

Susitna-Watana Hydroelectric Project Document

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Susitna-Watana Hydroelectric Project (FERC No. 14241)

Overview of Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report

Prepared by

Alaska Energy Authority



SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

November 2015

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1. INTRODUCTION TO ISR PART D

This document provides the Alaska Energy Authority’s (AEA) Part D Supplemental Information to the Initial Study Report (ISR) for the original licensing of the proposed Susitna-Watana Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC or Commission) Project No. 14241. This Part D is provided in furtherance of the Commission’s Integrated Licensing Process (ILP) regulations, 18 C.F.R. § 5.15(c), which require an applicant to “describ[e] its overall progress in implementing the study plan and schedule and the data collected, including an explanation of any variance from the study plan and schedule.” Under the Commission’s ILP regulations, the ISR also is to “include any modifications to ongoing studies proposed by the potential applicant.”

AEA filed its ISR for the Project in June 2014. This ISR Part D provides a “roadmap” of updates to the ISR—covering the period June 2014 when the ISR was filed, through the filing of this ISR Part D.¹ As directed by Commission staff in its October 27, 2015 letter, this ISR Part D “tie[s]-together the record of information” generated in AEA’s implementation of the Study Plan.² Recognizing that Commission staff, federal and state resource agencies, Alaska Native entities, and other licensing participants have had access to the ISR for approximately 17 months now, this ISR Part D seeks to tie the record together efficiently and without requiring a duplication of effort. For this reason, ISR Part D is a high-level cumulative report of ISR elements (e.g., variances and modifications), provides crosswalk tables to relevant documents for each study, and identifies any supplemental or updated sections of the previously filed Parts A, B and C of the ISR.

Moreover, the “study implementation reports” and “study completion reports,” described in Section 1.5 below, are intended to be complementary to the information presented in this ISR Part D. AEA began posting these implementation and completion reports to the Project licensing website in October 2015, and will continue to do so as these reports are finalized. In addition, AEA began filing these reports with the Commission once it lifted the abeyance in its October 27 letter.

Consistent with AEA’s longstanding practice in this licensing process, data collected during the Study Plan implementation, to the extent they have been verified through AEA’s quality assurance and quality control procedures and are publicly available, can be accessed at <http://gis.suhydro.org/reports/>.

1.1. Background of ISR Part D Development

The ISR, including this Part D Supplement, is the product of nearly four years of intense work and consultation among AEA, federal and state resource agencies, Alaska Native entities, and

¹ While most work completed since the June 2014 ISR occurred during calendar year 2014, in a number of instances data collection and other work extended into 2015. Any work completed during 2015 is noted in the individual ISR Part D reports.

² Letter from Ann Miles, Federal Energy Regulatory Commission, to Wayne Dyok, Alaska Energy Authority, at 2, Project No. 14241-000 (issued Oct. 27, 2015).

other licensing participants. Since the filing of AEA's Notice of Intent and Pre-Application Document in December 2011, AEA and licensing participants have consulted closely in the development and implementation of the Study Plan.

These efforts, from the early stages in 2011 through the June 2014 filing of the ISR, are summarized in the introductory Section 1.1 of the ISR. Since June 2014 to the present time, these efforts are summarized as follows:

- ***Continued Data Collection:*** Although AEA had limited funding available for fieldwork in 2014, during preparation of the June 2014 ISR it recognized that a targeted, continuing study effort could greatly assist Commission Staff, AEA, resource agencies, Alaska Native entities, and other licensing participants in advancing the Project's remaining licensing study program. In particular, at that time AEA had recently obtained a land access permit from the Cook Inlet Region Working Group (CIRWG)—lands that were not accessible to AEA during the 2013 study season. For these reasons, the ISR (Section 1.3 and Table 3) detailed AEA's plans for continued data collection.
- ***Release of 2014 Technical Memoranda:*** In preparation for ISR meetings scheduled for October 2014, AEA filed over 20 technical memoranda with the Commission on September 17, 29, and 30, 2014. These technical memoranda reported on: (1) results of studies conducted during 2013 and 2014 that were not available at the time AEA filed the ISR in June 2014; and (2) studies that AEA completed during the 2014 field season—to take advantage of the newly acquired access to CIRWG lands, maintain continuity of certain ongoing study efforts, and economically utilize existing field support infrastructure by completing additional field work for other studies.
- ***2014 ISR and Technical Workgroup Meetings:*** Following AEA's filing of the ISR in June 2014, it continued to hold technical workgroup meetings on ongoing study efforts. In September 2014, for example, it held a three-day fish passage feasibility workshop. In October 2014, AEA convened a total of six, one-day ISR meetings to review progress on each of the 58 individual studies. In December 2014, AEA held technical workgroup meetings for aquatics, fish passage, geomorphology, and groundwater studies. The agenda, meeting notes, presentations, and other information for each meeting (including transcripts for the October 2014 ISR meetings) are all accessible at AEA's website for the Project, <http://www.susitna-watanahydro.org/meetings/past-meetings/>.
- ***Abeyance of ILP:*** On December 26, 2014, the Governor of the State of Alaska issued an Administrative Order to suspend discretionary spending on a number of capital projects, including the Project, due to a large state budget deficit. Accordingly, on December 31, 2014, AEA suspended additional ISR meetings scheduled for January 2015 and requested the Commission to hold the ILP in abeyance. The Commission granted this request by letter order dated January 8, 2015.
- ***Lifting of Abeyance:*** On July 6, 2015, the Governor's office clarified that the Governor's prior Administrative Order regarding discretionary spending authorized AEA to proceed with efforts to reach the Commission's issuance of its Study Plan Determination (SPD) for the Project. Accordingly, on August 26, AEA requested the Commission to lift the

abeyance and adopt a modified ILP schedule to issue its SPD. AEA's proposed schedule included significantly more time for Commission staff, AEA, and licensing participants to review reports related to the Study Plan and fulfill their obligations in study plan development. To assist in this effort, AEA reported that it would be preparing study reports that detail its implementation (or, as appropriate, completion) of the Commission-approved Study Plan to date. These reports are described in more detail in Section 1.5, below. On October 27, 2015, the Commission lifted the abeyance but deferred a decision on AEA's proposed schedule until reviewing this ISR Part D.

- **Release of Study Implementation and Completion Reports:** Beginning in October 2015, AEA began its release of reports for 38 of the 58 studies included in the Commission-approved Study Plan. For most of these studies, AEA prepared a "study implementation report"—a progress report on implementing the study since the June 2014 ISR. AEA has completed all required elements of the study and fulfilled all Study Plan objectives for 11 of the 38 reports. For these studies, AEA prepared a comprehensive "study completion report." These reports are described in more detail in Section 1.5, below. To distribute these studies to resource agencies, Alaska Native entities, and other licensing participants as quickly as possible, AEA posted these reports on its licensing website for the Project (<http://www.susitna-watanahydro.org/type/documents/>) as they were completed. Once the Commission lifted the ILP abeyance on October 27, 2015, AEA filed the previously posted reports with the Commission on its eLibrary system. The remaining reports will be filed with the Commission and placed on the Project website as they are finalized.

1.2. Structure of ISR Part D

AEA filed the ISR for the Project on June 3, 2014. As described in greater detail in Section 1.2 of the June 2014 ISR, this filing consisted of three separate segments for each of the 58 individual studies included in the Study Plan, as follows:

- **Part A:** Part A of the ISR reproduces the draft ISR filed with the Commission on February 3, 2014. For each individual study, Part A reports on the methodologies employed and the results achieved through the 2013 study season. Part A also identifies any variances in methodologies from the Study Plan during the 2013 study season, and discusses how AEA had proposed, as of February 2014, to meet Study Plan objectives in light of such variances. In many instances, Part A evaluates how the data collected through the 2013 study season compare to historical scientific data in the Project area.
- **Part B:** Part B of the ISR contains any new supplemental information or errata with respect to Part A that occurred between the time of the draft ISR (in February 2014) until the filing of the ISR in June 2014. The information in Part B was derived from either comments received during technical meetings following AEA's distribution of the draft ISR, or AEA's internal review of the document following its February 3 submittal.
- **Part C:** Part C of the ISR includes material that was not included in the February 3 draft ISR, as well as an updated executive summary for each individual study. Part C details AEA's plans—as of June 2014 when the ISR was filed—for completing the Study Plan,

including modifications. It also includes AEA's specific proposal for 2014 and 2015 work and explains how the modifications will meet Study Plan objectives.

This filing supplements the ISR by adding a new **Part D** for each of the individual studies in the Study Plan. This Part D Supplement to the ISR is intended primarily to be a high-level cumulative report of the following information, from the initiation of the Project study program in 2012 and the Commission's SPD in 2013, through the filing of this ISR Part D:

- **Status, Highlighted Results, and Achievements:** Each individual study reported in Part D contains a summary of the important accomplishments achieved in implementing the study. For each individual study, this section summarizes information presented in ISR Part A, Sections 5 and 6 (presenting information collected through the end of the 2013 study season), as well as in the complementary study implementation and completion reports (presenting information collected after the 2013 study season) discussed in Section 1.5 below.
- **Summary of Study Documents:** Throughout the study program, AEA has released scores of technical memoranda and other documents reporting on study progress and reports. An important component of this Part D is to identify and describe each of these documents, for each individual study included in this supplement to the ISR. AEA believes that this summary will assist Commission staff and licensing participants in identifying and organizing all pertinent information for each individual study, on a going-forward basis.
- **New Study Documentation Supplementing the ISR:** In preparing this Part D Supplement to the ISR, AEA reviewed Parts A, B and C of the ISR, to determine whether any sections of the ISR required updating, refinement, or clarification based on work completed since the ISR was prepared in June 2014.
- **Variances:** Per the Commission's ILP regulations, Part D includes a comprehensive identification of all variances to the FERC-approved Study Plan since AEA commenced its implementation in 2013. The information on variances presented in this Part D is intended to be a high-level summary, with more detailed information on variances presented in ISR Part A, Section 4 (for variances through the end of the 2013 study season), as well as in the complementary study implementation and completion reports (for variances since the 2013 study season) discussed in Section 1.5 below.
- **Modifications:** Per the Commission's ILP regulations, Part D includes a comprehensive identification of all modifications to the FERC-approved Study Plan since AEA commenced its implementation in 2013. Consistent with its approach to reporting variances, the information on Study Plan modifications presented in this Part D is intended to be a high-level summary, with more detailed information presented in ISR Part C, Section 7 (for modifications identified in the ISR following the 2013 study season), as well as in the complementary study implementation reports (for modifications on a going-forward basis) discussed in Section 1.5 below.

- **Steps to Completing the Study:** As explained in more detail in Section 2.2 below, Part D for each individual study identifies steps needed for AEA to complete the Study Plan.

Because this Part D Supplement to the ISR is comprehensive and cumulative in nature—identifying and summarizing work performed by AEA under the Study Plan since the ISR was filed in June 2014—there are no information gaps in the Commission’s review of all work performed to date. This approach supports a thorough SPD by the Commission in 2016 that will identify, for each individual study, all remaining work needed to support AEA’s license application for the Project.

1.3. Changes to Transmission and Access Corridors

When AEA filed the ISR in June 2014, it explained in Section 1.4 of the ISR two major changes to the transmission and access corridors under review for the Project. First, AEA explained that it was adding an additional alternative north-south corridor alignment for transmission and access from the dam site to the Denali Highway. AEA explained that this new alignment—referred to as the “Denali East Option”—could have advantages over other alternatives, as it would encumber only State-owned lands and traverse generally lower-elevation areas (and possibly avoid some of the icing problems typically encountered at higher elevations) than the original north-south alignment. For clarification, AEA noted that the original north-south alignment, which was previously referred to simply as the “Denali Corridor,” would be referred to the “Denali West Option” on a going-forward basis (although the two Denali options are co-terminus near the dam site at the south end for both transmission and access and along Denali Highway to the north for transmission).

In addition, AEA in Section 1.4 of the ISR explained that it was considering the possibility of eliminating the Chulitna Corridor from further study. At that time, AEA reported that it was reviewing initial study results and consulting with federal and state resource agencies, Alaska Native entities, and other licensing participants on this matter. Following this review and consultation, AEA in September 2014 filed a formal proposal with the Commission to change the Study Plan by eliminating the Chulitna Corridor from further study. AEA explained that using this corridor would entail the crossing of Indian River and Portage Creek, and it would parallel Portage Creek for about 8 miles. Both of these waterways contain important anadromous salmon spawning and rearing habitat. In addition, using the Chulitna Corridor would require the road and transmission line routes to be located at higher elevations along more avalanche-prone slopes than the other corridors, and thus would not provide as reliable access and transmission operations as the other corridors.

These changes affect the study areas for many of the individual 58 studies in the Study Plan, including the following: Study 4.5 (Geology and Soils Characterization Study); Study 6.5 (Geomorphology Study); Study 9.13 (Aquatic Resources Study within the Access Alignment, Transmission Alignment, and Construction Area); Study 10.10 (Terrestrial Furbearer Abundance and Habitat Use); Study 10.11 (Aquatic Furbearer Abundance and Habitat Use); Study 10.12 (Small Mammal Species Composition and Habitat Use); Study 10.14 (Surveys of Eagles and Other Raptors); Study 10.15 (Waterbird Migration, Breeding, and Habitat Use); Study 10.16 (Landbird and Shorebird Migration, Breeding, and Habitat Use); Study 10.18 (Wood Frog Occupancy and Habitat Use); Study 10.19 (Evaluation of Wildlife Habitat Use); Study 11.5

(Vegetation and Wildlife Habitat Mapping Study in the Upper and Middle Susitna Basin); Study 11.7 (Wetland Mapping Study in the Upper and Middle Susitna Basin); Study 11.8 (Rare Plant Study); Study 11.9 (Invasive Plant Study); Study 12.5 (Recreation Resources Study); Study 12.6 (Aesthetic Resources Study); Study 13.5 (Cultural Resources Study); and Study 13.6 (Paleontological Resources Study).

Although a general depiction of these changes to the study areas of these studies appears in Figure 1, the specific changes are noted in the individual study Sections of this ISR Part D.

1.4. Completed Studies

While most of the 58 individual studies in the FERC-approved Study Plan remain a work-in-progress at this time, AEA has completed all required fieldwork, investigation, study, analysis, and reporting of the following studies:

- Study 5.5, Baseline Water Quality Study
- Study 7.7, Glacier and Runoff Changes Study
- Study 9.7, Salmon Escapement Study
- Study 9.9, Characterization and Mapping of Aquatic Habitats Study
- Study 10.7, Dall's Sheep Distribution and Abundance Study
- Study 10.9, Wolverine Distribution, Abundance and Habitat Occupancy Study
- Study 10.10, Terrestrial Furbearer Abundance and Habitat Use Study
- Study 10.13, Bat Distribution and Habitat Use Study
- Study 10.15, Waterbird Migration, Breeding, and Habitat Use Study
- Study 10.18, Wood Frog Occupancy and Habitat Use Study
- Study 15.9, Air Quality Study
- Study 16.5, Probable Maximum Flood Study
- Study 16.6, Site Specific Seismic Hazard Study

Because AEA believes that each of these studies is now complete in terms of meeting the requirements of the approved study plan, AEA's final, completed report and analysis for these studies appear in individual study completion reports.³ In addition, to assist Commission staff and licensing participants determine the completeness of these studies, AEA has included each study as part of this ISR Part D.

1.5. Study Implementation and Completion Reports

In its August 26, 2015 request for the Commission to lift the abeyance of this ILP process, AEA indicated that it would be filing study reports to ensure a complete and up-to-date record of all progress made in implementing the FERC-approved Study Plan. Although the ISR contains an accurate reporting of work completed through the 2013 study season, since that time AEA has made additional progress on many of the 58 individual studies—either through additional fieldwork, data collection, or data analysis. For the 38 studies in which AEA has made

³ The only exceptions are Study 7.7 and Study 16.5, in which the final report appears in Part A of the ISR, filed in June 2014.

substantial progress since the June 2014 ISR, AEA has prepared a “study implementation report” (for studies that remain a work-in-progress) or a “study completion report” (for studies that AEA has completed since the June 2014 ISR).

In general, these implementation and completion reports contain detailed treatment of: (1) methods and variances in implementing the study since 2013; (2) study results through calendar year 2014; (3) discussion and analysis of study results; and (4) identification, as applicable, of modifications to the Study Plan on a going-forward basis.

AEA has not prepared an implementation report for 20 studies. Two of these studies were fully completed and reported in the June 2014 ISR. The remaining 18 studies have either been deferred, or have not advanced to the point where a study report is needed. For these 20 studies, the ISR itself contains the most up-to-date information related to AEA’s progress. To ensure that this ISR Part D presents a complete record for Commission staff and licensing participants of all reports for each of the 58 individual studies, Table 1 contains a listing of each individual study component. (Table 1 below updates and supersedes the Table 1 included in Section 1.6 of the ISR filed in June 2014.)

2. CONCLUSION AND NEXT STEPS

2.1. Study Plan Determination

The Commission’s ILP regulations provide an opportunity for the license applicant, resource agencies, Alaska Native entities, and other licensing participants to review interim study results and progress, and to evaluate whether new studies or study modifications are needed to support the license application. While this interim review typically occurs shortly after the first study season, the circumstances of this Project are unique—given the large volume of studies, fluctuations in Project appropriations, and on-the-ground challenges of implementing an extensive study program in a remote, isolated location of South-Central Alaska. AEA appreciates the flexibility of Commission staff and all licensing participants in customizing the ILP process to the needs of this Project.

When the Commission lifted the abeyance for the ILP process on October 27, 2015, it did not establish a schedule for the ISR meetings, meeting summary, comment opportunities, and other activities leading to its SPD. Instead, once Commission staff has an opportunity to review this ISR Part D “roadmap,” it will decide on the schedule going forward.

Once Commission staff decides on the schedule, AEA will establish the dates for the ISR meetings. AEA will notify licensing participants of these meeting dates through its email notification system, and the meeting dates will be filed with the Commission and posted on the Project’s website.

2.2. Completing the Study Plan

AEA began implementing the Study Plan in the 2013 study season, shortly after Commission staff approved the December 2012 Revised Study Plan in separate determinations issued in

February and April 2013. Since the Commission's Study Plan approval, AEA in 2013 completed one full year of study work, followed by a more targeted study program since that time.

While AEA hopes to reinstate the study program assuming additional appropriations of the Alaska State Legislature in 2017, future efforts necessarily must conform to the level of such appropriations and other factors.

For these reasons, this ISR Part D purposefully excludes a schedule for completing the Study Plan—and any prior anticipated schedule for completing the Study Plan set forth in Parts A, B or C of the ISR (or any other AEA document) is no longer valid. Instead, AEA is now focusing on the scope of work and sequence of activities for each study that are required to meet the objectives and requirements of the Study Plan—fully recognizing and anticipating that any individual study element may be delayed due to circumstances beyond AEA's control.

This approach will allow for the Commission to issue a SPD identifying all studies and information needed to support AEA's licensing application, while providing the needed schedule flexibility to adapt to unforeseen circumstances that could arise during Study Plan implementation.

3. FIGURES AND TABLES

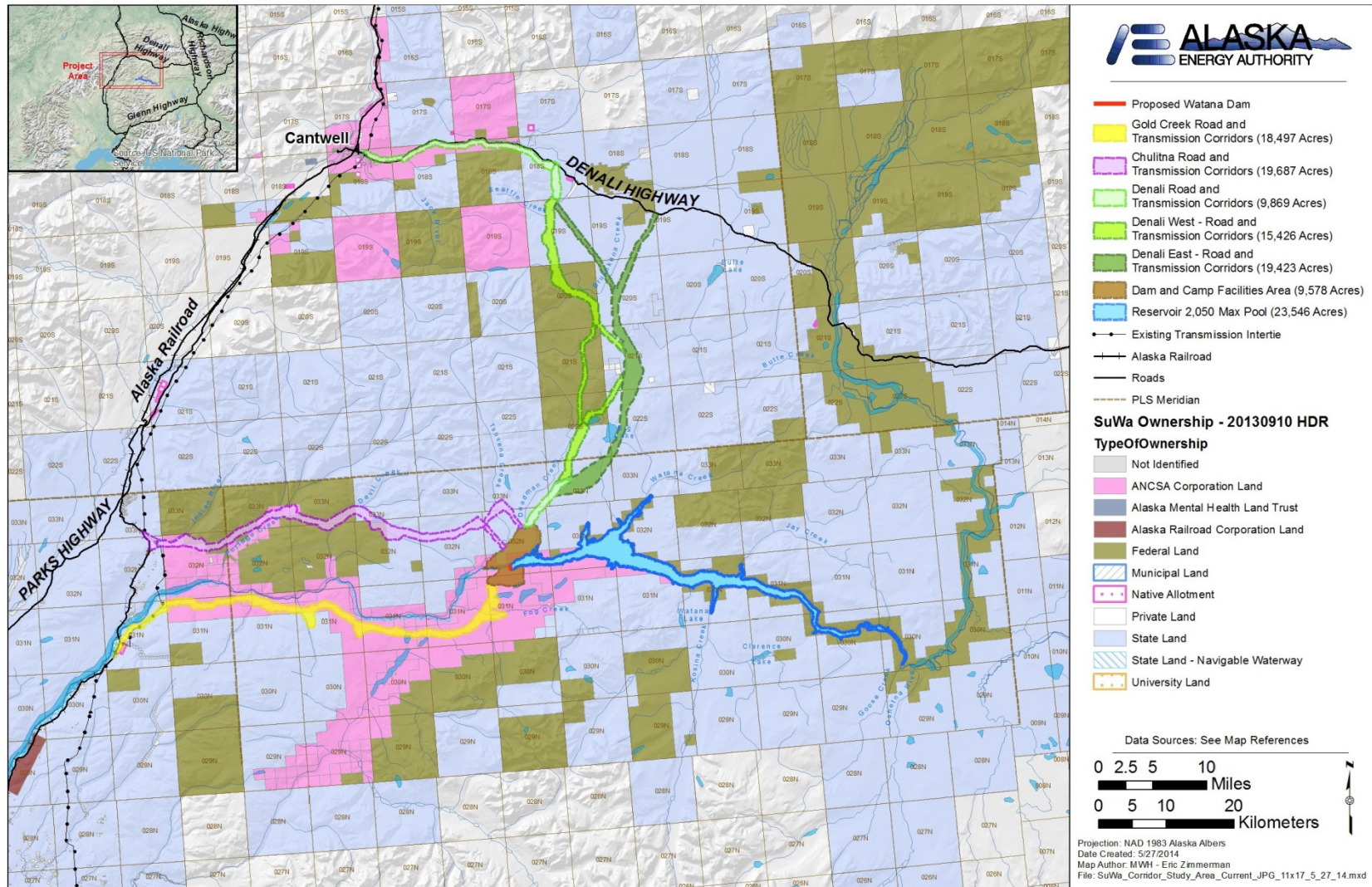


Figure 1. Updated Susitna-Watana Project Area

Table 1. Complete List of ISR Components

Document Title	Document Link
4 GEOLOGY AND SOILS	
4.5 Geology and Soils Characterization Study	
Geology and Soils Characterization Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 4.5 ISR Part B for Study 4.5 ISR Part C for Study 4.5
Geology and Soils Characterization Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 4.5
Geology and Soils Characterization Study 2014-2015 Study Implementation Report	2014-2015 SIR for Study 4.5
5 WATER QUALITY	
5.5 Baseline Water Quality Study	
Baseline Water Quality Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 5.5 (File 1) ISR Part A for Study 5.5 (File 2) ISR Part A for Study 5.5 (File 3) ISR Part A for Study 5.5 (File 4) ISR Part A for Study 5.5 (File 5) ISR Part A for Study 5.5 (File 6) ISR Part B for Study 5.5 ISR Part C for Study 5.5
Baseline Water Quality Study (Study 5.5) and Water Quality Modeling Study (Study 5.6), Water Quality and Lower River Modeling	Sept. 2014 TM for Study 5.5
Baseline Water Quality Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 5.5
Baseline Water Quality Study Completion Report	SCR for Study 5.5 (File 1)

Document Title	Document Link
	SCR for Study 5.5 (File 2)
5.6 Water Quality Modeling Study	
Water Quality Modeling Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 5.6 ISR Part B for Study 5.6 ISR Part C for Study 5.6
Baseline Water Quality Study (Study 5.5) and Water Quality Modeling Study (Study 5.6), Water Quality and Lower River Modeling Technical Memorandum	Sept. 2014 TM for Study 5.6
Water Quality Modeling Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 5.6
Water Quality Modeling Study 2014-2015 Study Implementation Report	2014 SIR for Study 5.6 (File 1) 2014 SIR for Study 5.6 (File 2)
5.7 Mercury Assessment and Potential for Bioaccumulation Study	
Mercury Assessment and Potential for Bioaccumulation Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 5.7 ISR Part B for Study 5.7 ISR Part C for Study 5.7
Mercury Assessment and Potential for Bioaccumulation Study (Study 5.7), Evaluation of Continued Mercury Monitoring Beyond 2014 Technical Memorandum	Sept. 2014 TM for Study 5.7
Mercury Assessment and Potential for Bioaccumulation Study (Study 5.7) Errata to Evaluation of Continued Mercury Monitoring Beyond 2014 Technical Memorandum(September 30, 2014)	Nov. 2014 TM for Study 5.7
Mercury Assessment and Potential for Bioaccumulation Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 5.7
Mercury Assessment and Potential for Bioaccumulation Study 2014-2015 Study Implementation Report	2014-2015 SIR for Study 5.7 (File 1) 2014-2015 SIR for Study 5.7 (File 2)

6 GEOMORPHOLOGY	
6.5 Geomorphology Study	
Geomorphic Reach Delineation and Characterization, Upper, Middle and Lower Susitna River Segments Technical Memorandum	May 2014 TM for Study 6.5
Geomorphology Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 6.5 (File 1) ISR Part A for Study 6.5 (File 2) ISR Part A for Study 6.5 (File 3) ISR Part B for Study 6.5 ISR Part C for Study 6.5
Susitna River Historical Cross Section Comparison Technical Memorandum	Sept. 2014 TM for Study 6.5
Update of Sediment Transport Relationships and a Revised Sediment Balance for the Middle and Lower Susitna River Segments Technical Memorandum	Sept. 2014 TM for Study 6.5
Mapping of Geomorphic Features and Turnover within the Middle and Lower Susitna River Segments from 1950s, 1980s, and Current Aerials	Sept. 2014 TM for Study 6.5 (File 1) Sept. 2014 TM for Study 6.5 (File 2) Sept. 2014 TM for Study 6.5 (File 3) Sept. 2014 TM for Study 6.5 (File 4) Sept. 2014 TM for Study 6.5 (File 5) Sept. 2014 TM for Study 6.5 (File 6) Sept. 2014 TM for Study 6.5 (File 7) Sept. 2014 TM for Study 6.5 (File 8) Sept. 2014 TM for Study 6.5 (File 9) Sept. 2014 TM for Study 6.5 (File 10) Sept. 2014 TM for Study 6.5 (File 11) Sept. 2014 TM for Study 6.5 (File 12) Sept. 2014 TM for Study 6.5 (File 13)

	Sept. 2014 TM for Study 6.5 (File 14) Sept. 2014 TM for Study 6.5 (File 15) Sept. 2014 TM for Study 6.5 (File 16)
Geomorphology Study (Study 6.5) - Updated Mapping of Aquatic Macrohabitat Types in the Middle Susitna River Segment from 1980s and Current Aerials Technical Memorandum	Sept. 2014 TM for Study 6.5 (File 1) Sept. 2014 TM for Study 6.5 (File 2) Sept. 2014 TM for Study 6.5 (File 3) Sept. 2014 TM for Study 6.5 (File 4) Sept. 2014 TM for Study 6.5 (File 5)
Geomorphology Study (Study 6.5) - Mapping of Geomorphic Features and Turnover within the Middle and Lower Susitna River Segments from 1950s, 1980s, and Current Aerials Technical Memorandum	Sept. 2014 TM for Study 6.5 (File 1) Sept. 2014 TM for Study 6.5 (File 2) Sept. 2014 TM for Study 6.5 (File 3) Sept. 2014 TM for Study 6.5 (File 4) Sept. 2014 TM for Study 6.5 (File 5) Sept. 2014 TM for Study 6.5 (File 6) Sept. 2014 TM for Study 6.5 (File 7) Sept. 2014 TM for Study 6.5 (File 8) Sept. 2014 TM for Study 6.5 (File 9) Sept. 2014 TM for Study 6.5 (File 10) Sept. 2014 TM for Study 6.5 (File 11) Sept. 2014 TM for Study 6.5 (File 12) Sept. 2014 TM for Study 6.5 (File 13) Sept. 2014 TM for Study 6.5 (File 14) Sept. 2014 TM for Study 6.5 (File 15) Sept. 2014 TM for Study 6.5 (File 16)
Geomorphology Study (Study 6.5) - Susitna River Historical Cross Section Comparison (1980s to Current) Technical Memorandum	Sept. 2014 TM for Study 6.5

Geomorphology Study (Study 6.5) - 2014 Update of Sediment-Transport Relationships and a Revised Sediment Balance for the Middle and Lower Susitna River Segments Technical Memorandum	Sept. 2014 TM for Study 6.5
Glacier and Runoff Changes (Study 7.7) and Fluvial Geomorphology (Study 6.5) Assessment of the Potential for Changes in Sediment Delivery to Watana Reservoir Due to Glacial Surges Technical Memorandum	Nov. 2014 TM for Study 6.5
Geomorphology Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 6.5
Geomorphology Study Initial Study 2014-2015 Study Implementation Report	2014-2015 SIR for Study 6.5 (File 1) 2014-2015 SIR for Study 6.5 (File 2) 2014-2015 SIR for Study 6.5 (File 3)
6.6 Fluvial Geomorphology Modeling Below Watana Dam Study	
Fluvial Geomorphology Modeling Below Watana Dam Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 6.6 (File 1) ISR Part A for Study 6.6 (File 2) ISR Part A for Study 6.6 (File 3) ISR Part B for Study 6.6 ISR Part C for Study 6.6
Fluvial Geomorphology Modeling below Watana Dam Study (Study 6.6) Decision Point on Fluvial Geomorphology Modeling of the Susitna River below PRM 29.9 Technical Memorandum	Sept. 2014 TM for Study 6.6
Fluvial Geomorphology Modeling Below Watana Dam (Study 6.6) Winter Sampling of Main Channel Bed Material Technical Memorandum	Sept. 2014 TM for Study 6.6
Riparian Instream Flow (Study 8.6) and Fluvial Geomorphology (Study 6.6) Dam Effects on Downstream Channel and Floodplain Geomorphology and Riparian Plant Communities and Ecosystems—Literature Review Technical Memorandum	Nov. 2014 TM for Study 6.6
Fluvial Geomorphology Modeling Below Watana Dam Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 6.6

Fluvial Geomorphology Modeling Below Watana Dam Study Initial Study 2014-2015 Study Implementation Report	2014-2015 SIR for Study 6.6 (File 1) 2014-2015 SIR for Study 6.6 (File 2) 2014-2015 SIR for Study 6.6 (File 3) 2014-2015 SIR for Study 6.6 (File 4)
7 HYDROLOGY RESOURCES	
7.5 Groundwater Study	
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Recreation Resources Study 2014-2015 Study Implementation Report	2014 SIR for Study 12.5 (File 1) 2014 SIR for Study 12.5 (File 2) 2014 SIR for Study 12.5 (File 3)
12.6 Aesthetics Resources Study	
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Aesthetics Resources Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 12.6
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12.7 Recreation River Flow Study	
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Recreation River Flow Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 12.7
Recreation River Flow Study 2014 Study Implementation Report	2014 SIR for Study 12.7
13 CULTURAL AND PALEONTOLOGICAL RESOURCES	
13.5 Cultural Resources Study	
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Cultural Resources Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 13.5
13.6 Paleontological Resources Study	
Paleontological Resources Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 13.6 ISR Part B for Study 13.6 ISR Part C for Study 13.6
Paleontological Resources Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 13.6
14 SUBSISTENCE RESOURCES	
14.5 Subsistence Baseline Documentation Study	
Subsistence Baseline Documentation Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 14.5 ISR Part B for Study 14.5 ISR Part C for Study 14.5
Subsistence Resources Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 14.5
Subsistence in the Copper River Basin	July 2015 TM for Study 14.5
Subsistence Resources 2014 Study Implementation Report	2014 SIR for Study 14.5
The Harvest and Use of Wild Resources in Selected Communities of the Copper River Basin and East Glenn Highway, Alaska, 2013- Subsistence Report	Nov. 2015 Subsistence Report
15 SOCIOECONOMIC AND TRANSPORTATION RESOURCES	
15.5 Regional Economic Evaluation Study	
Regional Economic Evaluation Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 15.5 ISR Part B for Study 15.5 ISR Part C for Study 15.5
Regional Economic Evaluation Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 15.5

15.6 Social Conditions and Public Goods and Services Study	
Social Conditions and Public Goods and Services Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 15.6
Social Conditions and Public Goods and Services Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 15.6 ISR Part B for Study 15.6 ISR Part C for Study 15.6
15.7 Transportation Resources Study	
Transportation Resources Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 15.7 ISR Part B for Study 15.7 ISR Part C for Study 15.7
Transportation Resources Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 15.7
Transportation Resources Study 2014-2015 Study Implementation Report	2014 SIR for Study 15.7
15.8 Health Impact Assessment Study	
Health Impact Assessment Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 15.8 ISR Part B for Study 15.8 ISR Part C for Study 15.8
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15.9 Air Quality Study	
Air Quality Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 15.9 ISR Part B for Study 15.9 ISR Part C for Study 15.9
Air Quality Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 15.9

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16 PROJECT SAFETY	
16.5 Probable Maximum Flood (PMF) Study	
Probable Maximum Flood (PMF) Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 16.5 ISR Part B for Study 16.5 ISR Part C for Study 16.5 (File 1) ISR Part C for Study 16.5 (File 2)
Probable Maximum Flood (PMF) Study Initial Study Report Part D: Supplemental Information to June 2014 Initial Study Report	ISR Part D for Study 16.5
16.6 Site-Specific Seismic Hazard Study	
Site-Specific Seismic Hazard Study Initial Study Report Part A (Sections 1-6, 8-9), Part B (Supplemental Information and Errata to Part A), and Part C (Executive Summary and Section 7)	ISR Part A for Study 16.6 ISR Part B for Study 16.6 ISR Part C for Study 16.6
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