/SHPO re proposed Phase II site-specific methodology for evaluation of NRHP eligibility
	06/08/2015	Memo indicating that OHA/SHPO has no objection to the proposed methodology for evaluating the NRHP eligibility of select sites in the Project corridor

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TABLE 4.2.2-1 Summary of Meetings and Communication with State of Alaska and Local Agencies		
Agency Contact	Date Contacted	Summary
	07/2/2015	Letter indicating that OHA/SHPO has no objection to the proposed methodology for evaluating presence of submerged cultural resources in Cook Inlet
	7/29/2015	Discussion regarding strategy schedule, and approach to Programmatic Agreements, NRHP eligibility
	01/22/2016	Meeting with OHA/SHPO to discuss Winter 2015/16 geotechnical and geophysical program re: Cultural Resources inventory, assessment, and monitoring plan
	01/26/2016	Project representatives submitted a copy of the desktop DOE and 2015 evaluation reports to OHA/SHPO
	02/11/2016	SHPO provided comments on eligibility recommendations for 70 cultural resource sites within Project Area.
	03/21/2016	SHPO provided comments on eligibility recommendations for 24 cultural resource sites within the Project Area
	09/01/2016	Meeting with OHA/SHPO to discuss Project approach to Section 106 and mitigating adverse effects to NRHP-eligible sites
	09/15/2016	SHPO provided DOE for sites KEN-00656, LIV-00778, PSM-00580
	09/30/2016	SHPO provided DOE for 15 sites
	03/03/2017	E-mail from OHA/SHPO providing Iditarod Dog Sledding area Multiple Property Document

4.2.3 Consultation with Federally Recognized Indian Tribes

Acting as FERC's non-federal representative for the Project for purposes of Section 106 consultation, Project representatives contacted federally recognized Indian Tribes in October 2014. Most of the potentially affected Indian tribes were contacted by Project representatives by letter in October 2014 with follow up by telephone and email in September 2015. Project representatives held numerous informal informational meetings with individual federally recognized Indian Tribes between 2013 and 2016. In addition, informational meetings were held with the Alaska Native Claims Settlement Act (ANCSA) Regional Association in January and February, 2015. Appendix C of this Resource Report provides information on the meetings held with these groups. A list of federally recognized Indian Tribes and Alaska Native Corporations that may have knowledge of, or an interest in, cultural resources potentially affected by the Project is included in Table 4.2.3-1.

4.2.3.1 Comments from Tribes and Alaska Native Organizations

Project representatives began consultation with the Native Village of Tyonek in October, 2014 and continued engagement with the Village in several public meetings in April and May, 2015, and through calls and emails in September, 2015.

Consultation with the Kenaitze Indian Tribe was initiated by Project representatives in October, 2014, and follow-up calls and emails were placed in September 2015. A public meeting was conducted by Project representatives in April, 2015. Discussions with Project representatives continued in May, 2015. The Tribe noted concerns about social justice and the potential environmental and economic impacts of the Project.

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In October, 2015, the Knik Tribe wrote to FERC to express concerns about the lack of consultation and information exchange about cultural resource investigations, historic sites, and environmental and conservation outcomes. Of particular concern to the Knik Tribe are areas between Cantwell and the Tsi'utnu (Chulitna River) drainage through Dengiht'u (Broad Pass) to the Suyitnu (Susitna River) drainage. The Knik Tribe requested government-to-government consultation with FERC regarding the Project. The Knik Tribe requested that Project representatives actively engage the Nation to use its expertise in cultural and natural resources. Subsequently, the Knik Tribe furnished participants for the 2016 Phase II cultural resources field studies (see 2016 cultural resource reports in Appendix B).

In November, 2015, the Chickaloon Village Traditional Council (CVTC) wrote to FERC recommending that the Project use field reports from other projects, such as the Alaska Stand Alone Pipeline (ASAP) Project, for determining cultural and ecological resources and potential impacts of the Project. CVTC requested government-to-government consultation for the Project under the Section 106 process.

In December, 2015, the Tanana Chiefs Conference (TCC) wrote to FERC to provide scoping comments on the Project. The letter noted that the Project poses potential impacts to several federally recognized Tribes in the TCC region and traverses traditional lands of the villages of Allakaket, Alatna, Evansville, Stevens Village, Rampart, Minto, Nenana, and possibly others. The TCC requested that the FERC and Project representatives meaningfully engage those villages in the federal environmental review process. In regards to cultural resources, TCC noted that the review should include extensive outreach to traditional and customary use areas and develop mitigation measures to minimize impacts to subsistence economies where incomes are low and unemployment is high.

4.2.3.2 Cultural Resource Advisor Program

In addition to correspondence, email, telephone, and community meetings, the Cultural Resource Advisor (CRA) program was developed to involve local Alaska Natives in the cultural resources field programs (exp 2015). The program helped expose tribal members to the Section 106 process and encourage Alaska Natives to pursue an interest in archaeology or cultural resource management, and provided local villages and tribal entities a way to be involved in the cultural resources program and provide feedback and input as the work progresses. CRAs were chosen from candidates who identified as members of tribal organizations, villages, and/or native corporations. The CRAs provided insight to cultural resources crews on subsistence and cultural and traditional knowledge in particular areas and in general during field surveys. The CRAs observed and participated in cultural investigations, documenting what was being studied and assisting the Project in reporting information about the investigations to Alaska Native entities. CRAs include members of the following ANCSA Regional Corporations and federally recognized tribes: Doyon (Gana-A'Yoo [Galena]), Bean Ridge Corporation (Manley Hot Springs), Cook Inlet Region Inc. (Native Village of Tyonek), Calista Corporation (Algaaciq Native Village [Saint Mary's]), and NANA Regional Corporation (Native Village of Kotzebue). A summary of the CRA program and a report of the results of the effort are included in Appendix B (exp 2015).

TABLE 4.2.3-1 Summary of Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations		
Organization	Date	Description
	1/30/2015	Project representatives gave a Project update presentation in Juneau.

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TABLE 4.2.3-1 Summary of Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations		
Organization	Date	Description
Alaska Native Claims Settlement Act (ANCSA) Regional Association	2/3/2015	Project representatives gave a Project update at board meeting in Juneau.
Alatna Village	10/23/2014	Project representatives sent a consultation request letter.
	9/21–25/2015	Project representatives called and sent a follow-up email (could not leave message); the Corporation was not successfully contacted.
Allakaket Village	10/23/2014	Project representatives sent a consultation request letter.
	9/21–25/2015	Project representatives called and sent a follow-up email; indicated that the tribe would have a council meeting and share information.
Chickaloon Native Village	5/20/2015	FERC sent an introductory letter.
	10/13/2015	FERC held a government-to-government meeting; noted that the Project crosses the western edge of the Tribe's traditional use area; would like the Alaska Stand Alone Pipeline (ASAP) Project's field results to be used.
	11/25/2015	The Chickaloon Village Traditional Council sent comments to FERC and requested government to government consultation.
Circle Native Community	5/20/2015	FERC sent an introductory letter.
Eklutna Native Village	10/23/2014	Project representatives sent a consultation request letter.
	5/20/2015	FERC sent an introductory letter.
	1/31/2015	A presentation was given at the Native Village of Eklutna annual shareholder meeting.
	9/21–23/2015	Project representatives called and sent a follow-up email; Project representatives received a response that they did not have enough information to provide comments.
Evansville Tribal Council	10/23/2014	Project representatives sent a consultation request letter.
	5/20/2015	FERC sent an introductory letter.
	9/21/2015	Project representatives called and sent a follow-up email. The Council stated that the pipeline is its neighbor and it had already reviewed the Environmental Impact Statement (EIS) for the ASAP Project pipeline.
Inupiat Community of the Arctic Slope	10/23/2014	Project representatives sent a consultation request letter.
	5/20/2015	FERC sent an introductory letter.
	9/21–25/2015	Project representatives called and sent a follow-up email.
Kaktovik Village	10/23/2014	Project representatives sent a consultation request letter
	1/14/2015	Project representatives held a public meeting.
	5/20/2015	FERC sent an introductory letter
	9/21–25/2015	Project representatives called and sent a follow-up email.
Kenaitze Indian Tribe	10/23/2014	Project representatives sent a consultation request letter.
	9/21–22/2015	Project representatives called and sent a follow-up email; received a response that Ms. Brenda Trefonas is the point of contact for future Section 106 correspondence.
	4/17/2015	Project representatives held a public meeting.
	5/20/2015	FERC sent an introductory letter.
	5/22/2015	Project representatives discussed subsistence activities in Cook Inlet.
	10/15/2015	FERC held a government-to-government Meeting; concerns about social justice, environmental, and economic impacts of the Project were discussed.
Knik Tribe	10/23/2014	Project representatives sent a consultation request letter.
	9/21–25/2015	Project representatives called and sent a follow-up email.

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TABLE 4.2.3-1 Summary of Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations		
Organization	Date	Description
	2/20/2015	The Knik Tribe formally requests FERC initiate government-to-government consultation under Section 106.
	2/20/2015	The Knik Tribal Council provided comments on Draft Resource Report No. 4 to FERC.
	10/16/2015	FERC held a government-to-government meeting; the Knik Tribe requested that the Project representatives actively engage the Nation to use its expertise in cultural and natural resources.
	10/16/2015	The Knik Tribal Council sent a letter to FERC with comments and concerns.
	10/26/2015	FERC sent a response to the comments from the Knik Tribal Council.
Nagsragmuit Traditional Council	10/23/2014	Project representatives sent a consultation request letter.
(Anaktuvuk Pass Federally Recognized Tribe)	1/29/2015	Project representatives held a public meeting.
	9/21–25/2015	Project representatives called and sent a follow-up email.
Native Village of Barrow Inupiat Traditional Government	10/23/2014	Project representatives sent a consultation request letter.
	5/20/2015	FERC sent an introductory letter.
	9/21–25/2015	Project representatives called and sent a follow-up email.
	11/12/2015	Project representatives held a public meeting and FERC representatives attended.
Native Village of Cantwell	10/23/2014	Project representatives sent a consultation request letter.
	5/20/2015	FERC sent an introductory letter.
	9/21–25/2015	Project representatives called and sent a follow-up email.
	11/5/2015	Project representatives held a public meeting and FERC representatives attended.
Native Village of Chenega	5/20/2015	FERC sent an introductory letter.
Native Village of Eyak	5/20/2015	FERC sent an introductory letter.
Native Village of Fort Yukon	5/20/2015	FERC sent an introductory letter.
Native Village of Gakona	5/20/2015	FERC sent an introductory letter.
Native Village of Kluti-Kaah	5/20/2015	FERC sent an introductory letter.
Native Village of Minto	10/23/2014	Project representatives sent a consultation request letter.
	5/20/2015	FERC sent an introductory letter.
	9/21–25/2015	Project representatives called and sent a follow-up email.
	11/10/2014	Project representatives held a public meeting and FERC representatives attended.
Native Village of Nuiqsut	10/23/2014	Project representatives sent a consultation request letter.
	1/13/2015	Project representatives held a public meeting.
	5/20/2015	FERC sent an introductory letter.
	9/21–25/2015	Project representatives called and sent a follow-up email.
Native Village of Port Graham	5/20/2015	FERC sent an introductory letter.
Native Village of Stevens	10/23/2014	Project representatives sent a consultation request letter.
	9/21–25/2015	Project representatives called and sent a follow-up email—could not leave message; not successfully contacted.
Native Village of Tyonek (Tyonek Native Corporation)	10/23/2014	Project representatives sent a consultation request letter.
	4/10/2015	Project representatives held a public meeting.
	5/15/2015	Project representatives held a public meeting with Tyonek Native Corporation.

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TABLE 4.2.3-1 Summary of Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations		
Organization	Date	Description
	5/21/2015	Project representatives held a public meeting with the Native Village of Tyonek.
	9/21–25/2015	Project representatives called and sent a follow-up email.
	10/16/2015	FERC held a government-to-government meeting; concerns about cultural resources, including archaeological sites and cultural landscape were discussed.
	10/29/2015	Project representatives held a community meeting, and FERC representatives attended.
Nenana Native Association (Toghotthele Corporation)	10/23/2014	Project representatives sent a consultation request letter.
	11/6/2014	Project representatives held a public meeting, and FERC representatives attended.
	4/20/2015	Project representatives held a public meeting with the Toghotthele Corporation.
	9/21–22/2015	Project representatives called and sent a follow-up email; the Corporation indicated that they it had set up a FERC meeting on October 16, 2015, in Anchorage.
	10/16/2015	FERC held government-to-government meeting.
Ninilchik Traditional Council	10/23/2014	Project representatives sent a consultation request letter.
	4/3/2015	Project representatives held a public meeting.
	9/21–24/2015	Project representatives called and sent a follow-up email; the Council responded by email to indicate that it did not have a need for a tribal consultation at this time.
Rampart Traditional Council	10/23/2014	Project representatives sent a consultation request letter.
	9/21–25/2015	Project representatives called and sent a follow-up email.
Village of Salamatof	10/23/2014	Project representatives sent a consultation request letter.
	5/5/2015	Project representatives held a meeting regarding subsistence activities in Cook Inlet.
	5/26/2015	Project representatives held a meeting regarding subsistence activities in Cook Inlet.
	9/21–24/2015	Project representatives called and sent a follow-up email; the Village responded that Chris Monfor is the president and point of contact. The Village is supportive of the Project and does not request tribal consultation at this time.
Tanana Chiefs Conference (TCC)	12/4/2015	TCC provided comments on the Project.

4.2.4 Consultations with Other Interested Parties

In addition to state agencies, federal agencies, and federally recognized Indian Tribes, the Section 106 process includes consultation with other parties that may have an interest in the Project and the cultural resources that may be affected by the Project. The parties may include local governmental organizations, Certified Local Governments (CLGs), boroughs, municipalities, and other groups. To date, representatives of the Project have held informational meetings with a number of CLGs - the Fairbanks North Star Borough, the City of Fairbanks, the City of Kenai, the Kenai Peninsula Borough, the City of Seward, the Matanuska-Susitna Borough, the Municipality of Anchorage, and the North Slope Borough - that may qualify as consulting parties for the Section 106 process. Although the Denali Borough is not listed as a CLG, it may also qualify as a consulting party for Section 106.

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Project representatives have held numerous workshops and public meetings along the Project route. Consultations with communities and CLGs, are summarized in Table 4.2.4-1. Project representatives have met with the Kenai Peninsula Borough, the Matanuska-Susitna Borough, and North Slope Borough on multiple occasions.

TABLE 4.2.4-1 Summary of Consultation with Other Interested Parties		
Organization	Date	Description
Anaktuvuk Pass	1/29/2015	Open House regarding the Project
Kenai Peninsula Borough	6/4/2014	Discussion regarding 2014 field activities
	8/19/2015	Cook Inlet Routing and Construction Review
	9/02/2015	Liquefaction Facility footprint review
Matanuska-Susitna Borough	8/19/2015	Cook Inlet Routing and Construction Review
	4/16/2015	Matanuska-Susitna Borough Cultural Resources Division requests that agencies performing cultural investigations consult and keep the Borough informed on progress.
North Slope Borough	7/9/2014	North Slope Borough Iñupiat History Language and Culture permitting requirements
	1/29/2015	Open House regarding the Project
	6/24/2015	Part of multi-agency pipeline construction execution workshop

4.3 AREA OF POTENTIAL EFFECTS

The APE is the “geographic area or areas within which an undertaking may directly (direct APE) or indirectly (indirect APE) cause changes in the character of or use of historic properties, if any such properties exist” (36 C.F.R. § 800.16(d)). The direct APE for cultural resources includes all areas where the ground or seabed may be disturbed. The APE for indirect impacts is generally defined as the area in which a project could affect the qualities for which a historic property is eligible for or listed in the NRHP.

The APE for direct impacts to cultural resources from the Project includes all areas that could be impacted during construction and operation of the Project facilities (Appendix A and Table 4.7.1-1). The direct APE includes the Project facilities footprints, associated support facilities, and any additional workspace needed for construction. The Project’s direct APE includes submerged and submersible land offshore in Cook Inlet and at the Liquefaction Facility; also at the GTP on the North Slope where dredging or alteration of the seabed could occur. The 67,074-acre direct APE for the Project includes:

An approximately 63-mile-long, 32-inch-diameter aboveground PTTL pipeline to transport natural gas from the PTU to the GTP and associated facilities such as additional temporary work space (ATWS), a construction camp, a meter station, and other support facilities totaling approximately 2,076 acres.

An approximately 1-mile-long, 60-inch-diameter aboveground PBTL pipeline to transport natural gas from the Central Gas Facility (CGF) to the GTP totaling approximately seven acres.

A GTP which would be located in the PBU near the Beaufort Sea coast. This facility would include the GTP pad, a control building, operations center, transfer pipelines, and the West Dock. Other facilities associated with the GTP and its construction would include camps, a module staging area, access roads, a

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reservoir, and other temporary facilities. The GTP contributes approximately 926 acres to the Project direct APE.

An approximately 807-mile-long, 42-inch-diameter, natural gas pipeline (the Mainline), extending from the GTP on the North Slope to the Liquefaction Facility, including an offshore pipeline section crossing Cook Inlet; direct APE totaling 37,802 acres. (Offshore the marine permanent and construction ROWs, measuring 100 feet and 1 to 2.5 miles wide respectively, would be reviewed for cultural resources. The expanded cultural resources review area is intended to encompass the impacts of direct lay of the pipe and anchors for the lay barge);

Additional facilities in areas of the Mainline ROW that would be required during construction (temporary) and operation (permanent) of the pipeline. The direct APE for the additional facilities totals to approximately 12,380 acres. The additional facilities include:

- Compressor stations;
- ATWS for construction activities;
- Access roads, both temporary and permanent;
- Helipads and airstrips, mainly at existing facilities;
- Mainline Construction camps;
- Pipe storage and contractor yards;
- Rail spurs and rail work pads;
- Material sites to supply sand, granular material, and rock/stone;
- Disposal sites for excavated material, stumps, blast rock, acid drainage rock, and slash removed from the permanent pipeline ROW;
- Double joining yard; and
- Other associated facilities such as Mainline block valves (MLBVs), launchers and receivers, cathodic protection facilities, pipeline corrosion protection system, stray current interference mitigation facilities, alternating current mitigation, telluric current dampening systems, and cathodic protection system test stations (found mainly within the footprint of other facilities).

A Liquefaction Facility consisting of the 983-acre LNG Plant on the shore of Cook Inlet near Nikiski (inclusive of a temporary construction camp) and an 82-acre Marine Terminal offshore. The terminal includes a Product Loading Facility, a temporary Material Offloading Facility (MOF), a Dredging Area for the MOF, and a shoreline protection area. Offshore activities will require a dredge disposal area of approximately 1,200 acres. The location of the disposal area has not yet been sited.

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Indirect impacts are defined in FERC guidance as “...those effects on historic properties which are removed in time and/or space from their proximate causes” (FERC 2002). The potential indirect impacts associated with construction of the Project would often be visual in nature, but could also include noise and vibration from construction or operating activities. Indirect effects could also include the greater potential for vandalism to historic properties as a result of the Project increasing access to the remote areas. The APE for indirect effects has not been defined but will be established in consultation with OHA/SHPO and federal agencies shortly after the application filing.

The direct and indirect impacts of the three non-jurisdictional facilities must be analyzed as part of the Environmental Impact Statement (EIS) for the Project because they are considered connected actions under NEPA. The non-jurisdictional areas include:

Point Thomson Gas Expansion Project (PTU Expansion Project) – Granular expansion of existing Central and West Pads; construction of an East Pad and associated granular access road; gathering line connecting East Pad wells to Central Processing Facility; new granular material mine to support infrastructure construction; minor dredging of sealift bulkhead berths;

PBU Major Gas Sales (MGS) Project – expansion of two granular pads, construction of a new 10-mile gas pipeline connecting the Apex Gas Injection (AGI) Pad with Gathering Center #1; construction of new pipelines to deliver GTP Byproduct to Well Pad W, Well Pad Z, the AGI Pad, Drill Site 9, and Drill Site 16; and

Relocation of the Kenai Spur Highway – several proposed routes are under consideration to relocate the Kenai Spur Highway east of the Liquefaction Facility.

4.4 BACKGROUND RESEARCH

Cultural resource investigations included background research prior to field investigations. File searches and literature reviews identified previous cultural resource surveys and previously recorded cultural resources in the Project vicinity. The background research provided information on previously recorded cultural resources located within one mile of the pipeline centerline and within three miles of the proposed Liquefaction Facility to provide regional data for studying settlement and land use patterns and developing a historic context for cultural resources identified during the Project investigations. Data were gathered from a larger buffer around the Liquefaction Facility due to its greater size and visibility on the landscape. A subset of the data collected for historic context (known sites located within a 2,000 foot-wide-study area) is presented in Section 4.7.1 and Table 1 of Appendix E.

The previous surveys data were used to form the foundation for the research and field methodology for the Project. Data from previous large-scale pipeline project survey efforts in proximity to the Project corridor have provided the most substantive information. Those projects include TAPS, Northwest Alaska Pipeline, AGPPT, ASAP, APP, and Point Thomson. The AHRS inventory, which also contains information on cultural resources that were located during surveys not associated with pipeline projects, was a prime source for background information. Background research results are described in detail in the 2010, 2011, and 2013 Phase I Cultural Resources Summary Report for the Project, located in Appendix B. Three projects, the ASAP Project, the Alaska Pipeline Project (APP), and the Point Thomson Project, were of particular interest during the background research since portions of those projects overlap the Project’s APE:

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The ASAP Project is a pipeline project that has been under consideration since 2010 and has generated cultural resources data (ASRC 2011, 2012). Project researchers examined ASAP cultural resources data from surveys conducted in 2010 and 2011 and identified areas where ASAP collocates with the Project. Large-scale ASAP maps were available to Project researchers and used to compare the ASAP Project centerline to the Project's proposed centerline. Initial reviews of the ASAP Project data indicated that approximately 25 miles of the ASAP Project 2010 and 2011 survey coverage would overlap the Project between Livengood and the Susitna River Crossing (Greiser et al. 2014: Table 4-6). Additional review of data from the ASAP Project revealed several issues with using the data for the Project. Discrepancies in the survey methods, a narrower survey corridor (200 feet wide), and incomplete GIS data limited the utility of the ASAP Project data; therefore, none of the surveyed areas completed for the ASAP Project were deemed completely assessed for the Project.

The majority of the Project Mainline from Prudhoe Bay to Livengood, as well as the GTP and the PTTL, was surveyed as part of the APP 2010–2012 field work. The surveys examined a 300- to 600-foot-wide corridor within which the APE for the project would be located. Associated facilities such as pipe yards, ATWS, and access roads were also surveyed. A review of the cultural resources survey data from the APP (Greiser et al., 2013a) indicated:

- 3,084 acres were surveyed on the Mainline;
- 2,434 acres were surveyed for facilities and pipeline segments that were off the ROW for the Mainline;
- 41 acres were surveyed for the GTP in the PBU;
- 387 acres were surveyed along the PTTL route; and
- 60 acres were surveyed for facilities associated with the PTTL.

A part of the PTTL route was examined in 2008 as part of the cultural resource investigations for the Point Thomson Project (USACE 2012). The study examined four alternatives for a 22-mile-long gas condensate export pipeline, as well as associated facilities within the Point Thomson Unit including a central granular pad for wells and facilities, two outlying granular pads for wells, an airstrip, a service pier, a sealift facility, a granular material mine site, infield granular roads, and infield gathering pipelines. According to the project's EIS, there were no direct impacts to cultural resources associated with the preferred alternative (Alternative B) and one site might be potentially directly affected by one of the other three alternatives. The USACE EIS for the project notes that 43 cultural resources sites would potentially be indirectly affected by Alternative B. Available map information indicates that the Project's PTTL closely follows the Point Thomson Project's Alternative B route.

Background research prior to offshore cultural resources investigations in Cook Inlet included a review of three main data sources to determine the potential for encountering historic-era cultural resources in Cook Inlet waters. The principal resource containing information on potential and specific submerged shipwreck sites in the region is the US Department of the Interior, Bureau of Ocean Energy Management (BOEM) Alaska Shipwreck Database (BOEM 2013). Information on known, verified, and recorded shipwreck resources is also included in the AHRS files (AHRS 2013). Shipwreck and obstruction data are also included in the National Oceanic and Atmospheric Administration (NOAA) Office of Coast Survey's

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Automated Wreck and Obstruction Information System (NOAA AWOIS). The potential for prehistoric period resources was evaluated based on prehistoric site databases, Pleistocene/Holocene geology, known geomorphological features, available geotechnical cores and existing available acoustic remote sensing data (i.e., side-scan and multi-beam sonar, sub-bottom profiling) (Alaska LNG Project, 2015).

4.5 POTENTIAL CULTURAL RESOURCE SITE TYPES WITHIN THE DIRECT APE

As noted in Section 4.6, background research was conducted within one mile of the pipeline centerline and within three miles of the proposed Liquefaction Facility to provide regional data for studying broad settlement and land use patterns and developing a historic context for cultural resources that would be identified during the Project’s cultural resource investigations. The Project then narrowed their research focus to known sites within 2,000 feet of the Project footprint to help determine the site types likely to be found during the Project’s cultural resources surveys.

4.5.1 Sites Located within the 2,000-Foot-Wide Study Area (Excluding sites within the Project survey areas)

Appendix E, Table 1 Archeological Sites Located within the 2,000-foot Study Area, but Outside the APE provides a list of cultural resources sites that are located within a 2,000-foot-wide study area for the Project, but that are not within the Project’s current survey areas. The sites include those identified during Project cultural resources surveys conducted in areas no longer under consideration for use by the Project as well as previously recorded sites listed in the AHRS database maintained by OHA/SHPO. The resources are depicted on maps in Appendix A. These data along with the information provided in Appendix E, Table 2 Cultural Resources within the APE for the Mainline and PTTL and Appendix E, Table 3 Cultural Resources within the APR for Facilities and Access Roads, assist in defining a route that minimizes impacts to known cultural resources. Data collected from sites in the 2,000-foot-wide study area also provided information on the types of cultural resources that might be found during Project cultural resources surveys. The 205 sites recorded in the 2,000-foot-wide study area (excluding sites in the Project survey area – Appendix E, Table 2) include prehistoric sites (151), historic sites (24), sites with both prehistoric and historic components (2), one site with both prehistoric and protohistoric components, one site with both historic and protohistoric components, sites with both historic and modern components (2), sites with both historic and recent components (2), modern sites (2), one recent site, 11 sites that lack sufficient data to be identified temporally (undetermined), and a single site that includes both a historic and an undetermined component. Seven sites included in the AHRS data are identified as paleontological sites and do not include cultural resources.²

The majority of the 205 sites identified within the 2,000-foot-wide study area (excluding sites in the Project survey area) have not been formally evaluated for NRHP eligibility. Fifty-seven of the sites are listed in the NRHP, determined eligible for listing in the NRHP, or recommended as eligible for listing in the NRHP. One resource (the Dalton Highway) is recorded as “treat as eligible.”

Examples of cultural resources sites within the 2,000-foot-wide study area include:

² Paleontological sites recorded are noted in the text since they are recorded in the AHRS inventory. They are not cultural in origin and are not regulated under Section 106 of the NRHP. For additional information on the Project’s paleontological studies, please refer to Resource Report No. 6, Section 6.6.

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The Prudhoe Bay Oil Field Discovery Well site (XBP-00056), located adjacent to, but not within the direct APE for, the GTP facility (Wooley, 1999). This NRHP listed site is the location where explorers from the Atlantic Richfield Corporation and Humble Oil Company made a major oil discovery in 1968. The discovery of the largest oil field in the United States "...brought unexpected and almost unimaginable prosperity to the financially strapped new State of Alaska" (Wooley, 1999:13). Efforts to exploit these newfound oil deposits led to a wave of activity on the North Slope, including construction of the Hickel Highway and later the Dalton Highway to transport equipment and other materials to the oil fields. The discovery altered the Inupiat people's use of the land in the Prudhoe Bay area and the employment and tax base funded basic village infrastructure. The Gallagher Flint Station (PSM-00050), a Paleoarctic site exhibiting lithics, bone, pottery, and charcoal. The site is a National Historic Landmark and one of the oldest sites on the North Slope.

Sites XBP-00020 and XFI-00036 which provide insight into site types to be expected on Prudhoe Bay. Both were located on a previous alignment of the PTTL ROW, but are avoided in the currently proposed PTTL route. Site XBP-00020 is an Inupiat winter sod house located along the bank of the Sagavanirktok River. Several cache pits and depressions were identified, along with the remains of a boat rack, caribou bone, and a scatter of cans. Site XFI-00036 is also located between Point Thomson and Prudhoe Bay. It has been described as a domestic trash scatter dating from the 1960s, probably associated either with U.S. military activity, or with oil exploration in the 1960s.

A portion of the Atigun Archaeological District (PSM-00204) in the vicinity of Galbraith Lake on the north slope of the Brooks Range, attributed to the late prehistoric Athapaskan Kavik culture. Site PSM-00074, Atigun I, is a prehistoric camp dating from Before Present (BP) 360+/-100 and 310+/-140 containing a scatter of Kavik material including chert flakes, fire-cracked rock, and animal bones. Located within sand dunes that extend along the Atigun River, the site consists of several discrete loci that include hearths. The district has been nominated for listing on the NRHP; however, the nomination did not go through the complete evaluation process and was never forwarded to the Keeper of the NRHP; however, the district is eligible for listing in the NRHP.

The Rosebud Knob Archaeological District (LIV-00284) which includes site LIV-00030, a small primary workshop-quarry locus, Site LIV-00040, a scatter of lithic artifacts adjacent to a chert outcrop, and Site LIV-00043, a large prehistoric camp site including a variety of points, edge tools, cores, microblades and burins, as well as two small hearths/charcoal smears and two circular piles of ochre-covered stones.

- The Ch'u'itnu Archaeological District (TYO-00132), located on the upper Cook Inlet north of the village of Tyonek, includes 48 rectangular house pits that are grouped into 16 clusters that may represent concurrent or sequential occupations (AHRs 2016). The smaller depressions attached to the house pits are interpreted as side rooms or steam baths. More than 277 smaller cache pits are located near the house pits. The district was considered eligible for listing in the NRHP under Criterion A because it clearly conveys its significance as a place that represents the broad patterns of history regarding the uninterrupted use, from pre-contact times to the present, of salmon subsistence not merely as a dietary supplement, but as an integral part of contemporary Tyonek culture. The district also was "considered eligible under Criterion D for its potential to expand knowledge of Dena'ina seasonal winter residences for the historic and prehistoric periods" (AHRs 2016). According to the DOE form, "the concentration of undisturbed house pits and number of

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associated food processing and storage pits exceeds that of most known Dena'ina winter residential sites" (AHRs Card accessed February 9, 2016).

4.6 SURVEY METHODOLOGY

4.6.1 Survey Methodologies from Previous Projects

Prior to initiating cultural resource surveys for the Project, meetings were held with representatives from various agencies (Table 4.2.2-1) to review data collection methodologies, protocols, and scope for the 2013, 2014, 2015, and 2016 field seasons. Subsequent to agreement on the path forward, the survey methodologies used by previous projects in the vicinity of the Project were reviewed and provided the basis for predictive models and survey methods employed during the Project studies to date.

Two previous pipeline projects conducted surveys that covered portions of the Project area between Prudhoe Bay and Livengood and provided preliminary information about a number of cultural resources sites recorded in the vicinity of the Project. Investigations for the Trans-Alaska Pipeline System (TAPS), which coincides in part with the Mainline survey corridor, were conducted between 1969 and 1977 by the University of Alaska Fairbanks and Alaska Methodist University (now Alaska Pacific University). Surveys for the proposed Northwest Alaska Pipeline Project were conducted in the late 1970s along a survey corridor that generally follows the Project route from Prudhoe Bay to Livengood before turning east toward the United States-Canada border. Concerns expressed by OHA/SHPO about early survey methods and the quality of the cultural resources information available from older surveys led the Project to re-examine areas that may have been included in previous surveys. The early survey data often lack accurate site location information and sufficient data to determine site NRHP eligibility.

More recent pipeline projects resulted in additional cultural investigations along or in the vicinity of the proposed Project corridor. In 2001, investigations for the Alaska Gas Pipeline Producers Team (AGPPT) pipeline were conducted by Northern Land Use Research Alaska, LLC, (NLURA) and Chumis Cultural Resources Services (NLURA/Chumis) along a corridor from Prudhoe Bay to the United States-Canada border (Port Alcan) (Potter et al., 2001). A predictive model based on geomorphic variables ranked the potential of finding culturally significant sites and was used to structure the AGPPT field investigations. Portions of the route were ranked as Type A (low potential), Type B (moderate potential), and Types C and D (high potential). Type A locations were spot-checked by helicopter survey whereas Types B, C, and D were examined via pedestrian surveys and shovel testing. Approximately 624 miles of the AGPPT route were surveyed with 122 cultural resources identified during the investigations. Because the northern portion of the 2001 AGPPT corridor (Prudhoe Bay to Livengood) is in close proximity and similar to the proposed Mainline route for the Project, AGPPT's predictive survey model was used in developing the Project's sensitivity mapping efforts and their survey results have been included in the background information gathered to provide a cultural resource context for the Project.

In 2008, Denali - The Alaska Gas Pipeline LLC (Denali Project) proposed to construct a gas pipeline from Prudhoe Bay to Alberta, Canada. The northern portion of the route followed the route of the AGPPT. Cultural resources survey data from three previous major pipelines within or immediately adjacent to the Denali Project area were reviewed. Researchers determined that the data from the TAPS and Alaska Natural Gas Transportation System (ANGTS) projects were "questionable due to the change in standards for site identification, location, and analysis as well as survey methodology, location and coverage" (NRG, 2008). They concluded that most TAPS and ANGTS site information or survey areas within the Denali

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Project area would require resurveying and updated location information and analysis using current survey standards (NRG, 2008). Data collected in 2001 as part of the AGPPT Project were deemed satisfactory for reconnaissance level survey, but it was determined that a focused delineation of site boundaries and testing in areas with high potential to contain buried cultural resources sites was necessary. Cultural resource reconnaissance surveys conducted in 2008 were focused on the portion of the project between Delta Junction and the Canadian border.

In 2010, the Alaska Pipeline Project (APP) applied the results of the 2001 AGPPT archaeological sensitivity model using GIS data and observations from pre-field survey helicopter overflights to develop a generalized sensitivity map of the entire proposed pipeline facilities corridor (Higgs et al. 2011a, 2011b, 2012). This essential step enabled stratification of the 2010 pipeline facilities corridor into areas of cultural resource sensitivity (Type A or Type B) based on relationships between known sites and key environmental variables. The APP did not maintain the distinction between Type B, C, and D survey methods and reported all pedestrian and shovel testing as Type B. The 2010 Phase I cultural resource surveys for the APP were completed within a nominal 328-foot-wide (100-meter) corridor, with some areas expanded to up to 2,625 feet wide (800 meters).

South of Livengood, the Project has included the 2010 through 2014 survey results from the ASAP Project (made available by OHA/SHPO) in the background information gathered to inform the Project studies and has examined the ASAP survey protocols which consist of Type A and B surveys as used by the APP project. The ASAP Project conducted surveys in a 200-foot corridor centered over the project's proposed centerline; portions of the ASAP route overlap the Project route.

4.6.2 Project Survey Methodology

Building on approaches developed for earlier projects, a sensitivity model was developed for the Project that allowed field surveys to effectively target high-potential areas while still providing data on areas deemed to have low potential for containing cultural resources. The sensitivity maps developed for the Project were based on data from overflights, previous surveys, recorded site locations, geomorphologic setting, and other environmental variables. These data were combined to predict areas of low and high potential for cultural resources. For a detailed explanation of the development of the sensitivity mapping protocol, see Section 5.1 of *2013 Phase I Cultural Resource Report: Archaeological Survey and Site Documentation* (USAKE-UR-SRZZZ-00-0021) included in Appendix B.

Phase I surveys were designed based on the mapped sensitivity (cultural resources potential) of areas along the Project corridor. Pre-survey helicopter overflights were employed to demarcate generally high or low potential segments and locate visible historic buildings or structures. A desktop review of the corridor, which applied the sensitivity model, identified areas with very low to no potential for cultural resources and those areas were eliminated from field surveys. The remaining areas were segregated into low potential (Type A) and high potential (Type B) areas. For Type A areas, helicopter or vehicular surveys of segments not previously surveyed were used to identify isolated higher-potential areas that may lie within low potential areas for targeted field survey. For Type B areas, field investigations were conducted, including pedestrian transect surveys with systematic shovel testing of previously un-surveyed areas, as well as targeted surveys where previous surveys (e.g., Denali Pipeline Project, AGPPT, APP, or ASAP) were considered inadequate.

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The field investigations included a combination of aerial/vehicular surveys, walkover, surface inspection, and shovel testing. Of these techniques, walkover transects or vehicular/aerial surveys were used most frequently in Type A survey areas, with visual inspection of areas where previous surveys were conducted or where topography and vegetation cover suggested a lower potential for cultural resources. The areas included wetlands or inundated areas, previously disturbed locations, and areas where the slope exceeded 15 percent. Shovel testing was the primary survey method for Type B areas. Shovel tests were placed at a maximum interval of 15 meters with each assigned a unique identification number. Location data were collected using handheld global positioning system (GPS) units; both location data and survey results were recorded on survey forms. Shovel tests were excavated to a depth below which cultural materials might be found, as little as 10 centimeters below the base of the Type A horizon or over 100 centimeters in alluvial or colluvial settings. To investigate strata below the base of standard shovel tests, 1-inch-diameter cores were used. Selected prehistoric and historic period artifacts were collected from the surface and from shovel tests. Prehistoric artifacts found on the surface were recorded using GPS and documented in photographs and notes. Diagnostic artifacts were collected for further analysis. Unique diagnostic historic artifacts were also retained for analysis; however, non-diagnostic or mass-produced items were recorded and left at the site. A provisional artifact curation agreement was obtained from the University of Alaska, Museum of the North (UAMN) in Fairbanks for the eventual disposition of the artifacts. The UAMN is the repository for all cultural resources collections made on federal and state lands in Alaska. A deed of gift would be obtained from private land owners for any collections from private lands to be curated at UAMN.

Surface inspection was conducted along transects spaced at 5- to 10-meter intervals. This survey method was principally used on historic-age sites where surface materials were sufficiently abundant to determine the approximate age, function, and limits of the site. Provenience³ information for diagnostic artifacts found on the surface was recorded using GPS units and documented in photographs and notes. This method was also used at prehistoric sites, but was supplemented by shovel tests on landforms where there was also a strong potential for subsurface prehistoric components.

All information collected during the Phase I investigations was evaluated to determine which sites would require Phase II investigations to complete evaluation of NRHP eligibility.

Investigations to determine the potential for deeply buried cultural deposits within the APE were initiated during the 2015 field season (Proue, 2016a). Recent studies have documented stratified Late Pleistocene and Holocene cultural sites in dune fields (eolian landforms) of the Tanana Valley. The Project determined to investigate similar eolian landforms in the Project APE where deeply buried cultural materials could be present. Dune deposits on the lower Nenana River and the loess deposits mantling the lower foothills bordering the east side of the Tolovana River were selected for deep testing (Proue et al., 2016a; Appendix F). Field investigations included excavation of 1-meter by 1-meter test units to a depth of at least 1.2 meters into dune and loess deposits to search for cultural materials and to collect charcoal and sediment samples. Sediments were excavated with shovels and trowels, then passed through 1/8-inch mesh screens. Deposits below 1.2 meters were examined using a 1-inch soil probe with extensions to permit sampling to 5 meters below ground surface.

³ Provenience refers to the three-dimensional location or find spot of an artifact or feature within a cultural resources site.

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Protocols for determining the presence of historic and prehistoric underwater sites in the API in Cook Inlet included reviewing the following data and references:

- Prehistoric sites databases;
- Databases outlined above for historic shipwrecks;
- Pleistocene/Holocene geology;
- Known geomorphologic features;
- Available geotechnical cores (may be a combination of publicly available and Project-acquired data); and
- Available acoustic remote sensing data, i.e. side-scan and multi-beam sonar, sub-bottom profiling (may be a combination of publicly available and Project-acquired data).

These data will be used to generate the analysis used for Section 106 consultation.

4.7 CULTURAL RESOURCES PHASE I SURVEY RESULTS

4.7.1 Phase I Survey Results within the Direct APE (acres)

Phase I surveys sought to identify cultural resources located within a 300-foot-wide survey corridor for the Mainline, PBTL, and PTTL which included the direct APE or, in some cases, a 600-foot-wide survey corridor (in some earlier investigations) which included the direct APE (Greiser et al., 2013a). Cultural resource surveys conducted after the 2013 field season were confined to a consistent 300-foot-wide survey corridor containing the direct APE for the Mainline, the PBTL, and the PTTL. For access roads, a 150-foot-wide survey corridor encompassed the direct APE. For facilities, the actual facility footprint plus a buffer zone was subjected to survey.

Table 4.7.1-1 provides a summary of the cultural resource surveys conducted to date within the direct APE by field season. These investigations were conducted in accordance with standards and guidelines issued by FERC and OHA/SHPO (FERC, 2002; OHA/SHPO, 2003) using the protocols discussed above which were approved by the OHA/SHPO and the BLM. The field investigations conducted for the Project's Mainline in 2013 focused on completing surveys of those few areas where the Project centerline diverged from the APP route north of Livengood. The results of the investigations are presented in separate reports for work on BLM lands (Greiser et al., 2013b) and on private and state lands (Greiser et al., 2013c) and are included in Appendix B.

South of Livengood, the Mainline diverges from the APP route. Although portions of the Project corridor are collocated with the ASAP Project, differences in survey methods and GIS data quality have precluded use of the ASAP Project data from the areas that overlap with the proposed Project route between Livengood and the Susitna River crossing (Greiser et al., 2014).

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TABLE 4.7.1-1 Cultural Resource Survey Completed within the Direct APE by Field Season (acres)						
Facility	APP	AKLNG2013	AKLNG2014	AKLNG2015	AKLNG2016	Grand Total
LNG PLANT AND TERMINAL			464.25	71.55	0.20	535.99
MAINLINE ROW	3,083.52	314.79	2,287.98	13,377.44	1,917.54	20,981.27
MAINLINE FACILITIES	2,434.37	1,058.16	691.63	1,730.17	3,663.84	9,578.17
PBTL				0.42	6.89	7.31
PTTL ROW	387.20	1.26		973.15	154.81	1,516.41
PTTL FACILITIES	60.19	2.17		163.30	107.83	333.49
GTP	41.28	249.69		153.38	431.16	875.52
Grand Total	6,006.56	1,626.08	3,443.86	16,469.42	6,282.26	33,828.18

Cultural resource surveys conducted in 2014 examined select survey target areas along the Mainline direct APE south of Livengood and the proposed Liquefaction Facility site near Nikiski (Greiser et al., 2014; URS/AECOM, 2015). In 2015, the investigations included additional cultural resource surveys of the direct APE for the Mainline and additional off-ROW facilities required for the Project, and evaluation of a large number of cultural resources identified during previous investigations (Greiser et al., 2015; Proue et al., 2016a, 2016b, 2016c, 2016d, 2016e). Additional surveys of the direct APE were conducted at the Liquefaction Facility in connection with geophysical and geotechnical activities (URS/AECOM, 2015). Cultural resource investigations in 2016 consisted of Phase I survey within the direct APE at 2,012 specified target areas from the North Slope south to the Kenai area. The survey efforts focused on a linear survey route along the 807 mile (1298.05 kilometers) (Revision C, as of August 2016) proposed centerline; portions of the 62.5 mile (100.6 kilometers) PTTL; and planned access roads and off-ROW facilities. The Project cultural resources direct APE currently includes 67,073.93 acres. At the close of the 2016 field season, 24,818 acres (86 percent) of the onshore facilities had been surveyed. A summary of the status of cultural resource surveys to date, by component, completed through the 2016 field season is presented in Table 4.7.1-2. Appendix A provides the extent of cultural resources survey coverage on maps, and Appendix D provides the extent of survey coverage by milepost and facility in tabular format. The Project will complete Phase I surveys in the summer of 2018 and provide reports of those surveys by the end of 2018.

4.7.2 Cultural Resource Sites Recorded Within the Surveyed Areas

To date, 158 cultural sites and two paleontological sites have been recorded to date within the surveyed areas for the Project (Table 4.7.2-1; Appendix E, Tables 2 and 3). Table 4.7.2-1 presents the sites by component and NRHP status. Two previously identified cultural sites were not relocated during the survey; it is likely that these sites were misplotted in the AHRs data. Of the 158 cultural resource sites identified within the surveyed areas, 78 are classified as prehistoric sites, 62 are classified as historic, two include both prehistoric and historic components, five include both historic and modern components, one includes both historic and recent components, two sites are modern, and eight sites are of undetermined type. Ninety-

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TABLE 4.7.1-2 Status of Cultural Resource Survey Through 2016 by Component (acres)								
Facility Type	Undefined	Type A	Type B	Marine	Total Surveyed	Not Surveyed	Footprint (APE) Area	Percent APE Surveyed
PTTL	447.39	1,381.75	20.77	0.00	1,849.91	226.53	2,076.44	89.09%
PTTL ROW OPERATIONS	108.65	504.87			613.52	0.09	613.62	99.98%
PTTL CONSTRUCTION ROW	278.55	624.10	0.24		902.89	210.11	1,113.00	81.12%
PTTL ICE ROADS	40.75	150.20			190.95	11.21	202.16	94.46%
PTTL ATWS	2.31	13.54			15.85	5.12	20.97	75.61%
PTTL CAMP	8.36	68.33	20.53		97.22	0.00	97.22	100.00%
PTTL HELIPAD	0.57				0.57		0.57	100.00%
PTTL MLBV	0.14	0.27			0.41		0.41	100.00%
PTTL METER STATION	0.47				0.47		0.47	100.00%
PTTL PSY	7.58	20.42			28.01	0.00	28.01	100.00%
PBTL		7.31			7.31		7.31	100.00%
GTP	41.28	817.04	17.20	0.00	875.52	50.42	925.95	94.55%
GTP ACCESS RD	10.85	210.20	1.54		222.58	36.22	258.81	86.00%
GTP BARGE BRIDGE		2.23			2.23	0.36	2.58	86.21%
GTP TURNING BASIN		13.70			13.70		13.70	100.00%
GTP CAMP		56.00			56.00		56.00	100.00%
GTP WEST DOCK		22.79			22.79	8.26	31.05	73.40%
GTP ICE PADS		1.39			1.39	1.36	2.75	50.45%
GTP MATERIAL SITE	18.58	122.58			141.16		141.16	100.00%
GTP MODULE STAGING AREA		80.07	3.16		83.23	3.35	86.58	96.13%
GTP PAD	2.43	212.95	12.51		227.88	0.00	227.88	100.00%
GTP PIPELINE ROW	7.11	62.33			69.44	0.87	70.32	98.76%
GTP RESERVOIR	2.31	32.81			35.12		35.12	100.00%
MAINLINE ROW Total	3,083.77	1,243.64	7,828.81	0.00	12,156.22	331.63	12,487.85	97.34%
MAINLINE ROW OPERATIONS	1,257.74	477.01	3,140.38	0.00	4,875.13	137.94	5,013.07	97.25%
GTP		0.10			0.10		0.10	100.00%

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TABLE 4.7.1-2 Status of Cultural Resource Survey Through 2016 by Component (acres)								
Facility Type	Undefined	Type A	Type B	Marine	Total Surveyed	Not Surveyed	Footprint (APE) Area	Percent APE Surveyed
Prudhoe Bay to Atigun	416.89	204.43	473.59		1,094.92	0.08	1,095.00	99.99%
Atigun to Yukon	670.86	28.33	500.26		1,199.46	0.04	1,199.50	100.00%
Yukon to Livengood	164.34	8.42	119.03		291.80	0.03	291.83	99.99%
Livengood to Healy	5.53	49.97	712.84		768.34	10.33	778.67	98.67%
Healy to Trapper Creek		145.42	695.80		841.22	70.55	911.77	92.26%
Trapper Creek to Cook Inlet		40.33	592.79		633.11	18.37	651.48	97.18%
Cook Inlet to Nikiski			46.06		46.06	38.54	84.61	54.45%
LNG	0.11				0.11		0.11	100.00%
MAINLINE ROW - OPERATIONS - OFFSHORE								
Trapper Creek to Cook Inlet**								
Cook Inlet to Nikiski**								
MAINLINE ROW CONSTRUCTION	1,826.03	766.63	4,688.43	0.00	7,281.09	193.69	7,474.78	97.41%
GTP		0.22			0.22		0.22	100.00%
Prudhoe Bay to Atigun	624.94	344.32	687.49		1,656.75	0.26	1,657.01	99.98%
Atigun to Yukon	951.64	43.39	684.42		1,679.45	0.02	1,679.47	100.00%
Yukon to Livengood	240.36	12.05	182.20		434.60	0.04	434.65	99.99%
Livengood to Healy	8.96	89.86	1,157.60		1,256.42	16.25	1,272.67	98.72%
Healy to Trapper Creek		222.87	1,027.63		1,250.49	100.53	1,351.02	92.56%
Trapper Creek to Cook Inlet		53.92	879.21		933.13	24.36	957.50	97.46%
Cook Inlet to Nikiski			69.88		69.88	52.23	122.11	57.23%
LNG	0.14				0.14		0.14	100.00%
MAINLINE ROW CONSTRUCTION OFFSHORE								
Cook Inlet to Nikiski**								
MAINLINE FACILITIES	2,405.09	1,390.07	5,672.34	0.00	9,467.50	2,911.98	12,379.48	76.48%
ACCESS RD ROW	185.15	453.30	825.12		1,463.56	529.34	1,992.90	73.44%
ACCESS RD ROW - ICE	7.64	291.93	92.36		391.93	0.01	391.94	100.00%

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TABLE 4.7.1-2 Status of Cultural Resource Survey Through 2016 by Component (acres)								
Facility Type	Undefined	Type A	Type B	Marine	Total Surveyed	Not Surveyed	Footprint (APE) Area	Percent APE Surveyed
ACCESS RD ROW - PERMANENT	1.43	84.57	365.79		451.79	179.60	631.39	71.56%
ATWS	320.71	140.04	1,029.51		1,490.26	159.02	1,649.27	90.36%
MATERIAL SITE	1,594.19	279.73	2,469.91		4,343.83	1,411.62	5,755.46	75.47%
CAMP	89.53	75.37	318.15		483.05	193.96	677.00	71.35%
COMPRESSOR STATION	48.60	1.38	207.22		257.20	0.38	257.58	99.85%
COMPRESSOR STATION CAMP	4.79		20.37		25.15	0.00	25.16	99.99%
DISPOSAL SITE	75.77	8.68	58.78		143.23	115.92	259.14	55.27%
DOUBLE JOINING YARD					0.00	199.74	199.74	0.00%
HELIPAD	0.69	0.17	3.30		4.16	0.20	4.36	95.39%
MLBV	2.31	0.14	5.76		8.21	0.10	8.31	98.83%
METER STATION	1.58	2.73	0.01		4.32	1.13	5.45	79.27%
PSY	72.69	49.32	270.38		392.38	81.82	474.20	82.75%
RR SPUR		0.56	0.78		1.35	9.53	10.87	12.38%
RR WORKPAD		2.15	4.92		7.07	29.63	36.70	19.27%
LNG	461.54	0.00	0.20	0.00	461.73	521.19	982.92	46.98%
LNG TERMINAL (OFFSHORE)**								
LNG FACILITY (ONSHORE)	461.54		0.20		461.73	521.19	982.92	46.98%
Grand Total	6,439.07	4,839.81	13,539.32	0.00	24,818.19	4,041.75	28,859.94	86.00%
**The acreage for the marine portions of the cultural resources surveys is not included. The Mainline offshore survey corridor, including the centerline, was completed. The remainder will be surveyed prior to construction								

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three sites (59 percent) currently recorded in the surveyed areas are eligible, to be treated as eligible, or recommended as eligible for NRHP inclusion.

The prehistoric sites include isolated lithic finds, lithic scatters, artifact scatters, house pits, cache pits, and camp sites. Historic sites include domestic refuse scatters, house sites, camp sites, trails, roads, and other historic or modern cultural materials. Numerous segments of the Dalton Highway, which parallels the proposed Project centerline between Prudhoe and Livengood, are within the surveyed areas and are treated as eligible for the NRHP under the terms of a Programmatic Agreement with the Federal Highway Administration. In addition, several other roads and trails cross the proposed centerline of the Project (Appendix E, Tables 2 and 3).

Table 2 in Appendix E indicates that 94 sites identified fall within the surveyed areas for Mainline construction. Table 3, Appendix E, provides the distribution of the 64 sites recorded within the aboveground Mainline Project facilities surveyed areas. Twelve sites were identified in the surveyed portions of the Liquefaction Facility near Nikiski, one site was recorded within a helicopter pad survey area, four sites were identified at camp locations, 27 sites were recorded in access road survey areas, and 20 sites were identified at material borrow areas. No sites were recorded within the surveyed areas for the GTP or the PTTL.

4.7.2.1 Liquefaction Complex

4.7.2.1.1 LNG Facility

Twelve cultural resources were identified within the surveyed area for the Liquefaction Facility at Nikiski (URS/AECOM, 2014, 2015). Of the 12 sites, one dates from the prehistoric period, one has both prehistoric and historic components, and 10 date from the historic or modern periods. Prehistoric site (KEN-00643) is defined by a single earthen pit and is not eligible for NRHP listing. The site with both prehistoric and historic components (KEN-00656) includes four house pit depressions and approximately 11 cache pit depressions in two clusters and is eligible for NRHP listing. The 10 historic/modern sites are the remains of mid-20th century domestic and industrial activity that have been determined not eligible for listing in the NRHP (Appendix E, Table 3).

4.7.2.1.2 Marine Terminal and Approach Channel

Review of remote sensing data from the Marine Terminal and approach channel identified 12 sonar targets and 77 magnetic anomalies (Rogers 2016). Three of the 12 sonar targets (Sonar Targets 1, 2, 3) were coincident with weak magnetic anomalies (<30 gammas) and three larger sonar targets (Sonar Targets 5, 7, 8) likely represent objects lost or dropped from the existing dock structure. Target number 5 is a rectangular object measuring approximately 6.5 by 23 feet (1.98 by 7 meters) flush with the seafloor. Target number 7 is a rectangular object measuring approximately 9 by 31 feet (2.7 by 9.4 meters) with ladder-like form. Target number 8 is a linear object measuring approximately 3.5 by 38 feet (1.1 by 11.6 meters) and probably represents a section of pipe or cable. The remaining targets were considered likely geologic features such as boulders or outcrops. Forty of the 77 magnetic anomalies had high amplitudes. The analysts noted that the surveyors indicated that operating conditions produced rather noisy profile data but considered them to be legitimate anomalies. Anecdotal evidence suggests that at least some of the anomalies may be related to fishing practices on the coast where seaward gill-net ends are often secured to the seabed with steel anchors. Other anomaly clusters are clearly associated with existing piers and berthing facilities.

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TABLE 4.7.2-1 Cultural Resources Identified in the Surveyed Areas by Project Component and NRHP Status ^a									
Project Component	Eligible/ Treat as eligible	Recommend eligible	Recommend ineligible	Avoid	Phase I	Phase II	Ineligible	Undetermined	Grand Total
LIQUEFACTION FACILITY	1	0	0	0	0	0	11	-	12
LNG Facility	1	-	-	-	-	-	11	-	12
Marine Terminal	-	-	-	-	b	-	-	-	b
MAINLINE – TERRESTRIAL	28	16	13	0	0	13	22	2	94
Prudhoe Bay to Atigun Pass	5	3	4	-		1	6	1	20
Atigun Pass to Yukon River	6	3	4	-	-	1	2	-	16
Yukon River to Livengood	3	-	1	-	-	1	2	-	7
Livengood to Healy	9	4	3	-	-	4	7	1	28
Healy to Trapper Creek	2	-	1	-	-	1	3	-	7
Trapper Creek to Cook Inlet	3	4	-	-	-	-	2	-	9
Cook Inlet to Nikiski	-	2	-	-	-	5	-	-	7
MAINLINE – MARINE	-	-	-	-	b	-	-	-	b
Cook Inlet Crossing	-	-	-	-	b	-	-	-	b
MAINLINE FACILITIES	19	6	5	1	-	14	6	1	52
Access Roads	16	6	1	-	-	2	2	-	27
Borrow Areas	2	0	4	-	-	11	2	1	20
Camps	1	-	-	1	-	1	1	-	4
Heli Pad	-	-	-	-	-	-	1	-	1
MLBV	-	-	-	-	-	--	-	-	0
Compressor Stations	-	-	-	-	-	-	-	-	0
Meter Station	-	-	-	-	-	-	-	-	0
Pipe Storage Yards	-	-	-	-	-	-	-	-	0
Railroad Work pads	-	-	-	-	-	-	-	-	0

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TABLE 4.7.2-1

Cultural Resources Identified in the Surveyed Areas by Project Component and NRHP Status^a

Project Component	Eligible/ Treat as eligible	Recommend eligible	Recommend ineligible	Avoid	Phase I	Phase II	Ineligible	Undetermined	Grand Total
PTTL	0	0	0	0	0	0	0	0	0
PTTL ATWS	-	-	-	-	-	-	-	-	0
PTTL Camp	-	-	-	-	-	-	-	-	0
PTTL East Pad	-	-	-	-	-	-	-	-	0
PTTL Helipad	-	-	-	-	-	-	-	-	0
PTTL MLBV	-	-	-	-	-	-	-	-	0
PTTL Meter Station	-	-	-	-	-	-	-	-	0
PTTL Pipe Storage Yards	-	-	-	-	-	-	-	-	0
PTTL ROW	-	-	-	-	-	-	-	-	0
GTP	0	0	0	0	0	0	0	0	0
GTP Access Roads	-	-	-	-	-	-	-	-	0
GTP Camp	-	-	-	-	-	-	-	-	0
GTP West Dock	-	-	-	-	-	-	-	-	0
GTP Material Site	-	-	-	-	-	-	-	-	0
GTP Module Staging Area	-	-	-	-	-	-	-	-	0
GTP Pad	-	-	-	-	-	-	-	-	0
GTP ROW	-	-	-	-	-	-	-	-	0
GTP Reservoir	-	-	-	-	-	-	-	-	0
GRAND TOTAL	48	22	18	1	0	27	39	3	158

Notes:

Large linear sites such as trails and highways may have more than one AHRS number (i.e., Dalton Highway).

Paleontological sites with AHRS numbers are not included in these counts since they are not cultural resources.

Totals reflect the number of AHRS sites for each Project component; because sites may be located in more than one Project component footprint, the totals reflect the actual number of sites regardless of how many facilities they intersect.

^a The NRHP status of many sites is a recommendation rather than a DOE

^b Acoustic targets identified in remote sensing data identified as anthropogenic in origin however data was insufficient to determine whether they may be cultural resources that should be considered for eligibility to the NRHP

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The submerged cultural resources report indicated that the existing data indicates that Sonar Targets 5, 7, and 8 are located next to existing dock facilities north of the proposed Marine Terminal and were most certainly anthropogenic in origin. The marine report implies that these targets are modern in origin and unlikely to be considered eligible for the NRHP. The report also notes that although none of the magnetic anomalies were coincident with sonar targets, the anomalies probably represent materials that are buried in sediment and should be investigated further prior to Project-related ground-disturbing activities in the vicinity of these anomalies. Most of the anomalies are located adjacent to existing dock facilities north of the proposed Marine Terminal area. The two magnetic targets mapped in the Terminal area are located along the shoreline northeast of the Project footprint. Further investigation of these targets and anomalies with appropriate techniques is recommended if it appears that final routing and Project design would result in ground-disturbing impacts in these locations (Rogers 2016).

The Project plans to locate the Marine Terminal and facilities (MOF, MOF dredge, shoreline protection, etc.) adjacent to the planned onshore LNG Plant and south of the existing dock facilities. All of the sonar targets and most of the magnetic anomalies are located outside of the facility locations and are unlikely to be directly affected by construction of these facilities. Further investigation of some of the targets/anomalies may be necessary should Project plans change, or anchor plans might result in ground-disturbing impacts in these locations.

4.7.2.2 Mainline

4.7.2.2.1 Prudhoe Bay to Atigun Pass (PA)

A total of 20 cultural resources were identified within the Mainline surveyed area between Prudhoe Bay and Atigun Pass. Sixteen of the resources are prehistoric, three are historic and one site includes both historic and modern components. The resources include five prehistoric sites that are eligible or recommended as eligible for listing in the NRHP and three historic properties (highways) that are to be treated as eligible for the NRHP. Ten of the remaining sites were determined or recommended not eligible for NRHP listing and, one site's eligibility is undetermined and one site is recommended for Phase II evaluation.

The five prehistoric sites in the Prudhoe Bay to Atigun Pass spread determined or recommended to be eligible for listing in the NRHP include PSM-00601, PSM-00607, PSM-00075, PSM-00606, and PSM-00578.) The sites consist of lithic artifact scatters, occasionally with animal bone (PSM-00075). Site PSM-00075 may be a campsite since evidence of cooking in the form of fire-cracked rock was also found.

The Project direct APE would cross two highways that were constructed to facilitate trucking access to the Prudhoe Bay oil discovery in the late 1960s (Greiser, 2013a). The Project direct APE intersects the Hickel Highway (site SAG-00098) once in the Prudhoe Bay to Atigun Pass spread and several times in other spreads (Prudhoe Bay to Atigun Pass and Atigun Pass to Yukon River). The highway was a winter trail that was constructed in the winter of 1968 from Stevens Village (north of Livengood) to Sagwon (south of Deadhorse). The 550-mile highway was constructed in just over 100 days. Even though it was quickly abandoned in favor of the Dalton Highway, the profound changes to the region initiated by the construction of the road accelerated in the decades that followed.

The 415-mile-long Dalton Highway extends from the Elliott Highway at Livengood to Prudhoe Bay and is crossed twice (sites SAG-00097 and PSM-00570) by the Mainline direct APE within the Prudhoe Bay to

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Atigun spread and is also intersected by the direct APE of a number of related facilities. The Dalton Highway was constructed during the early 1970s as a more permanent trucking route to the North Slope. Both the Hickel Highway and the Dalton Highway are treated as eligible for listing in the NRHP by the Alaska Department of Transportation and Public Facilities (ADOT&PF), a status that requires projects to evaluate the portion of the resource that may be impacted by an undertaking (ADOT&PF, 2012).

4.7.2.2.2 Atigun Pass to Yukon River (AY)

A total of 16 cultural resources are recorded within the surveyed area for the Mainline between Atigun Pass and the Yukon River. Nine sites date from the prehistoric period and seven are recorded as historic age sites. Nine sites are eligible, treat as eligible, or recommended eligible for listing in the NRHP, and one is recommended for Phase II investigation to provide data for determining NRHP eligibility. The remaining six sites are either not eligible or recommended as not eligible for listing in the NRHP.

The nine resources determined, recommended, or to be treated as eligible for the NRHP include four prehistoric lithic scatters (CHN-00077, CHN-00124, WIS-00436, BET-00081), one prehistoric site with bone tools (BET-00074), one historic trash scatter (CHN-00025), and three locations of the Dalton Highway (CHN-00070, WIS-00408, BET-00200).

The NRHP-eligible prehistoric lithic scatter sites all exhibit intact and well-preserved subsurface deposits that contain artifacts that suggest the site has the potential to yield significant information about prehistoric activities in the area. Minimal testing conducted during the survey, and Phase II evaluation at the behest of the BLM, resulted in the recovery of scant chronologically diagnostic artifacts from some of the sites, even though the evidence from the sites indicated that they could be present (Proue et al., 2016e).

CHN-00025 is a historic trash scatter adjacent to Gold Creek dating from ca. 1899–1918 during the gold rush period in the Koyukuk Historic Mining District. The site was determined eligible for the NRHP under Criteria A and D for its association with the historic mining district and its potential to yield information as a contributing element to the Koyukuk Historic Mining District (WIS-00386) (Proue et al., 2016c). See Section 4.7.2.2.1 for information regarding the Dalton Highway (CHN-00070, WIS-00408, BET-00200) and its NRHP eligibility.

4.7.2.2.3 Yukon River to Livengood (YL)

South of the Yukon River, seven cultural resources sites and one paleontological site were identified within the Mainline survey area. Four of the cultural resources are prehistoric and three are historic. Three of the resources are eligible or to be treated as eligible for listing in the NRHP, one site is recommended for Phase II evaluation, two sites are not eligible, and one site is recommended not eligible. The prehistoric sites are recorded as lithic scatters, some including tools. Two of the historic resources are roads; the third consists of two pits. The road features include the Elliott Highway (LIV-00752), and the Dalton Highway (LIV-00501). The Elliott Highway was determined not eligible for listing in the NRHP in 2015. The Dalton Highway is treated as eligible for listing in the NRHP by the ADOT&PF, a status that requires that projects must evaluate the portion of the resource that may be impacted by an undertaking (ADOT&PF, 2012). See Section 4.7.2.2.1 for information regarding the Dalton Highway (LIV-00501) and its NRHP eligibility.

Prehistoric site LIV-00284, the Rosebud Knob Archaeological District, is located in the direct APE south of Livengood and has been determined eligible for listing in the NRHP by the OHA. The district consists

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of a dense concentration of prehistoric cultural resources sites associated with exposed layers of chert, which were extracted and used in tool manufacture. The sites range from lookouts and flaking stations to complex, multi-component camps. Archaeological testing and/or excavation was completed at many of the Rosebud Knob Archaeological District sites, and most of the sites are considered eligible for listing on the NRHP for the ability to contribute to an understanding of land and resource use by interior aboriginal peoples. The Rosebud Knob Archaeological District was determined eligible for listing in the NRHP in March 2015.

4.7.2.2.4 Livengood to Healy (LH)

A total of 28 cultural resources were identified within the Mainline survey area between Livengood and Healy. Thirteen of the cultural resources in the spread are prehistoric, 12 resources are historic, one resource contains both prehistoric and historic components, one is modern, and one is of undetermined age. Thirteen resources are eligible, treat as eligible, or recommended eligible for listing in the NRHP. Four resources are recommended for Phase II evaluation, seven are not eligible for the NRHP, three sites are recommended not eligible, and one site's eligibility is undetermined.

The thirteen resources eligible, treat as eligible, or recommended eligible for the NRHP include five prehistoric lithic scatters (LIV-00748, LIV-00749, HEA-00595, HEA-00662, HEA-00658). LIV-00748 is a lithic scatter with a diverse assemblage that includes microblades that may be indicative of a Holocene or late Pleistocene period occupation focused on subsistence activities. LIV-00749 is one of only a few cultural resources sites located on the Minto Flats and contains artifacts like a grooved manuport and possible red ochre that indicate a varied activity set. HEA-00595 is a multi-component prehistoric site with a lower component dating from the Early to Middle Archaic period with debitage and an ungulate tooth, and an upper component likely from an occupation a few thousand years later marked by debitage (Proue et al., 2016c, 2016d). Site HEA-00662 is a multi-component site with a prehistoric Athapaskan (AD 1495–1687) camp site with a large concentration of fire-cracked rock and calcined bone, and a historic component that was apparently associated with construction of the Alaska Railroad during the 1920s. Site HEA-00658 is a lithic isolate recovered from a saddle between two higher knolls that overlook the Nenana River Valley.

The thirteen resources also include one multi-component site with a prehistoric Athapaskan component and an early 20th century historic component (Nenana River Gorge Site, HEA-00062), two historic sites, one with surface depressions and artifact scatters (FAI-02386) and another with culturally modified trees, depressions, and artifacts (FAI-02390).

The final five resources of the thirteen consist of trails or highways either eligible or to be treated as eligible that are intersected by the Mainline direct APE. The Dunbar-Minto-Tolovana Trail (FAI-02177) was a 121-mile-long sled road in use from 1910 to 1935 to transport goods and people between Dunbar and Tolovana. The trail connected the Dunbar Railroad Station with many small communities and was instrumental in the 1925 serum run from Nenana to Nome, a significant event in the history of Alaska. The Nenana-Knights Roadhouse Trail (also known as the Nenana-Kantishna Trail) (FAI-02366) was cut in 1920 and formed an important transportation route between the Kantishna Mining District and the railroad at Nenana. The trail was the primary route to the mining district from Fairbanks. The proposed Mainline direct APE would also cross the Dunbar Brooks Terminal Trail (LIV-00556, FAI-02102) in two locations on the Livengood to Healy construction spread. The rise of aviation in the 1930s led to the decline of this and other trails throughout the state. The trail's character-defining features are distinguished by a cleared

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brush trail through the lowland spruce/birch forest (Proue et al., 2016c). The Mainline direct APE would also cross the Denali Highway (HEA-00450), which is approximately 135 miles long and runs from the Richardson Highway at Paxson west to Cantwell Road at the George Parks Highway. The road is currently treated as eligible for the NRHP by the ADOT&PF, a status that requires that projects must evaluate the portion of the resource that may be impacted by an undertaking (ADOT&PF, 2012). The highway would also be crossed multiple times by the direct APE of various components of the Project. A desktop DOE recommends that the segments of the Denali Highway crossed by the Project direct APE are eligible for the NRHP (Proue et al., 2016c).

4.7.2.2.5 Healy to Trapper Creek (HT)

The seven cultural resource sites identified within the Mainline survey area between Healy and Trapper Creek include two prehistoric, one historic, one historic/modern, one modern, and two of undetermined age. Two of the seven sites are eligible for listing in the NRHP and Phase II evaluation is recommended for one site to gather information to determine NRHP eligibility; the remaining four sites are determined or recommended not eligible for NRHP listing.

One eligible site (TLM-00327) consists of a subsurface lithic scatter characterized by fine silts that may derive from tephra from a Hayes volcano eruption event that may date from 3,500 to 3,800 years ago. Although limited Phase II testing at the site yielded only a few pieces of debitage, the integrity and research potential of the site led researchers to recommend the site as eligible for listing in the NRHP (Proue et al., 2016c). The other eligible site (TAL-00181) is a historic log cabin (single-room cabin with gable roof and entryway in center of south wall) and associated features dating from 1920–1940 near Sawmill Creek. The cabin size and lack of windows suggest a safety cabin. A large debris pile is located four meters south of the cabin entryway (Proue et al., 2016c).

4.7.2.2.6 Trapper Creek to Cook Inlet (TI)

The nine cultural resources identified within the Mainline survey area between Trapper Creek and Cook Inlet include four prehistoric sites, four sites from the historic period, and one site of undetermined age. Seven sites, three historic and four prehistoric, are eligible or recommended eligible for the NRHP. One historic site and one site of undetermined age are not eligible for NRHP listing.

Two historic trail sites, TYO-00086 (connecting trail to the primary Iditarod historic trail) and TYO-00084 (Knik-Rainy Pass Trail) are associated with the Iditarod National Historic Trail and have both been determined eligible for the NRHP as part of the Iditarod National Historic Trail system that includes resources from Seward to Nome (BLM, 1986; Proue, 2016a). A third historic trail site (TYO-00228), the USGS Base Winter Trail 1, intersects the Mainline direct APE. Portions of the trail were determined eligible for the NRHP due to the trail's association with the recent NRHP listing of the Iditarod Dog Sledding Historic District (ISHD)/Historic Vernacular Landscape (ANC-03326/TYO-00203) (Braund, 2009). The OHA/SHPO concurred with the Project's desktop determination that the portion of the trail crossed by the Mainline direct APE is eligible for the NRHP (Proue, 2016a). A Multiple Property Document, developed on behalf of the Surface Transportation Board and based on OHA/SHPO consultation/guidance, serves as a management tool for developers assessing potential impacts of their undertakings to properties contributing to the ISHD (HDR, Inc. 2015).

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Prehistoric site TYO-00338 is recommended eligible for the NRHP and is described as a habitation site on an alluvial terrace exhibiting a large house pit depression and a possible double-celled cache pit. Prehistoric site TYO-00352, a subsurface site on a bench northeast of the confluence of the Susitna and Yentna Rivers, is also recommended eligible as is prehistoric site TYO-00340, which is located west of the Deshka River and described as an ovoid surface depression with an associated mound of dirt; charcoal and ash were visible in a subsurface test. Finally, prehistoric site TYO-00326 is recommended eligible and consists of a concentration of numerous house and cache pits on a terrace east of Alexander Creek. Depressions are spread over an 850-meter by 180-meter area on a relatively flat river terrace.

4.7.2.2.7 Kenai Peninsula, Cook Inlet to Nikiski (IN)

Of the seven cultural resources identified in the Mainline survey area on the Kenai Peninsula between Cook Inlet and the Liquefaction Facility near Nikiski, five are prehistoric and two are of undetermined age. Three of the prehistoric sites require Phase II investigations to gather information to determine NRHP eligibility — TYO-00359, and TYO-00357 consist of lithic scatters while KEN-00706 consists of two oval-shaped depressions. Two prehistoric sites, KEN-00705 and KEN-00708, are recommended as eligible for NRHP listing. Of the two sites of undetermined age, one consists of four cache pits (KEN-00707) and one consists of a single circular surface depression (KEN-00703). Both sites of undetermined age require Phase II investigations to gather information to determine NRHP eligibility. (Proue et al., 2016g).

4.7.2.2.8 Cook Inlet Marine Crossing

A review of historic and database inventory records, geophysical remote-sensing data, and geotechnical sample materials collected for the Project engineering indicated that although there was little potential for submerged prehistoric cultural resources, historic period resources may be present (Rogers 2016). Database records in the BOEM/MMS Shipwreck Database indicate the potential for shipwrecks in the portion of Cook Inlet crossed by the proposed pipeline but is of limited value in identifying wrecks within the APE because the locations are based on reported shipwreck positions that are often described only in terms of general landmarks in historical literature and have not been groundtruthed. Information included in the NOAA AWOIS database does not contain the full record of information that may be of interest to this Project because it is a compilation of data on wrecks and obstructions that may pose a hazard to surface navigation. Finally, the AHRS inventory was consulted and it was determined that there are no records of known shipwrecks located in the study area.

Remote sensing data and geophysical samples collected to identify and characterize seafloor features and hydrographic conditions were reviewed for cultural and anthropogenic potential. Data from single- and multi-beam bathymetry, side-scan sonar imagery, magnetometry, and chirp and boomer sub-bottom profiles were examined. Side-scan targets that were regular or symmetrical shape in shape, or patterns of clustering or regular placement were identified as most likely of anthropogenic origin. Magnetometer anomalies with high signal strength also were noted. The study examined data along two marine routes across Cook Inlet but only the western Optional Route (Route 2) is currently under consideration for the Project. The area examined along Route 2 (Western Route) encompassed an area measuring 2,066 feet (630 meters) wide and approximately 27 miles (43 kilometers) long (Rogers 2016).

Two of 14 sonar targets identified in geophysical data collected in the study area exhibit regular or symmetrical size and shape and are potentially of anthropogenic origin. Sonar Target 2 is a rectangular object measuring approximately 8.5 by 12.1 feet (2.6 by 3.7 meters) standing 6.6 feet (2 meters) above the

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sea floor. Sonar Target 7 is a wedge-shaped symmetrical object measuring 17.7 by 29.2 feet (5.4 by 8.9 meters) with virtually no relief above the seafloor. Only two of the 22 magnetic anomalies identified had high signal strength, with peak-to-peak amplitudes exceeding 500 gammas. None of the magnetic anomalies were coincident with sonar targets.

The submerged cultural resources report indicated that although the existing data indicate that Sonar Targets 2 and 7 were most certainly anthropogenic in origin, they do not provide sufficient information to determine whether they may be resources that should be considered for eligibility to the NRHP. The report also notes that although none of the magnetic anomalies were coincident with sonar targets, they probably represent materials that are buried in sediment and should be investigated further prior to Project-related ground-disturbing activities in the vicinity of these anomalies. Further investigation of these targets and anomalies is recommended if it appears that final routing and Project design would result in ground-disturbing impacts in these locations (Rogers 2016).

4.7.2.3 Sites Located within the survey area of Mainline Associated Infrastructure

Cultural resources identified within the survey area for Mainline compressor stations, pipe storage yards, construction camp sites, access roads, and other facilities are summarized in Table 4.7.2-1 and are listed in Appendix E, Table 3. A total of 52 cultural resource sites are located within the direct APE for associated infrastructure where investigations have been conducted. No sites have been recorded within the GTP, PTTL, compressor stations, pipe storage yards, railroad work pads, heater stations, PTU meter station, Mainline meter stations, Mainline block valve (MLBV) sites, or disposal sites.

4.7.2.3.1 Camps

A total of four cultural resources were identified within the survey areas for temporary camps; two are prehistoric and two are historic. One prehistoric site (LIV-00284) is part of the Rosebud Knob Archaeological District and has been determined eligible by OHA/SHPO; the other (FAI-02387) is a lithic scatter that requires Phase II investigation to gather information to determine NRHP eligibility. One historic site is a former Alyeska Pipeline Construction Camp (CHN-00122) that is not eligible for listing in the NRHP; the other is the isolated burial of Frank Secondchief's mother, Fanny, which will be avoided.

4.7.2.3.2 Helicopter Pads

One prehistoric site was located in the survey area of a helicopter pad associated with a MLBV. Site TYO-00318 consists of a surface rectangular depression on a flat terrace between the Deshka and Susitna rivers. The site is not eligible for listing in the NRHP.

4.7.2.3.3 Material Borrow Areas

A total of 20 cultural resources were identified within the survey areas for temporary material borrow sites. Five of the cultural resources are historic, 13 are prehistoric, and the types of two sites are undetermined. Two sites are eligible for listing in the NRHP, LIV-00556 and FAI-02102. Both are segments of the Dunbar-Brooks Terminal Trail, a historic trail that provided a route from the Alaska Railroad to the mining camps on Livengood Creek. It is currently used as an ATV/sled trail. The eligibility of prehistoric site BET-00253 remains undetermined. The site was subject to Phase II investigation; however, the main part of the site was determined to lie outside the APE and could not be tested. Eleven sites, two undetermined,

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seven prehistoric, and two historic, are recommended for Phase II investigation. The remaining six sites are ineligible or recommended ineligible for listing in the NRHP.

4.7.2.3.4 Access Roads

A total of 27 cultural resources were identified within the survey areas for access roads, both temporary and permanent. Eighteen of the cultural resources are historic, eight are prehistoric, and one resource includes both historic and modern components; one additional resource is paleontological and does not constitute a cultural resource. Twenty-two resources are eligible, recommended as eligible, or designated treat as eligible for listing in the NRHP. Of those 22 resources, 15 are historic, six are prehistoric, and one includes both historic and modern components.

Eight of the 15 historic resources eligible, recommended as eligible, or designated treat as eligible, are segments of the Dalton Highway that runs from the Elliott Highway at Livengood to Prudhoe Bay and is repeatedly crossed by the Project. The Dalton Highway was constructed during the early 1970s as a more permanent trucking route to the North Slope. The Dalton Highway is treated as eligible for listing in the NRHP by the ADOT&PF, a status that requires that projects must evaluate the portion of the resource that may be impacted by an undertaking (ADOT&PF, 2012). One of the recommended eligible historic resources is a segment of the Elliott Highway (LIV-00752). The Elliott Highway is approximately 154 miles long and runs from the Steese Highway at Fox to the Tanana River at Manley Hot Springs. Another historic resource is a small segment of the original Elliott Highway that was later bypassed by the current alignment (LIV-00764) and is eligible for NRHP listing. Historic site HEA-00450 is a segment of the Denali Highway designated as treat as eligible for NRHP listing. The Denali Highway is approximately 135 miles long and runs from the Richardson Highway at Paxson west to Cantwell Road at the George Parks Highway. Two NRHP eligible historic trails (FAI-02177 and TYO-00086) were also recorded in the direct APEs at access roads. FAI-02177 is labeled as "Wagon Road" on the U.S. Survey 2132 of the Carl White Homestead. Within the survey area the trail was documented as approximately 12 feet wide. Site TYO-00086 is a connecting trail to the primary Iditarod historic trail. Historic site CHN-00125 is recorded as Historic mining equipment scattered in tundra near Sheep Creek. Artifacts include sheet metal, pipe, a metal bucket, a wood barrel, stove pipe, and blazo cans. The site may be from the 1930s or 1940s and is recommended as NRHP eligible. The final historic eligible site, TAL-00181, consists of a historic log cabin and associated features dating from 1920-1940.

Four of the six prehistoric sites eligible or recommended as eligible for NRHP listing (PSM-00197, PSM-00578, LIV-00778, HEA-00660) consist of lithic scatters. Prehistoric site TYO-00350 is recommended eligible and consists of two trench-like depressions. Subsurface testing revealed bark from a cache pit. Prehistoric site TYO-00326, also recommended as NRHP eligible, is a concentration of numerous house pits and cache pits that was discovered during pedestrian survey of a terrace east of Alexander Creek. The depressions are spread over an 850-meter by 180-meter (2,789-foot by 591-foot) area on a relatively flat river terrace.

Multicomponent site (HEA-00066) is considered eligible for NRHP listing. The site was an Alaska Railroad water and coal station called the Broad Pass railroad section facility. The station and more than 20 associated structures were built between 1918 and the 1970s. While survey of the site in 2005 discovered that the station and associated buildings had been removed, numerous historic artifacts associated with railway activity were recovered nearby, and the site was ultimately determined eligible by the OHA/SHPO.

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4.7.2.4 Non-Jurisdictional Facilities

Non-jurisdictional facilities identified as connected actions include the PTU Expansion Project and the PBU MGS project as well as relocation of the Kenai Spur Highway. Modifications to or construction of manufacturing facilities to fabricate Project components outside of Alaska and third-party pipelines and associated infrastructure to transport natural gas from interconnection points to markets in Alaska are not known and cannot be analyzed at this time, but may be considered as part of a future analysis of cumulative impacts in the final Environmental Report (Resource Report No. 1, Appendix M).

The PTU Expansion would include granular expansions of the existing Central and West Pads, a new granular material mine to support infrastructure construction, and construction of a new gathering line connecting the West Pad to the Central Pad. An East Pad, road, and a gathering line from the East Pad to the Central Pad was previously permitted by the Initial Production System (IPS) Project. Comprehensive cultural resource investigations were conducted for the PTU facilities to support the NEPA and Section 106 review conducted by the USACE for the Point Thomson Project IPS Final EIS. At the conclusion of consultation, the USACE executed a Programmatic Agreement for the project. (USACE 2012). These surveys remain valid and indicate that newly proposed infrastructure at Point Thomson would not affect any known cultural resource sites. In addition, the new West Gathering Line is proposed to be installed on vertical support members (VSMs) shared with PTTL, the route for which was surveyed by this Project in 2015. The AHRS inventory additionally confirms that previously recorded cultural resources sites are more than 2,000 feet from proposed facilities at the PTU.

The PBU MGS Project includes: pad expansion at the CGF Pad and Skid 50 Pad; construction of new feed gas and propane pipelines; construction of new byproduct pipelines, and drilling and tie-in of approximately 10 new production and injection wells. Although cultural resource surveys have not been completed for these facilities, an approximately 3.9-mile segment of the approximately 25-mile Byproduct pipeline connecting the CGF module route to the GTP area was surveyed in 2013 for the Project. A review of data on previously recorded cultural resources indicates that there are three sites in the AHRS inventory within 2,000 feet of the non-jurisdictional facilities to be constructed at the PBU. The Prudhoe Bay Oil Field Discovery Well site (XBP-00056) is located adjacent to the GTP facility and approximately 800 feet from a non-jurisdictional connecting line. The NRHP-eligible site is discussed in greater detail previously in Section 4.5.1. The Putuligayuk River Delta Overlook Site (XBP-00007) is located approximately 815 feet from a PBU expansion pipeline ROW east of the GTP. The site is a prehistoric site consisting of nine fire hearths and surface scatters of lithic debitage with artifacts from the Arctic Small Tool tradition, Northern Archaic tradition, and Paleoarctic tradition dating from between BP 4000 and 8000 (AHRS 2016). Site XBP-00109 is located approximately 1,980 feet south of the ROW for the Byproduct line connecting the GTP to Well Pads Z and W west of the facility. The site consists of the remains of a hearth adjacent to a pingo.⁴ All three sites appear to be located outside of the APE for the non-jurisdictional facilities to be constructed at the PBU.

Several alternate routes are under consideration for the relocation of the Kenai Spur Highway between Kenai Spur Highway MP 18 and MP 25. These routes all move the existing highway east of the Liquefaction Facility to be constructed for the Project. Project representatives are working with the ADOT&PF and the Kenai Peninsula Borough to identify a route and complete environmental studies. At

⁴ A pingo is a periglacial landform consisting of a mound of earth covered ice formed as a result of hydrostatic pressure on water from permafrost.

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present, no cultural resource investigations have been completed for the relocation of the Kenai Spur Highway. A review of data indicates that only one of the 11 previously recorded sites located within 2,000 feet of the alternate routes under consideration is located outside of the Liquefaction Facility. Nine of the 10 sites located in the Liquefaction Facility areas were determined not eligible for listing on the NRHP (KEN-00643, KEN-00644, KEN-00645, KEN-00647, KEN-00648, KEN-00649, KEN-00650, KEN-00652, and KEN-00651). The 10th site (KEN-00656) was recommended eligible by the investigators (URS/AECOM, 2015b). The sole site located outside of the Liquefaction Facility (KEN-00011) is described as two well-defined house depressions with extra rooms and tunnels overlooking a small lake north of the Liquefaction Facility. Revisited in 2012, the site was found to be totally destroyed by modern construction (AHRs, 2016). Additional information on the relocation of the Kenai Spur Highway will be provided in the FERC application.

4.8 ETHNOGRAPHIC STUDY

An ethnographic analysis was conducted to identify Alaska Native groups or other groups with ties to the Project area and to identify properties of traditional, religious, or cultural importance to those organizations, interested parties, and ethnic groups. The study provides an ethnographic overview of Native cultures within the North Slope, Yukon River, Tanana River, Copper River, Southcentral Alaska, Prince William Sound, and the Kenai Peninsula. The primary cultures within these regions are the Inupiat, Athabascan, and Sugpiat (also called Alutiiq). The Athabascans in the study regions are further divided into the Koyukon, Gwich'in, Tanana, Ahtna, and Dena'ina cultural groups. The study describes selected ethnographic topics that characterize the Native study communities and their inhabitants within a region, identify agents of change, and address cultural themes that have the potential to be affected by the Project. The Ethnographic Report (Braund, 2016) is provided in Appendix B.

4.9 POTENTIAL CONSTRUCTION IMPACTS AND MITIGATION MEASURES

The Project recognizes that there are limitations to assessing effects and developing avoidance, minimization, and mitigation measures at this time since no indirect APE has been established and since final eligibility determinations have not been completed for all identified cultural resources. However, studies conducted to date indicate that the Project has the potential to impact cultural resources that are eligible for listing in the NRHP (historic properties as defined at 36 CFR 800.16[i]). A total of 94 cultural resources were identified within the surveyed areas for the Mainline, 12 cultural resources were identified in the surveyed areas for the Liquefaction Facility, and 52 cultural resources were identified within the surveyed areas for facilities associated with the Project (total of 158 cultural resources). Most of the cultural resources were evaluated for NRHP eligibility by applying the National Register Criteria for Evaluation (36 CFR 60.4 [a-d]). Seventy of the evaluated cultural resources were determined eligible, recommended as eligible, or to be treated as eligible for NRHP listing (Table 4.7.2-1). The historic properties are varied, including prehistoric camps and pit house villages, historic gold rush related sites, Iditarod-related trails, and trails/highways built as a result of the discovery of oil in Prudhoe Bay. The potential Project construction impacts on the historic properties depend on the specific type of construction activity, as well as the features and character-defining attributes of each property.

In general, any ground-disturbing activity, including activities such as removal of the vegetative mat, grading, trenching, earth-moving, blasting, and driving equipment across a site, may result in direct adverse effects to cultural resources. Indirect effects on cultural resources must also be considered; however, the indirect APE for the Project has not been determined. Indirect effects may result from changes in the

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landscape that could impact the viewshed of historic or traditional cultural properties or by increasing access to areas with NRHP-eligible cultural resources. Because the plans for aboveground facilities are still developing, consultation with FERC, OHA/SHPO, BLM, and possibly other parties to define the APE for indirect effects has not been initiated; however, the consultation process to define the indirect APE will begin shortly after the application filing.

Once engineering studies and planning are complete, the cultural resources determined, in consultation with FERC, OHA/SHPO and other consulting parties, to be historic properties would be assessed to determine the impacts that the Project would have on each. Although the Project plans to avoid affecting historic properties to the extent practicable, it is unlikely that it would be possible to avoid impacting all historic properties. An engineering review would be conducted for each historic property to determine which could be avoided. A variety of avoidance measures such as horizontal directional drilling, reconfiguration of workspaces, or narrowing the construction workspace could be applied. Should it be impossible to avoid adversely affecting a cultural resource, a detailed data recovery plan would be developed for concurrent review by FERC, OHA/SHPO, and other appropriate parties.

Although most cultural resources are identified through surveys conducted for the Project, it is possible that some cultural resources could escape detection and be discovered during construction. For this reason, the Unanticipated Discovery Plan was prepared to provide protocols for identifying cultural resources and human remains discovered during construction, evaluating their eligibility for listing in the NRHP, and resolving effects if necessary (see Section 4.11 and Appendix F). Potential impacts to visual resources have been analyzed using the BLM's Visual Resource Management methodology. Resource Report No. 8, Section 8.13 identifies visual resources potentially impacted by the Project which include reserves, wildlife management areas, special management areas, recreation areas, historic trails, scenic byways, and other resources. 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 key observation points. Locating proposed facilities 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 that equipment and associated materials are not visible from public roads. Construction during times when recreational use is minimal would also reduce visual effects. See Resource Report No. 8, Section 8.14 for a complete discussion of potential construction impacts to and mitigation measures for impacts to visual resources.

4.10 POTENTIAL OPERATION IMPACTS AND MITIGATION MEASURES

4.11 UNANTICIPATED DISCOVERIES PLAN

Prior to the FERC issuing any Order for the Project, a cultural resources survey will have been completed for the entire operational area of the Project along with mitigations for all known historic properties. While the probability of discovering previously undocumented cultural resources or human remains during maintenance or repair activities is unlikely, operations personnel will be trained in the procedures for implementing the Unanticipated Discovery Plan (see Section 4.11 and Appendix F) as would be appropriate in an operations setting. In the event of a discovery, the Project would retain the services of a qualified archaeologist or cultural resources specialist to ensure that all appropriate notifications are made, that the resource is properly recorded, and that any necessary treatment is carried out.

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An Unanticipated Discoveries Plan has been developed following the regulatory guidance related to Section 106 of the NHPA. The plan is included in Appendix F. The plan establishes procedures to be used in the event cultural resources or human remains are found during construction of the Project or during operations and maintenance activities within the operations ROW. The FERC, OHA/SHPO, and other consulting agencies have received the Unanticipated Discoveries Plan for review and have provided comments. During construction, copies of the Unanticipated Discoveries Plan would be kept at the main construction office on each spread; construction personnel and environmental inspectors would be trained in implementing the plan.

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