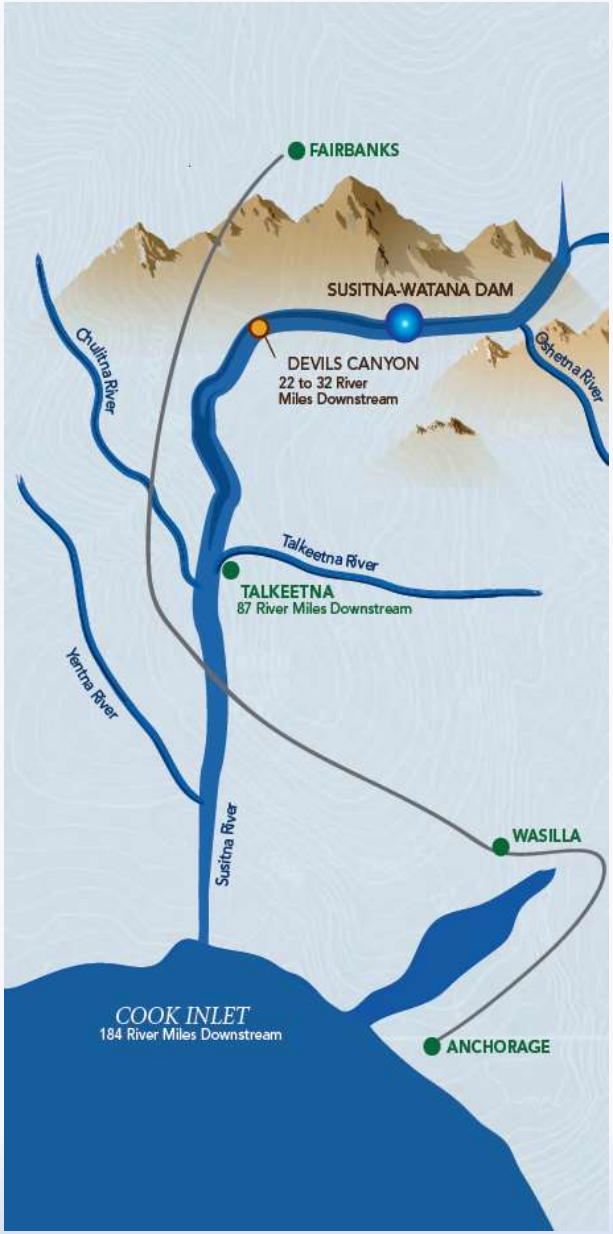


Initial Study Report Update Meeting

Study 10.16 Landbird and Shorebird Migration, Breeding, and Habitat Use

March 29, 2016

Prepared by

ABR, Inc.—Environmental Research & Services

Study 10.16 Objectives

- Collect current data on the **distribution, abundance, and habitat use of breeding landbirds and shorebirds**
- Study area is the proposed dam site/infrastructure area, reservoir inundation zone, and along transmission line/road corridor alternatives
- Identify **habitat associations** for landbirds and shorebirds
- Evaluate **changes in distribution, abundance, and habitat use** of landbirds and shorebirds by comparison with historical data collected in the 1980s
- Characterize the migration of landbirds and shorebirds through the proposed dam and camp facilities area (*conducted as part of ISR Study 10.15, Waterbird Migration, Breeding, and Habitat Use*)
- Data will be used to assess impacts on landbirds and shorebirds from construction and operation of the proposed Project

Study 10.16 Components

- Point-count surveys for breeding landbirds and shorebirds in all available habitats (ISR Part A, Section 4.1, p. 3)
- Transect surveys for breeding landbirds and shorebirds in riverine and lacustrine habitats (ISR Part A, Section 4.2, p. 11)
- Surveys of swallow nesting colonies in reservoir inundation zone (ISR Part A, Section 4.3, p. 13)
- Migration survey (ISR Part A, Section 4.4, p. 14; *conducted as part of ISR Study 10.15, Waterbird Migration, Breeding, and Habitat Use*)
- Comparison of results with historical data (ISR Part A, Section 4.5, p. 15; *to be conducted in the Study Completion Report*)
- Mercury assessment support (ISR Part A, Section 4.6, p. 15; *now part of ISR Study 5.7, Mercury Assessment and Potential for Bioaccumulation*)

Study 10.16 Status Update: 2014 ISR and Subsequent Work

- **ISR (Parts A, B, and C):** details the field survey results from May and June 2013.
- **ISR Meeting, October 2014:** study status described and survey results from 2013 briefly summarized.
- **2014 Study Implementation Report:** details the field survey results from May and June 2014; point-count, riverine- and lacustrine-focused surveys were conducted throughout the revised study area; all areas not surveyed in 2013 and the new Denali Corridor East Option were sampled; surveys were not conducted in the Chulitna Corridor, which had been dropped from further consideration.
- **ISR (Part D):** study status described; also provides list of documents filed and tasks completed for the study as of early November 2015.

Study 10.16 Variances in 2013

As explained in the ISR for Study 10.16 (Part A), five variances from the field survey methods described in RSP Sections 10.16.3 and 10.16.4 were implemented during the first field season in 2013:

1. Point-count plot locations were selected using an alternative, stratified random/systematic method (ISR Part A, Section 4.1.1.1), which mirrors the method used in the Alaska Landbird Monitoring Survey.
2. The study area in 2013 was 12% smaller than in the RSP because the vegetation strata used in the plot-allocation method did not cover the entire study area (ISR Part A, Section 4.1.1.1); unsampled areas subsequently were surveyed in 2014.
3. No surveys were authorized on CIRWG lands in 2013, which further restricted the 2013 study area by 27% (ISR Part A, Section 4.1.1.1); unsampled CIRWG lands subsequently were surveyed in 2014.
4. The helicopter used for colonially nesting swallow surveys resulted in both an increase in spatial coverage and survey efficiency over the boat originally proposed in the Study Plan (ISR Part A, Section 4.3.1).
5. The study area for colonially nesting swallows included a 2-mile buffer surrounding the proposed reservoir, dam, and camp (ISR Part A, Section 4.3.1).

Study 10.16 Variances in 2014

As explained in the 2014 Study Implementation Report for Study 10.16, another six variances from the field survey methods described in RSP Sections 10.16.3 and 10.16.4 were implemented during the second field season in 2014:

1. With the addition of the Denali East Corridor Option to the study area, point-count survey plots and lacustrine transects were allocated and sampled in that new north–south-oriented transmission line/access road corridor alternative (2014 Study Implementation Report, Section 4.1.1.1).
2. No sampling was conducted in the east–west-oriented Chulitna Corridor because that corridor was eliminated from Project plans (2014 Study Implementation Report, Section 4.1.1.1).
3. A half-mile buffer surrounding all known private land parcels and Alaska Railroad Corporation land was used to avoid field sampling on those lands (2014 Study Implementation Report, Section 4.1.1.1).
4. The point-count survey component of the riverine-focused surveys was eliminated because the 2013 data in riverine habitats indicated that river noise frequently inhibited detection of breeding songbirds in vegetated riparian habitats (2014 Study Implementation Report, Section 4.2.1).

Study 10.16 Variances in 2014 continued

As explained in the 2014 Study Implementation Report for Study 10.16, another six variances from the field survey methods described in RSP Sections 10.16.3 and 10.16.4 were implemented during the second field season in 2014:

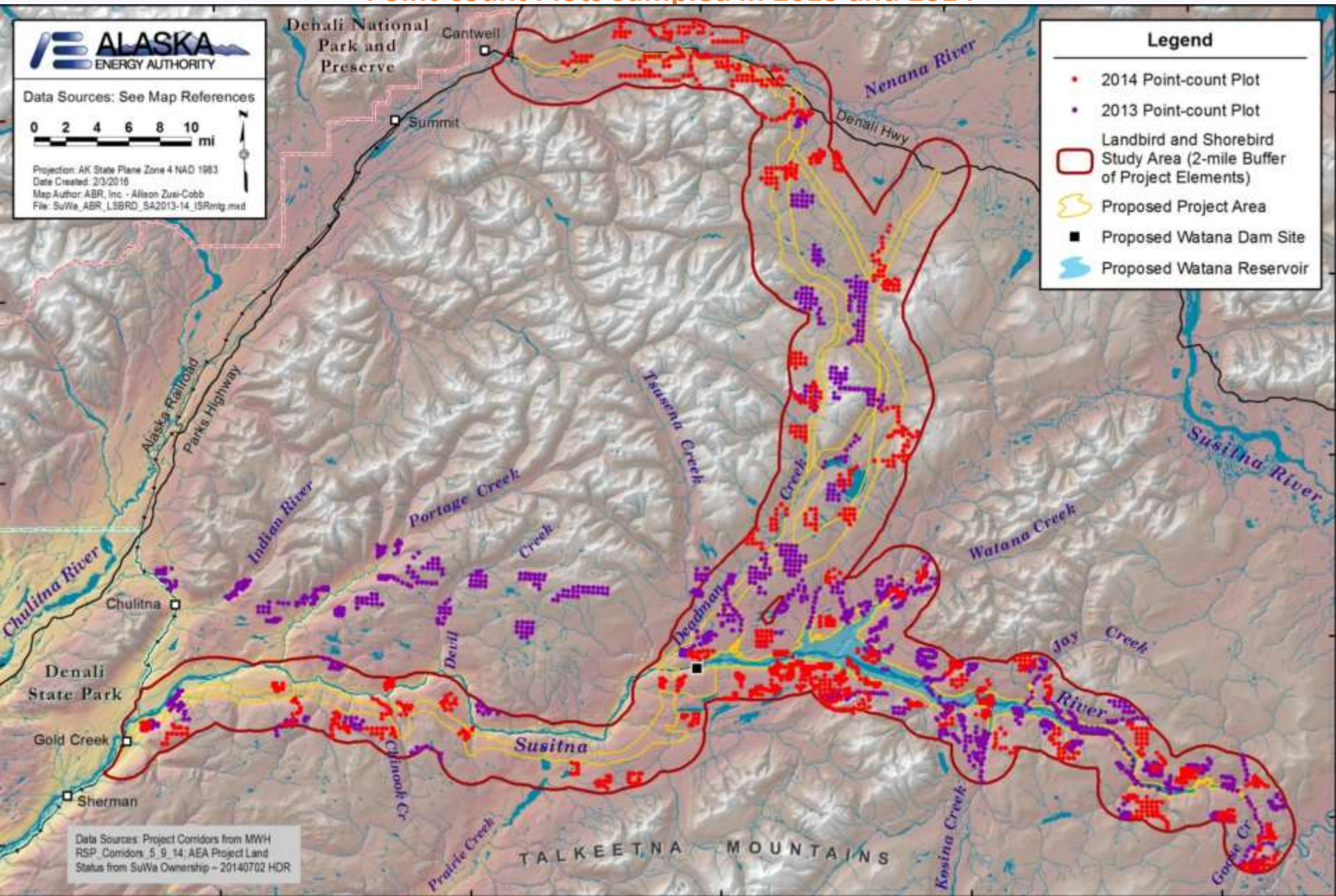
5. The metric used in 2013 to represent bird abundance for the riverine-focused surveys (birds per unit time) was changed to linear densities (birds per km of stream length) (2014 Study Implementation Report, Section 4.2.1).
6. To augment the uncorrected counts of birds recorded during the riverine-focused surveys, in 2014 line-transect distance-sampling techniques were added to the riverine-focused survey methods, which will facilitate analysis with distance-sampling methods to correct for detection probability and may allow for the estimation of a corrected number of birds that could be affected by the inundation of riverine habitats from the proposed Project. Line-transect distance-sampling methods were not possible in the vegetated riparian habitats surveyed adjacent to the sampled streams because of restrictions in visibility, so the numbers of birds recorded in those habitats will remain uncorrected for detection probability (2014 Study Implementation Report, Section 4.2.1).

Study 10.16 Summary of Results
(ISR Part A, Section 5 and SIR Section 5)

- Combining the data from 2013 and 2014, a total of 2,571 point-counts were conducted. This is a very large sample size for point-count surveys and represents one of the most intensive individual point-count survey efforts conducted in Alaska.
- Across both study years, a total of 28 riverine-focused and 148 lacustrine-focused transect surveys were conducted. All of the safely accessible segments of the larger streams and rivers, including the shorelines of many of the islands in the proposed inundation zone of the Susitna River, were sampled.
- In 2013, during helicopter and follow-up ground-based surveys, 25 swallow nesting colonies (both active and inactive) were located in the proposed inundation zone of the Susitna River and a 2-mile buffer.

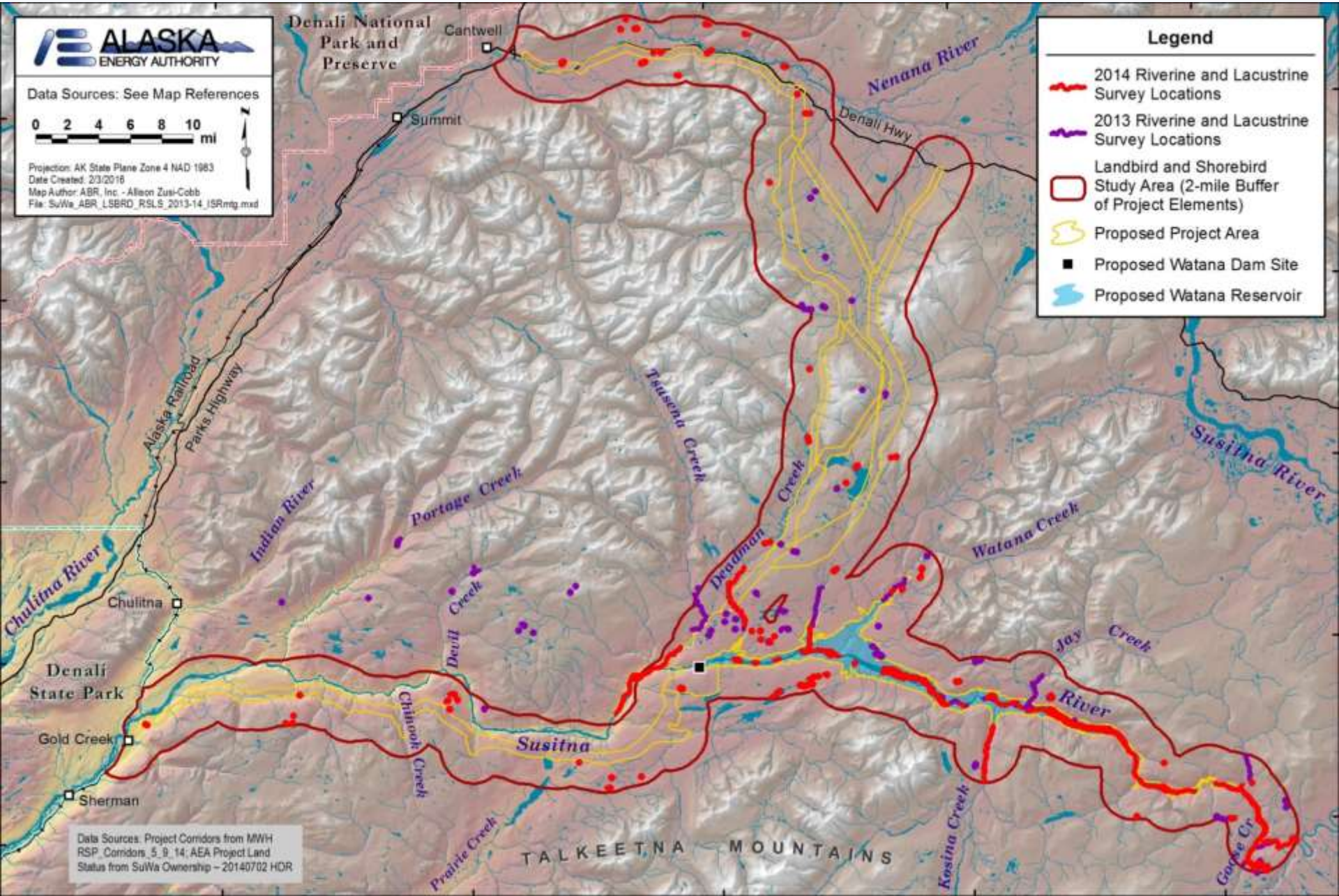
Study 10.16 Summary of Results (ISR Part A, Section 5 and SIR Section 5)

Point-count Plots Sampled in 2013 and 2014



Study 10.16 Summary of Results (ISR Part A, Section 5 and SIR Section 5)

Riverine- and Lacustrine-focused Transects Sampled in 2013 and 2014



Study 10.16 Summary of Results

(ISR Part A, Section 5 and SIR Section 5)

Landbirds, point-count survey data from May and June 2013 and 2014 combined:

Across both study years, 60 landbird species were recorded. A relatively small set of species were commonly recorded and a large number were infrequently observed. The 10 most commonly observed species (which combined accounted for >68% of landbird records in both years) varied slightly by year, but included Fox Sparrow, White-crowned Sparrow, Common Redpoll, Yellow-rumped Warbler, Varied Thrush, Savannah Sparrow, Ruby-crowned Kinglet, American Tree Sparrow, Dark-eyed Junco, Wilson's Warbler, and Gray-cheeked Thrush.

Corrected density calculations, 2013 data only:

Sufficient numbers of observations from 1,364 point-counts were available to calculate preliminary density estimates for 38 of the 53 (72%) landbird species recorded in 2013.

Study 10.16 Summary of Results

(ISR Part A, Section 5 and SIR Section 5)

Shorebirds, point-count survey data from May and June 2013 and 2014 data combined:

Across both study years, 14 shorebird species were recorded. By far the most commonly observed species (accounting for 60–61% of the shorebird records each year) was Wilson's Snipe. Other regularly observed shorebird species included American Golden-Plover, Lesser Yellowlegs, Least Sandpiper, Spotted Sandpiper, Red-necked Phalarope, Whimbrel, Semipalmated Plover, and Solitary Sandpiper.

Corrected density calculations, 2013 data only:

In the 2013 data set, insufficient numbers of observations were available for the naturally uncommon shorebirds to calculate corrected densities for any shorebird species. Distance analyses may be possible with the combined data from both study years.

Study 10.16 Summary of Results

(ISR Part A, Section 5 and SIR Section 5)

Lacustrine-focused surveys, 2013 and 2014 data combined:

- *Landbirds*: Rusty Blackbird, Savannah Sparrow, American Robin, Bohemian Waxwing, Wilson's Warbler, Fox Sparrow, Yellow-rumped Warbler, Hermit Thrush, and Bank Swallow were frequently recorded foraging along lake and pond shorelines, over lacustrine waterbodies, or in adjacent habitats in each year.
- *Shorebirds*: Red-necked Phalaropes accounted for 25 or 39% of the shorebird observations, depending on the year. Wilson's Snipe, Lesser Yellowlegs, Pectoral Sandpiper (migrant only), Least Sandpiper, and Solitary Sandpiper were other shorebird species commonly recorded using lacustrine habitats in each year.

Study 10.16 Summary of Results

(ISR Part A, Section 5 and SIR Section 5)

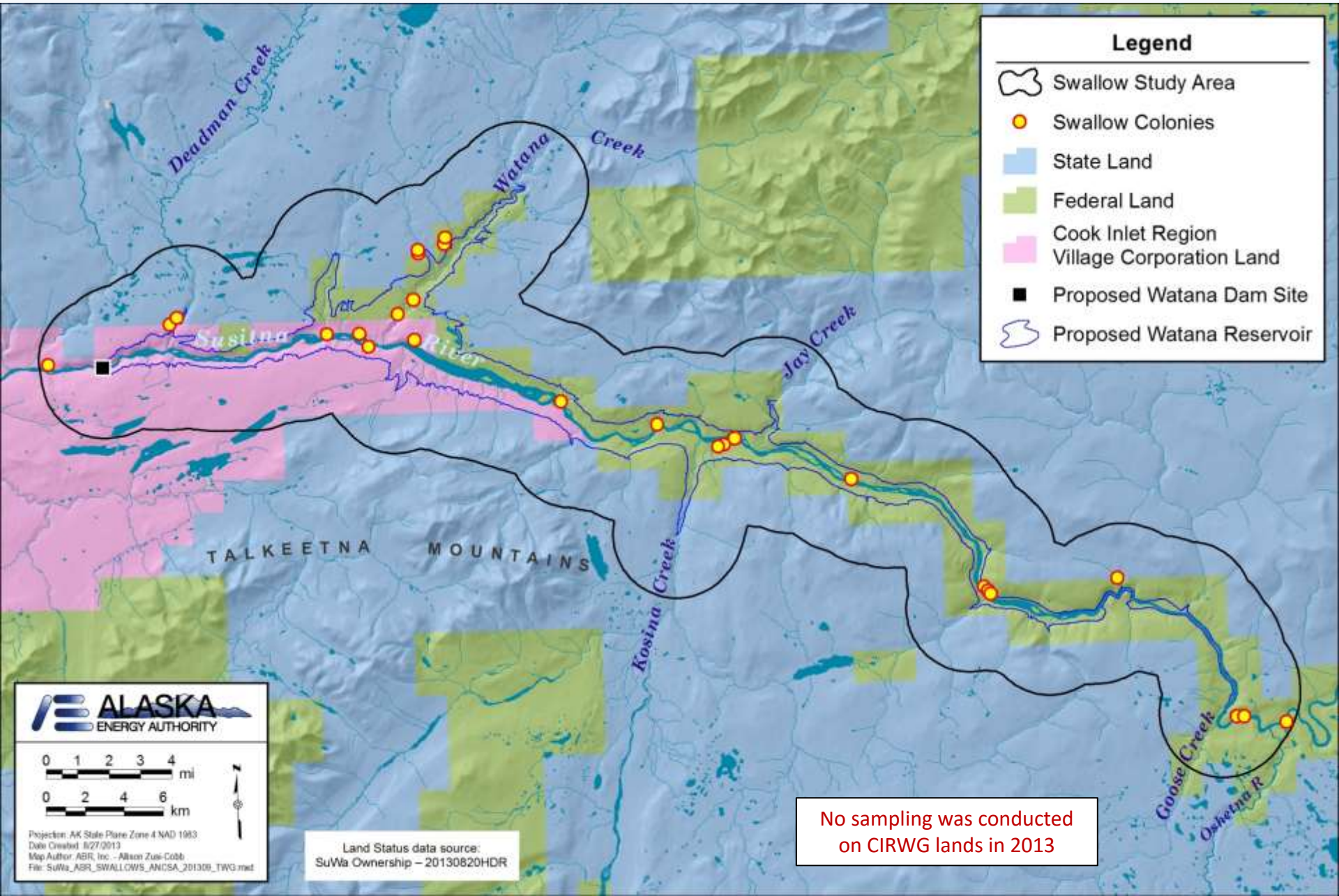
Riverine-focused surveys, 2013 and 2014 data combined:

- *Landbirds*: Northern Waterthrush, Blackpoll Warbler, Fox Sparrow, Wilson's Warbler, Yellow-rumped Warbler, Swainson's Thrush, Ruby-crowned Kinglet, Varied Thrush, and White-crowned Sparrow were frequently recorded in scrub and forested riparian habitats along the Susitna River and tributary streams surveyed in both years.

- *Shorebirds*: Spotted Sandpiper was by far the most common species recorded in shoreline habitats along the rivers and streams surveyed, accounting for 97–98% of shorebird observations in each year. Other shorebird species found in riverine habitats included Least Sandpiper, Lesser Yellowlegs, Solitary Sandpiper, and Wilson's Snipe.

Study 10.16 Summary of Results – 2013 Swallow Colonies

(ISR Part A, Section 5)



Study 10.16: Summary of Results
(ISR Part A, Section 5)

Swallow colony survey results, July 2013:

- 25 swallow colonies were located in the area of the proposed Watana Reservoir plus the 2-mile study area buffer.
- Nearly all colonies were Bank Swallows, but two colonies were of mixed species (Bank Swallows and Violet-green Swallows).
- Colonies ranged in size from 1 to 354 burrows (average = 37 burrows).

AEA's Proposed Modifications to Study 10.16

- For the lacustrine-focused surveys, the original bird abundance metric (birds per unit time) will be replaced with the total number of birds recorded on lacustrine water bodies and in adjacent habitats; this change will be implemented during preparation of the SCR. **(ISR Part C, Section 7.1.2)**
- Comparisons of current (2013 and 2014 data combined) and historical (1980s APA Project) data on the occurrence and abundance of breeding landbirds and shorebirds will be made and the results presented in the SCR. **(ISR Part C, Section 7.1.2)**
- The possible collection of feathers from Belted Kingfishers for mercury analysis in support of Study 5.7 (Mercury Assessment and Potential for Bioaccumulation) has been consolidated under that study. **(ISR Part C, Section 7.1.2)**

AEA's Proposed Modifications to Study 10.16
(SIR Section 7.2)

For the following reasons AEA has determined that the current data set (1–2 years of field data depending on the survey) is sufficient to meet the study objectives and that an additional year of sampling is not needed:

- All portions of the study area have now been surveyed and the volume of point-count survey data collected in the two study years was substantially above (50–70 percent greater than) the annual sampling goal set forth in the RSP. Because of this, sufficient point-count data are available to calculate corrected densities and provide estimates of the number of landbirds (for the more common species, and possibly some shorebird species) that could be affected by development of the proposed Project.
- Sufficient data also were collected in the two study years during the riverine- and lacustrine-focused surveys to describe the use of those habitats in the study area by landbirds and shorebirds. Adequate data are available to provide minimum estimates of the numbers of landbirds and shorebirds using riverine and lacustrine habitats that could be affected by development of the proposed Project.

AEA's Proposed Modifications to Study 10.16
(SIR Section 7.2)

For the following reasons AEA has determined that the current data set (1–2 years of field data depending on the survey) is sufficient to meet the study objectives and that an additional year of sampling is not needed:

- Additionally, the 2014 riverine-focused survey data are suitable for calculations of corrected densities and should provide (for the more common shorebird and waterbird species) estimates of the number of birds using riverine habitats that could be affected by development of the proposed Project.
- Lastly, a more efficient survey platform (helicopter instead of boat access) was used for colonially nesting swallows in the single survey year (2013), which facilitated a more comprehensive survey of a larger study area than planned in the RSP. The current data are sufficient to quantify the use of the study area by colonially nesting swallows, and will allow for a minimum estimate of the number of nesting swallows that could be affected by development of the proposed Project.

Current Status Study 10.16

- In 2013 and 2014, field surveys were completed as described in the RSP (Section 10.16.4.1.2), with the implementation of the variances described in the ISR and the 2014 Study Implementation Report.
- In both study years, many more point-count plots were surveyed than the goal of 800 per year listed in the RSP (Section 10.16.8). In 2013 and 2014, respectively, 1,364 and 1,207 point counts were completed.
- Riverine- and lacustrine-focused surveys were completed in both years as described in the RSP (Section 10.16.4.2), with the implementation of the variances described in the ISR and the 2014 Study Implementation Report.
- Swallow colony surveys were completed in a larger study area in 2013 and with greater efficiency than was planned in the RSP (Section 10.16.4.3).
- Overall, the study is on track to meet the study objectives.

Steps to Complete Study 10.16
(ISR Part D, Section 8)

- The two years of landbird and shorebird data from point-counts and the riverine- and lacustrine-focused surveys will be compared with the historical studies of breeding birds conducted for the APA Project in the 1980s to evaluate any long-term changes in occurrence and abundance (RSP Section 10.16.4.5).
- The two years of point-count data will be analyzed with both removal and distance analyses to improve the accuracy of the detection functions and density estimates for landbirds and shorebirds (RSP Section 10.16.4.1.3).
- Distance analysis of the line-transect data collected in 2014 for the riverine-focused surveys will be conducted in an attempt to calculate corrected density estimates for landbirds and shorebirds in riverine habitats in the inundation zone of the proposed Watana Reservoir.
- The uncorrected riverine-focused survey data will be used to calculate minimum estimates of linear densities (birds per km of stream length) for landbirds and shorebirds in riverine habitats in both study years.
- More detailed habitat-use analyses will be conducted for each landbird and shorebird species recorded in the study (RSP Section 10.16.7); these analyses will be based on the final wildlife habitat types mapped in the Vegetation and Wildlife Habitat Mapping Study (Study 11.5).

Licensing Participants' Comments and Proposed Modifications to Study 10.16?

- Agencies
- CIRWG members and Ahtna
- Public