

**Susitna-Watana Hydroelectric Project
(FERC No. 14241)**

**Vegetation and Wildlife Habitat Mapping Study in the
Upper and Middle Susitna Basin
Study Plan Section 11.5**

**Part D: Supplemental Information to
June 2014 Initial Study Report**

Prepared for

Alaska Energy Authority



SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

Prepared by

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1. INTRODUCTION

Section 1 (Part A) of the June 2014 ISR for this Vegetation and Wildlife Habitat Mapping Study in the Upper and Middle Susitna Basin (Study Plan 11.5) details the development of this study from the Revised Study Plan (RSP) in 2012, through the end of the 2013 study season. Section 7 of the ISR (Part C), filed in June 2014, sets forth AEA's plan and schedule, at that time, for completing this study and meeting the objectives of the RSP.

As detailed in Section 2.2 of the ISR Part D Overview, various circumstances have required AEA to extend the original timeframe for completing the Commission-approved Study Plan. However, AEA has made meaningful progress with Study 11.5 since the filing of the ISR in June 2014. As detailed below, AEA's recent activities for Study 11.5 have consisted of the following:

- On October 21, 2014, AEA held an ISR meeting to discuss the results and status of the Vegetation and Wildlife Habitat Mapping Study.
- In 2014 and 2015, digital mapping of the landscape variables that will be used to derive wildlife habitats in the study area was continued; this work is ongoing (see Sections 3 and 8 below).
- In August 2015, the study team conducted the final field surveys for this study and collected ground-reference data to support the mapping of vegetation and wildlife habitats in portions of the study area that had not yet been sampled.

The primary purpose of this Part D Supplemental Information to the ISR is to report on the implementation of the Study Plan from the filing of the ISR in June 2014, through the filing of this ISR Part D. In light of this additional implementation, this Part D also identifies AEA's plans for completing Study 11.5 in a manner that meets the objectives of the Commission-approved Study Plan.

2. BACKGROUND

2.1. Purpose of Study

As established in the Study Plan (RSP Section 11.5.1), the overall goals of this study are to classify and prepare maps of the existing vegetation and wildlife habitats in the Upper and Middle Susitna River Basin (upstream of and including the proposed Project dam and camp sites and along the alternative Project transmission line and access road corridors). This multi-year study was initiated in 2012; work has continued in 2013–2015 and is on-going. The mapping information from this study will be used to assess the potential impacts to both vegetation and wildlife habitat resources from development of the proposed Project, and to prepare any necessary protection, mitigation, and enhancement (PM&E) measures to minimize impacts to those resources. When completed, the wildlife habitat mapping will be used to evaluate habitat use by birds, mammals, and amphibians (in Study 10.19, Evaluation of Wildlife Habitat Use), and to estimate quantitatively the impacts of habitat loss and alteration for birds, mammals, and

amphibians. The wildlife habitat mapping prepared in this study will be one of the primary pieces of information used to evaluate impacts to wildlife species from the proposed Project.

This study is being conducted in close coordination with the Wetland Mapping Study in the Upper and Middle Susitna Basin (Study 11.7). In the field, data are being collected for both studies at each sampling plot, and the mapping efforts for both studies are being performed concurrently (i.e., each map polygon is being coded with the attributes needed to map vegetation, wildlife habitats, and wetlands).

The specific objectives of the Vegetation and Wildlife Habitat Mapping Study, as described in the RSP (Section 11.5.1), are to classify, delineate, and map vegetation and wildlife habitat types in the Upper and Middle Susitna River Basin based on current aerial imagery for the study area.

2.2. Study Components

This study consists of the following components:

- Field ground-reference surveys to collect data on the primary Integrated Terrain Unit (ITU) variables used to derive wildlife habitats (vegetation, physiography, surface forms, disturbances), and to collect complementary data on hydrology and soils.
- Digital mapping of physiography, surface form, vegetation type, and disturbance classes in *ArcGIS* based on high-resolution aerial imagery for the study area.
- Derivation of wildlife habitats from the ITU field and mapping data.

3. STATUS, HIGHLIGHTED RESULTS, AND ACHIEVEMENTS

This multi-year study was initiated in 2012 with preliminary field survey and vegetation and wildlife habitat mapping work; results of that work are reported in the 2012 technical memorandum for this study, *Vegetation and Wildlife Habitat Mapping Study in the Upper and Middle Susitna Basin*. The following tasks were completed in 2013 and reported in Part A of the ISR for Study 11.5:

- Two field surveys were conducted to collect ground-reference data to support the mapping of vegetation and wildlife habitats in the study area. Field surveys were conducted in early July and late July/early August 2013. The surveys were conducted concurrently with the surveys for Study 11.7.
- The digital mapping of ITU variables (vegetation type, physiography, surface form, and disturbance classes) in the study area was continued in 2013.
- A preliminary set of wildlife habitat types expected to be mapped throughout the study area was prepared for review by licensing participants.
- Maps of the preliminary wildlife habitat types occurring in representative physiographic types (lowlands, uplands, riverine, subalpine, and alpine) in the study area were prepared for review by licensing participants.

The study team has completed the following activities for Study 11.5 since the June 2014 filing of the ISR:

- On October 21, 2014, AEA held an ISR meeting to discuss the results and status of the Vegetation and Wildlife Habitat Mapping Study.
- In August 2015, the final field surveys for this study were conducted to collect ground-reference data for vegetation and wildlife habitats in portions of the study area that were not sampled in 2012 or 2013. Surveys were conducted primarily in the Denali East Corridor Option and on Cook Inlet Region Working Group (CIRWG) lands. The surveys were conducted concurrently with the surveys for Study 11.7.
- The digital mapping of ITU variables (vegetation type, physiography, surface form, and disturbance classes) in the study area was continued in 2014 and 2015. This work is ongoing and nearing completion. As of the end of October 2015, the study team had completed the preliminary digitizing of map polygons for 91 percent of the study area. Several tasks remain to be completed, however, before a final map product can be prepared (see Section 8 below).

4. SUMMARY OF STUDY 11.5 DOCUMENTS

Since filing of the RSP in 2012, AEA and FERC have prepared several documents pertaining to this study. To aid review by FERC staff and licensing participants, each of these documents is listed below. Each of these documents is accessible on AEA's Project licensing website (<http://www.susitna-watanahydro.org/type/documents/>) by clicking on the entry in the "Link" column in the table. In addition, these documents are available on FERC's eLibrary system (<http://www.ferc.gov/docs-filing/elibrary.asp>), in Docket No. P-14241.

Title	Date	Description	Link
11.5. Vegetation and Wildlife Habitat Mapping Study in the Upper and Middle Susitna Basin (Revised Study Plan)	12/14/2012	This document presents the plan for this study, including goals, objectives, the study area, and proposed study methods for the vegetation and wildlife habitat mapping study.	RSP for Study 11.5
FERC Study Plan Determination for Study 11.5	2/1/2013	This document presents FERC approval of Study 11.5, which approved AEA's Revised Study Plan with no recommended changes.	FERC SPD for Study 11.5
Vegetation and Wildlife Habitat Mapping Study in the Upper and Middle Susitna Basin (2012 Technical Memorandum)	3/7/2013	This technical memorandum describes 2012 field survey and mapping results.	Mar. 2013 TM for Study 11.5

Title	Date	Description	Link
Draft Initial Study Report for Study 11.5	2/3/2014	This draft of the ISR summarized the study methods and variances during the 2013 study season, and presented preliminary data collected for Study 11.5. This draft ISR was later republished as Part A of the final ISR.	Draft ISR for Study 11.5
Initial Study Report for Study 11.5	6/3/2014	This document is the Initial Study Report (Parts A, B and C) for Study 11.5. Part A republishes the Draft ISR. Part B identifies supplemental information and errata in Part A. Part C presents study modifications and plans for completing the study.	ISR Part A for Study 11.5 ISR Part B for Study 11.5 ISR Part C for Study 11.5
Initial Study Report Meetings, October 21, 2014 (Parts A and B)	11/15/2014	Transcripts and AEA's agenda and PowerPoint presentations for the ISR meeting concerning the Project botanical studies filed by AEA.	Transcripts from ISR Meeting Materials from ISR Meeting

5. NEW STUDY DOCUMENTATION SUPPLEMENTING THE ISR

Because the work and data analysis for this study are ongoing as of the filing of this ISR Part D, AEA has not prepared an implementation report for this Study 11.5 at this time. Thus, no additional reports or documents are available to supplement the ISR for Study 11.5.

6. VARIANCES

6.1. 2013 Study Season

As noted in Section 4 of the ISR (Part A) for this study, AEA encountered no variances when implementing this study in 2013.

6.2. 2014 - 2015 Study Season

The following variances occurred following the filing of the June 2014 ISR:

- As explained in the ISR Part D Overview Section 1.3, in 2014 AEA included the Denali East Corridor Option as an additional, alternative north-south corridor alignment for transmission and access from the dam site to the Denali Highway. For this study, in 2014 this corridor addition included a 2-mile buffer (see below) surrounding the center lines of the new corridor.
- For this study, the RSP (Section 11.5.3) describes a study area buffer of 4 miles surrounding the proposed Watana Reservoir, the Project dam site and associated infrastructure areas, and the alternative Project transmission line and access road corridors). In 2014, this study area buffer was reduced to 2 miles primarily because the

study team determined that the original 4-mile buffer was excessively large and was not needed to achieve the study objectives, nor was a 4-mile buffer study area needed to quantify and assess local-scale Project effects on vegetation, wetlands, and wildlife habitats. The ramifications of making this change in the study area buffer size were discussed with the Project wildlife study leads and the consensus was that a 2-mile buffer was sufficient to assess Project effects on wildlife, for both direct impacts (habitat loss) and indirect impacts (habitat alteration) to the habitats that would be affected by Project development. No negative ramifications on the Project wildlife studies were identified as a result of this study area change. Hence, the study objectives for the Vegetation and Wildlife Habitat Mapping Study and the interrelated wildlife studies can be fully met with the implementation of this variance (see additional details in the ISR [Study 11.5, Part C, Section 7.1.2]).

- Also in 2014, as explained in Section 1.3 of the ISR Part D Overview, after the ISR was filed with FERC in June 2014, AEA finalized its plans to eliminate the Chulitna Corridor from further study. Accordingly, in 2014 the Chulitna Corridor was removed from the study area for Study 11.5.

7. STUDY PLAN MODIFICATIONS

7.1. Modifications Identified in ISR

Section 7 of the ISR (Part C) details modifications for this study following the 2013 study season. These modifications are generally summarized as follows:

- As explained in the ISR Overview Section 1.3, in 2014 AEA included the Denali East Corridor Option as an additional, alternative north-south corridor alignment for transmission and access from the dam site to the Denali Highway. For this study, in 2014 this corridor addition included a 2-mile buffer (see below) surrounding the center lines of the new corridor. This change was implemented as a variance in 2014 (see Section 6.2 above).
- For this study, the RSP (Section 11.5.3) describes a study area buffer of 4 miles surrounding the proposed Watana Reservoir, the Project dam site and associated infrastructure areas, and the alternative Project transmission line and access road corridors). In 2014, this study area buffer was reduced to 2 miles primarily because the study team determined that the original 4-mile buffer was excessively large and was not needed to achieve the study objectives, nor was a 4-mile buffer study area needed to quantify and assess local-scale Project effects on vegetation, wetlands, and wildlife habitats. The ramifications of making this change in the study area buffer size were discussed with the Project wildlife study leads and the consensus was that a 2-mile buffer was sufficient to assess Project effects on wildlife, for both direct impacts (habitat loss) and indirect impacts (habitat alteration) to the habitats that would be affected by Project development. No negative ramifications on the Project wildlife studies were identified as a result of this study area change. Hence, the study objectives for the Vegetation and Wildlife Habitat Mapping Study and the interrelated wildlife studies can be fully met

with the implementation of this variance (see additional details in the ISR [Study 11.5, Part C, Section 7.1.2]). This change was implemented as a variance in 2014 (see Section 6.2 above).

7.2. Modifications Identified since the June 2014 ISR

The following modification, added after the June 2014 ISR and prior to the 2014 field season, was implemented during the 2014 field season:

- As explained in Section 1.3 of the ISR Part D Overview, AEA removed the Chulitna Corridor from the study area.

AEA plans no additional modifications to this study. The current Study Plan, as modified in Part C, Section 7.1.2 of the June 2014 ISR for this study and in this ISR Part D, is sufficient to complete the study in a manner that meets Study Plan objectives.

8. STEPS TO COMPLETE THE STUDY

- In light of the variances and modifications described above, the steps necessary for AEA to complete this study are summarized below. These steps have been updated from those listed in Part C, Section 7.1 of the ISR for this study.
- Completion of the digitizing of ITU map polygons throughout the study area (RSP Section 11.5.4.2);
- Senior review and revision, as needed, of the map polygon boundaries and/or ITU attributes to prepare a final ITU map layer (RSP 11.5.4.2);
- Completion of a spatial join in GIS to match and merge the polygon boundaries mapped in this study with those in the adjacent study area for the Riparian Vegetation Study Downstream of the Proposed Susitna-Watana Dam (Study 11.6) so as to facilitate the preparation of a Project-wide map of wildlife habitats (RSP Section 11.5.7); and
- Development of a final set of wildlife habitats (RSP Section 11.5.4.2) in coordination with both the wildlife researchers working on the Project (Studies 10.5 through 10.18) and the study team for the Riparian Vegetation Study (Study 11.6).