

**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**

**Initial Study Report
Part C: Executive Summary and Section 7**

Prepared for

Alaska Energy Authority



SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

Prepared by

ABR, Inc.—Environmental Research & Services

June 2014

TABLE OF CONTENTS

Executive Summary	ii
7. Completing the Study	1
7.1. Proposed Methodologies and Modifications	1
7.1.1. Decision Points from Study Plan	1
7.1.2. Modifications to Study Plan.....	1
7.2. Schedule	2
7.3. Conclusion	2
7.4. Figures.....	3

LIST OF FIGURES

Figure 7.1-1. Vegetation and Wildlife Habitat Mapping Study Area Showing the Denali East Option Corridor Added in 2014.....	4
---	---

EXECUTIVE SUMMARY

Vegetation and Wildlife Habitat Mapping Study 11.5	
Purpose	The primary objectives are to classify, delineate, and map existing vegetation and wildlife habitats in the Upper and Middle Susitna River Basin in those areas that would be directly altered or disturbed by Project construction and operations. The data will be used to facilitate the assessment of impacts to bird and mammal habitats associated with development of the proposed Project.
Status	The study was initiated with preliminary field and mapping work in 2012 and continued in 2013. This is an on-going study that will be completed in 2015.
Study Components	(1) 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; (2) digital mapping of physiography, surface form, vegetation type, and disturbance classes in <i>ArcGIS</i> based on high-resolution aerial imagery for the study area; and (3) derivation of wildlife habitats from the ITU field and mapping data.
2013 Variances	There were no variances from the field survey or mapping methods as described in the study.
Steps to Complete the Study	<p>The plans for completing this study include implementing the Study Components listed above in 2014 and 2015 (ITU mapping will occur in 2014 and 2015, and the final field surveys and final derivation of wildlife habitats will be conducted in 2015). AEA will implement two modifications to the FERC-approved Study Plan:</p> <p>(1) The study area has been changed from that described in the RSP (Section 11.5.3). As described the ISR Overview, AEA has added the Denali East Option road and transmission line alternative corridor to the study area. The small amount of additional high-resolution aerial imagery needed to cover the expansion of the study area applicable to this study for the Denali East Option corridor will be acquired in 2014.</p> <p>(2) The 4-mi study area buffer surrounding the proposed Watana Reservoir, the Project dam site and associated infrastructure areas, and the alternative Susitna-Watana Transmission Line/Road corridors (RSP Section 11.5.3) has been reduced to a 2-mi buffer. The study team along with the wildlife researchers on the Project have determined that (a) the local-scale Project effects on vegetation, wetlands, and wildlife habitats can be adequately quantified and assessed using the new 2-mi buffer; and (b) the study objectives for this study and the interrelated wildlife studies can be fully met with the</p>

	implementation of this study area modification.
Highlighted Results and Achievements	<p>To date, a total of 1,271 field plots have been sampled in the study area. High-resolution imagery suitable for fine-scale mapping of vegetation and wildlife habitats was acquired during the summer of 2013 for the 55% of the study area for which current high-resolution imagery was lacking. The classification and mapping of ITU variables using the field data collected in 2012 and 2013 and aerial imagery for the study area is on-going. Based on the mapping completed as of the end of October 2013, a preliminary set of 46 wildlife habitat types was developed for this report using two primary ITU variables (physiography and vegetation type). Large portions of the study area are characterized by mountainous terrain in which six alpine habitats and 11 subalpine habitats have been defined. At lower elevations, 10 more well-drained upland habitats and 10 wetter lowland habitats were defined. Six riverine and three lacustrine habitats were defined. These preliminary habitat types will serve as a template for the final set of habitats to be developed for the USR. The study is on track to meet its objectives over the period of study.</p>

7. COMPLETING THE STUDY

7.1. Proposed Methodologies and Modifications

To complete this study, the study team will implement the methods in the Study Plan except as described in Section 7.1.2 below. These activities include:

- Additional field data collection in portions of the study area not yet sampled and the collection of additional field data for vegetation types and wildlife habitats not adequately sampled during 2012 and 2013 (RSP Section 11.5.4.3);
- Review, revision, and completion of the ITU mapping throughout the study area (RSP Section 11.5.4.2); 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 Downstream of the Proposed Susitna Watana Dam (Study 11.6).

7.1.1. Decision Points from Study Plan

There were no decision points in the FERC-approved Study Plan to be evaluated for this study following the completion of 2013 work.

7.1.2. Modifications to Study Plan

AEA will implement two modifications to the Study Plan in 2014 and 2015:

1. The study area has been changed from that described in the RSP (Section 11.5.3). As described in the ISR Overview and depicted in Figure 1, AEA has added the Denali East Option road and transmission line corridor to the study area. For this study, the corridor addition to the study area includes a 2-mi buffer surrounding the center lines of the road and transmission line alignments of the new Denali East Option (Figure 7.1-1), which matches the 2-mi buffers used on the other potential road and transmission line corridors included in the study area. The study area buffer size surrounding the corridors was described as 4 mi in the Study Plan, but has been reduced to 2 mi (see the second modification below).
2. The RSP (Section 11.5.3) indicates that a study area buffer of 4-mi surrounding those areas that could be directly affected by Project construction and operations (the proposed Watana Reservoir, the Project dam site and associated infrastructure areas, and the alternative Susitna-Watana Transmission Line/Road corridors) would be used. Going forward, AEA will reduce this study area buffer to 2-mi (Figure 7.1-1) for the following reasons. First, the reduction to a 2-mi buffer will match the study areas being used in the Wetland Mapping Study in the Upper and Middle Susitna Basin (ISR Study 11.7) and the study of Landbird and Shorebird Migration, Breeding, and Habitat Use (ISR Study 10.16). Second, a 2-mi buffer is still quite large (e.g., it

represents 2 mi on either side of the proposed Project infrastructure), and any local-scale Project effects on vegetation, wetlands, and wildlife habitats can be adequately quantified and assessed within that 2-mi buffer (see below). The study team has determined that the original 4-mi buffer was excessively large and is not needed to achieve the study objectives. Third, the evaluation of broader, regional-scale effects on vegetation, wetlands, and wildlife habitats (to be conducted in the License Application) can be conducted by using existing, regional-scale mapping for Southcentral and Interior Alaska and cross-walking those coarse-scale land cover types to the finer-scale, mapped habitat types in the 2-mi buffer study area used in this study. 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-mi buffer was sufficient to adequately assess Project effects on wildlife, for both direct (habitat loss) and indirect (habitat alteration) impacts on 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 modification. 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 study area modification.

7.2. Schedule

In general, the schedule for completing the FERC-approved Study Plan is dependent upon several factors, including Project funding levels authorized by the Alaska State Legislature, availability of required data inputs from one individual study to another, unexpected weather delays, the short duration of the summer field season in Alaska, and other events outside the reasonable control of AEA. For these reasons, the Study Plan implementation schedule is subject to change, although at this time AEA expects to complete the FERC-approved Study Plan through the filing of the Updated Study Report (USR) by February 1, 2016, in accordance with the ILP schedule issued by FERC on January 28, 2014.

With regard to this specific study, AEA is not proposing any field work for 2014. Rather, AEA plans to complete the final year of field data collection in the 2015 study season. The ITU mapping, however, will be continued in 2014 and completed in 2015. Following completion of the ITU mapping, the final set of wildlife habitats will be derived. The results of each component of this study will be reported in the USR.

A small section of the 2-mi buffer study area in the new Denali East Option corridor is not covered by current, high-resolution imagery needed for the vegetation and habitat mapping work. This imagery gap will be filled in 2014 either with existing, archived satellite imagery or a new acquisition of digital aerial photography. The study team is actively working with staff at the Geographic Information Network of Alaska (GINA) to find the best solution to fill the imagery gap.

7.3. Conclusion

With the study area modification described above in Section 7.1.2, the ITU mapping, field survey work, and wildlife habitat derivation work planned for 2014 and 2015 will meet the study

objectives. Substantial progress was made in 2013 in characterizing and mapping ITU variables, and a preliminary set of wildlife habitats was developed for the study area. The ITU mapping work will be expanded to encompass those portions of the study area that have not yet been mapped in 2014 and 2015, and a final set of wildlife habitats will be derived in 2015. In 2013, current, high-resolution imagery was obtained for those portions of the study area in which it was absent, and the field data collected in 2013, combined with the additional planned field sampling in 2015, will allow for the classification and mapping of vegetation and wildlife habitats throughout the full study area.

Several modifications have been made to the Study Plans for the wildlife studies (Studies 10.5 through 10.18) related to this study. The modifications generally involved alterations to or expansions of the field survey methods, the incorporation of alternative methods, and/or expansions of the areas to be surveyed. The simple information needed from those studies for the development of wildlife habitat types (wildlife observation locations) will be unaffected by the various modifications to be implemented for those studies. Lastly, modifications to the field methods for the Riparian Vegetation Study Downstream of the Proposed Susitna-Watana Dam (Study 11.6) will not affect the coordination between that study and this one when deriving wildlife habitat types for Study 11.6.

7.4. Figures

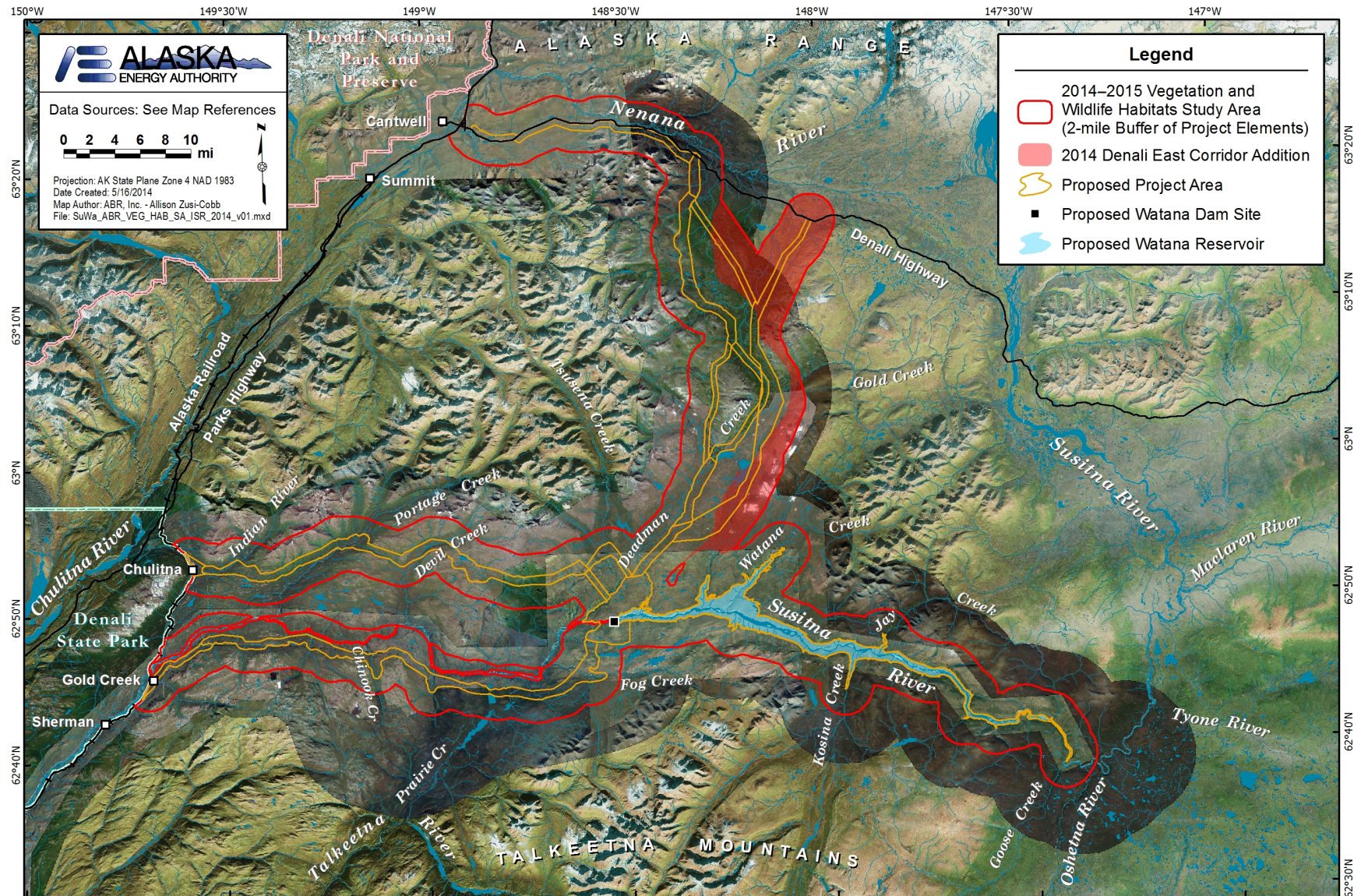


Figure 7.1-1. Vegetation and Wildlife Habitat Mapping Study Area Showing the Denali East Option Corridor Added in 2014.