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SUSITNA-WATANA HYDRO

Susitna-Watana Hydroelectric Project
(FERC No. 14241)

Aesthetic Resources Study
Study Plan Section 12.6

Initial Study Report

Prepared for

Alaska Energy Authority

SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

Prepared by

URS Corporation

February 2014 Draft

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

LIST OF ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

Abbreviation	Definition
ADNR	Alaska Department of Natural Resources
AEA	Alaska Energy Authority
AL	Analysis Location
AR	audio recording
BLM	Bureau of Land Management
CADNA/A	Computer Aided Noise Abatement
CFR	Code of Federal Regulations
CIRWG	Cook Inlet Region Working Group
dBA	a-weighted decibel
DEM	Digital Elevation Model
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
IfSAR	Interferometric Synthetic Aperture Radar
ISR	Initial Study Report
KOP	Key Observation Point
LCP	Landscape Character Points
LCT	Landscape Characteristic Type
L_{90}	Sound Level Exceeded for 90% of time under Consideration
Ldn	Day-night Sound Level
Leq	Equivalent Continuous Noise Level
LT	long-term
NEPA	National Environmental Policy Act
NPS	National Park Service
NSR	noise-sensitive receivers

Abbreviation	Definition
OA	Observation Area
OC	Observation Corridor
OHV	off-highway vehicle
OP	Observation Point
ORV	Outstanding Remarkable Values
OS	operational scenario
PAD	Preliminary Application Document
SPreAD	System for Prediction of Acoustic Detectability
RMP	Resource Management Plan
ROS	Recreational Opportunity Spectrum
ROW	right-of-way
RS	recreation sites
RSP	Revised Study Plan
SLA	Sensitivity Level Analysis
SLM	sound level meter
SPL	sound pressure level
ST	short-term
USC	United States Code
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WALROS	Water and Land Recreation Opportunity Spectrum

EXECUTIVE SUMMARY

Aesthetic Resources Study 12.6	
Purpose	The goals and objectives for the Aesthetic Resources Study are to inventory and document baseline aesthetic (visual and auditory) conditions within the Aesthetic Resources Study Area through photography, field observations, sound monitoring, and desktop research and to evaluate the potential effects to aesthetic resources that may result from construction and operation of the proposed Project. Photography will be used to generate photosimulations and sound monitoring will be used for sound modeling for assessing visual and sound impacts, respectively.
Status	The study completed its first field season and is on schedule. The majority of the field work is complete, with the limited remaining field work planned for the next study season. Photographs have been processed to create panoramas to support future development of photosimulations and analysis. Baseline sound data has been reviewed. Focus Groups have not been implemented and the impact analysis has not yet been initiated for either soundscape or visual components of the study.
Study Components	Study components include: • development of viewshed models for major project features, and both pre- and post-conditions of the Susitna River; • collecting photography and field observations at identified Key Observation Points (KOPs) to determine baseline visual resource conditions; • desktop data collection to assess scenic quality, visual distance zones, and visual sensitivity; collecting long-term and short-term sound data at select locations across all seasons to determine baseline soundscape conditions; • focus groups to gather additional data on visual sensitivity and address visual preference of each alternative; • coordinating with other resource disciplines to obtain data and information relevant to the aesthetics resources study; • generating photosimulations of the proposed project components from select KOPs for assessing impacts to visual resources; • modeling existing and proposed soundscape for assessing potential sound impacts; • and identifying avoidance and mitigation measures based on baseline data, impact analyses and design recommendations.
2013 Variances	No variances occurred in the 2013 study year, however some visual resource study locations that were identified early in the implementation of the study were not accessed in 2013 because permission to access CIRWG lands was

	not achieved.
Steps to Complete the Study	As explained in the cover letter to this draft ISR, AEA's plan for completing this study will be included in the final ISR filed with FERC on June 3, 2014.
Highlighted Results and Achievements	Viewsheds were generated for the major Project features for all proposed corridors, including the proposed reservoir and roads and transmission lines to estimate visibility of the project and identify KOPs for further analysis. Baseline visual data (high quality photographs and observations) were collected over four seasons at a total of 135 visual Analysis Locations. This data was used to establish existing conditions of the landscape, create panoramic photographs, and will be used to generate photosimulations of the proposed Project. Baseline sound data was collected over four seasons at a total of 31 long term sound monitoring locations and at 67 total short term sound monitoring locations. This data will be used to characterize baseline and predicted future conditions for assessing potential soundscape impacts.

1. INTRODUCTION

On December 14, 2012, Alaska Energy Authority (AEA) filed with the Federal Energy Regulatory Commission (FERC or Commission) its Revised Study Plan (RSP) for the Susitna-Watana Hydroelectric No. 14241 (Project), which included 58 individual study plans (AEA 2012). Included within the RSP was the Aesthetic Resources Study, Section 12.6. RSP Section 12.6 focuses on inventorying and documenting baseline aesthetic conditions within the Aesthetic Resources Study Area and evaluating the potential effects to aesthetic resources that may result from construction and operation of the proposed Project. RSP Section 12.6 provided goals, objectives, and proposed methods for aesthetic resources data collection and analysis.

On February 1, 2013, FERC staff issued its study plan determination (February 1 SPD) for 44 of the 58 studies, approving 31 studies as filed and 13 with modifications. RSP Section 12.6 was one of the 13 approved with modifications. In its February 1 SPD, FERC recommended the following:

> *We recommend that AEA modify the Aesthetic Resources Study Plan as follows:*
>
> - *Conduct surveys of ambient sound levels in all four seasons.*
> - *Include in the initial study report any proposed modifications to the study plan based on the first year's data on the lower river uses, hydrology, and ice processes.*

In accordance with the February 1 SPD, AEA has adopted the FERC requested modifications.

Following the first study season, FERC's regulations for the Integrated Licensing Process (ILP) require AEA to "prepare and file with the Commission an initial study report describing 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" (18 CFR 5.15(c)(1)). This Initial Study Report (ISR) on Aesthetic Resources Study has been prepared in accordance with FERC's ILP regulations and details AEA's status in implementing the study, as set forth in the FERC-approved RSP and as modified by FERC's February 1 SPD (referred to herein as the "Study Plan").

2. STUDY OBJECTIVES

The study objectives are established in RSP Section 12.6.1. The goals and objectives for the Aesthetic Resources Study are to inventory and document baseline aesthetic (e.g., visual, auditory) conditions within the Aesthetic Resources Study area and evaluate the potential effects to aesthetic resources that may result from construction and operation of the proposed Project. The analysis will focus on assessing these potential impacts and will help identify potential design and other mitigation options.

3. STUDY AREA

As established by RSP Section 12.6.3, the Aesthetic Resources Study area is shown in Figure 3-1. The study area was designed to be sufficient in size to address likely established indicators of change, including potential direct and indirect effects to recreation, cultural resources, subsistence, socioeconomics, geomorphology/ice processes, and riparian vegetation.

The Aesthetic Resources Study area was divided into primary and secondary study areas. The primary study area was defined by a 30-mile radius surrounding all Project components, including: the proposed dam and camp facilities including construction sites, the reservoir, transmission corridors, access road corridors, borrow sites, and rail sidings. The primary study area was defined in Q1 2013 using viewshed models generated from the most current Project design information at a resolution of a 10m DEM. At present, the analysis is focused on the following broadly defined viewer areas:

- The Susitna River corridor, downstream of Devils Canyon to Talkeetna
- The Susitna River corridor, from Devils Canyon to the proposed dam site
- The Susitna River, upstream of the proposed dam site to the upriver extent of the inundation zone
- Upland areas adjacent to the Susitna River, with emphasis on those areas within the viewshed of the inundation zone, proposed access roads, and proposed transmission corridors
- Common air transportation routes used for transportation and recreational air tours

The secondary study area for this study includes all lands located between the Denali Highway, south to the Glenn Highway and from the Richardson Highway, east to the mouth of the Susitna River (RSP Figure 12.6.2). This area will be evaluated using existing information and used to understand the distribution of on aesthetic resources within a larger geographic context.

The Study Plan noted that the aesthetics resource study area could be adjusted during the next study year to include areas within the river corridor located downriver of Talkeetna if 2013 studies in the lower reach indicate a possible Project-related effect on aesthetic resources in this area.

4. METHODS AND VARIANCES IN 2013

AEA implemented the methods described in the Study Plan with no variances. Baseline data collection was implemented across the primary and secondary study area. The primary study area was evaluated using a combination of desktop and field-based observations. The secondary study area was evaluated using desktop analyses and existing information. Data collection and analysis was completed across all four seasons. Components of the study addressed in this study include Viewshed Modeling, Interdisciplinary Coordination, Identification of Analysis Locations (AL), and Baseline Data Collection.

4.1. Viewshed Modeling

AEA implemented viewshed modeling per methods described in the Study Plan with no variances. Though access restrictions prohibited baseline data collection for both visual and soundscape on lands owned by members of the Cook Inlet Region Working Group (CIRWG), plans to evaluate baseline conditions in these areas will be implemented during the second study year, provided access is granted.

Viewshed models were generated for major Project features, including the proposed reservoir, and proposed access roads and transmission lines associated with the Denali, Chulitna, and Gold Creek Corridor. Viewshed models were also developed for pre-Project conditions of the Susitna River in order to understand expected changes in viewshed areas (i.e., creation of new views, loss of others). Site-specific viewshed models were created for ALs described below in order to better understand the theoretical extent of views from these locations. Maps displaying the viewsheds were created, and used to direct the identification of important views and vistas considered in the analysis.

4.1.1. Variances

No variances occurred in the methods for implementing viewshed models for Project components during 2013.

4.2. Identification of Analysis Locations

AEA identified ALs per methods described in the Study Plan with no variances.

Standard ALs were established to represent: (1) common and/or sensitive views within the Aesthetic Resources Study area, and (2) areas used to measure anticipated change in scenic quality, and/or new opportunities for views, based on potential configuration of access roads/transmission corridors. These locations were used to evaluate baseline aesthetic values (including visual resources and soundscape), and will be carried forward through the impact analysis.

KOPs were categorized as follows:

- *Observation Points (OPs)*: Observation Points represent specific locations or viewpoints, such as private lodges within the study area. The viewer experience at these locations is typically stationary and from a single vantage point. Views experienced from OPs may be directional (i.e., a focal view) or not (i.e., a 360 degree panoramic).

- *Observation Areas (OAs):* Observation Areas represent large geographic areas where views could be experienced from a variety of locations due to dispersed recreation and/or subsistence use. The likelihood of viewers standing in the same spot during repeated visits is low. Observation areas are common due to the low density of trails in much of the study area.

- *Observation Corridors (OCs)*: Observation Corridors, also called "linear KOPs", represent linear viewing experiences, in which scenic attributes are experienced as a

continuum. They may be focal (i.e., leading toward a noteworthy natural feature; entrance way), and/or transient (i.e., passing through a landscape). An example of OCs within the study area includes the Kesugi Ridge Trail, the Denali Highway, and existing networks of unmaintained two-track trails.

- *Landscape Character Points (LCPs)*: Landscape Character Points will be established to provide standardized locations in which to evaluate changes in scenic quality. These locations are not tied to a particular viewer experience; however, they will provide information regarding the change in the visual resource of the area (beneficial or adverse) that may result from the proposed Project. An example of LCP within the study area includes those placed at noteworthy natural features, such as Vee canyon or Big and Deadman Lake.

Each AL is targeted to address potential impacts (beneficial or adverse) to aesthetic resources, and is based largely on the anticipated nexus between the proposed Project and aesthetic resources identified in 2012. Locations used to assess new access to views / viewer experience that may result from access roads and/or transmission corridors were selected through review of topographic maps and viewshed modeling. ALs differ by landscape analysis factors (i.e., distance from the Project, predominant angle of observation, dominant use), and could be applicable to one or more seasons. Input from agencies and stakeholders on ALs was sought through TWG meetings held on February 27, April 3, August 8, and September 20 of 2013. At each TWG meeting, proposed ALs were displayed graphically and discussed with participants. Input was addressed as an action item, and reported on at the next TWG meeting. Final draft target ALs were selected and mapped.

4.2.1. Variances

No variances occurred in methods used to identify analysis locations during the 2013 study year. Table 12.6-1 of RSP Section 12.6 indicates preliminary recommendations for ALs. Baseline conditions were not assessed at locations contemplated in this table where sited on lands owned by members of the CIRWG due to access constraints. Provided access is granted, these areas will be assessed during the next study year, thereby meeting study objectives.

4.3. Baseline Data Collection

AEA implemented baseline data collection per methods described in the Study Plan with no variances. Baseline data collection included a combination of desktop (primary and secondary study area) and field data collection (primary study area).

Desktop data collection included existing spatial and geospatial data describing aesthetic attributes, including descriptions of scenic quality, visual distance zones, and visual sensitivity of the primary and secondary study areas contained in the East Alaska management Plan (BLM 2006) and AEA's PAD (AEA 2011).

Field data collection was implemented at ALs sited within the primary study area. Data on scenic quality included a description of landscape character attributes described in a narrative form, and including a breakdown of basic landscape components of form, line, color and texture,

was included. Baseline photography to be use in development of photosimulations was obtained at each AL.

Visual sensitivity was assessed through review of existing data collected during the Visual Sensitivity Level Analysis (SLA) completed during the RMP planning process for the BLM Ring of Fire and East Alaska RMP. A Project-specific analysis was completed through intercept surveys, mail surveys, and executive interviews completed in coordination with recreation resources, socioeconomics, and subsistence resources (see ISR Studies 12.5, 14.5, and 15.5). Evaluation of these data is underway and will be used to inform participants and content of focus groups planned for the next study year.

Visual distance zones represent the distance from which the landscape is most commonly viewed. These zones are established by buffering common travel routes and viewer locations at distances of three miles, five miles, and 15 miles using GIS (BLM 1986). Existing visual distance zones completed during the RMP planning process for the BLM Ring of Fire and East Alaska RMP were used to inform baseline characteristics. Project-level visual distance zones will be further developed through interdisciplinary coordination with the Recreation Resources Study (Study 12.5) to better understand local travel routes, including those used for recreation and tourism (i.e., the Susitna River corridor below Devils Canyon; flightseeing tours).

4.3.1. Variances

No variances occurred in the methods used in baseline data collection during 2013. As discussed in Section 4.2.1 above, locations within the study area where baseline conditions were not assessed due to access restrictions on CIRWG lands will be visited during the next study year, thereby meeting study objectives.

4.4. Photosimulations

AEA implemented the methods for photosimulations described in the Study Plan with no variances. Development of photosimulations was initiated in 2013, including the following procedural steps:

- **Collection of Photography:** Photography was collected in a series of frames to accurately represent a horizontal and vertical field of view typical to a human viewer at each AL.
- **Assembling Panoramic Photographs:** Raw data files (NEFs) for each photograph were color-corrected using Adobe Lightroom 5 such that each individual photograph for a specific Analysis Location matched each other as closely as possible. Following color-correction, each file was saved as a TIF and then the TIFs for each individual photograph were stitched together using Adobe Photoshop CS 5 software using cylindrical mapping. Final cropping and appropriate sizing to the original height of photos was applied and files were saved in TIF and JPEG format for proofing, and management.

4.4.1. Variances

No variances occurred in the methods used in developing photosimulations during 2013.

4.5. Soundscape Analysis

AEA implemented the methods for the soundscape analysis described in the Study Plan with no variances. Baseline data was collected to characterize the existing ambient sound environment in the study area to provide baseline data for assessment of potential change to that baseline as a result of construction and operational activities of the proposed Project.

4.5.1. Review Documentation

Relevant Project data contained in AEAs PAD (AEA 2011) was reviewed for information on potential noise sources associated with construction and operating of the proposed Project. A regulatory review was completed to determine relevant management framework with a nexus to the proposed Project. Analysis locations were selected based on information gleaned from this review, and through coordination with the visual resources assessment (Section 4.2 of this ISR), Recreation Resources Study (Study 12.5), and the River Recreation Flow and Access Study (Study 12.7).

4.5.2. Seasonal Surveys of Ambient Sound Levels

AEA implemented seasonal surveys of ambient sound levels per methods described in the Study Plan with no variances.

Ambient sound level measurements were collected, with the goal of establishing baseline soundscape data. ALs coincided with KOPs identified for the visual resource assessment, including both viewer [receptor]-based (OPs, OAs, and OCs), and landscape-based (LCPs). Where located on BLM-administered lands, baseline soundscape measurements were used to assess conditions in area managed under certain ROS designations. Sound measurements included: (1) unattended long-term (LT) monitors deployed for a minimum of 24 continuous hours and up to a single week, and (2) attended short-term (ST) monitors deployed for 15-20 minutes duration each. Perceived and identifiable sources of sound, such as bird calls, aircraft, or passing train or vehicle traffic, and the conditions during which they occur, were documented as part of the baseline data collection effort. This survey was conducted across four discrete survey periods corresponding with winter, spring, summer, and fall of 2013. Seasons were defined as follows:

- Winter –December 21 to March 20
- Spring – March 20 to June 20
- Summer –20 June to September 01
- Fall – September 02 to December 21

To the extent practicable, the survey locations were the same for each surveyed season.

4.5.3. Modeling of Project Sound Levels

Up to three scenarios or alternatives of future Project operational sound levels will be estimated with System for the Prediction of Acoustic Detectability (SPreAD) (Reed 2010).) or Computer Aided Noise Abatement (CADNA/A), an industry-accepted outdoor sound propagation modeling

program, could also be used (Sound Advice Acoustics Ltd, 2012). Model development was initiated during the 2013 study year though collection of baseline measurements and development of model parameters. Model development will continue during the next study season.

4.5.4. Variances

No variances occurred in the methods used in implanting the soundscape analysis during 2013.

4.6. GIS Maps and Figures

AEA implemented production of GIS maps and figures per methods described in the study with no variances.

Project viewsheds, ALs and relevant land management areas were mapped using GIS following Project geospatial standards. Visual features across the study area were photographed, and will be used to produce visual simulations depicting the appearance of the proposed Project at a subset of KOPs.

4.6.1. Variances

No variances occurred in the methods used in developing GIS maps and figures during 2013.

4.7. Assessment of Downriver Study Area

RSP Section 12.6.3 and the Commission's February 11 SPD indicate that the aesthetics resource study area could be adjusted in the next study year to include areas within the river corridor located downriver of Talkeetna if 2013 studies in the lower reach indicate a possible Project-related effect on aesthetic resources in this area. AEA implemented the assessment of the downriver study area per methods described in the Study Plan with no variances. The determination of the recommended downriver extent was based on interdisciplinary coordination between the Fish and Aquatic Instream Flow Study (Study 8.5) and the Ice Processes in the Susitna River Study (Study 7.6) leads, and a review of modeling completed as part of the analysis of these resource.

4.7.1. Variances

No variances occurred in the methods used in implementing the soundscape analysis during 2013.

5. RESULTS

This Section contains the results of 2013 baseline data collection for aesthetic resources and soundscape. Data developed in support of this study are available for download at http://gis.suhydro.org/reports/isr.

5.1. Aesthetics

5.1.1. Viewshed Modeling

A viewshed analysis was completed to identify locations where Project components could theoretically be seen and areas where components would be eclipsed by topography. This analysis, completed using a GIS tool, determines Project visibility based on the relationship between topography, height or area of Project components, and average eye height of the viewer. The resulting viewshed represents the geographic area where one or more Project components could theoretically be seen; however, it does not represent any measure of detectability of Project features. The viewshed analysis was also used to assess the relationship between potential views of the proposed Project and viewer experience. For example, travelers moving through the landscape on a roadway or trail may experience intermittent views of a project where topography is variable and more prolonged views where topography is flat.

5.1.1.1. Model Parameters

Viewshed models were generated for the access and transmission line corridors under consideration (proposed Denali, Chulitna, and Gold Creek corridors), the dam, the reservoir at capacity, and the Susitna River from the dam extending 5 miles downriver. The viewshed was based on the configuration of Project features provided in AEA's Pre-Application Document (PAD) (AEA 2011). Where specific information on Project design was not fully developed, conservative assumptions were made. For example, because specific tower heights could vary based on site-specific conditions, the viewshed model was generated using the tallest tower height being considered. This approach ensured that the resulting model was comprehensive and reduced the likelihood that areas would be missed. It is expected that the viewshed area will be reduced as Project specifications are refined. The Denali, Chulitna, and Gold Creek corridors were assumed to contain both access roads and transmission lines. All viewsheds were truncated to a distance of 30 miles.

Models were developed using a viewer height of 5.5 feet, and assuming bare ground. The following input parameters were obtained from spatial data contained in the Watana Geodatabase dated October 26, 2012:

- Dam height of 2,075 feet
- Reservoir pool maximum elevation of 2,050 feet, with viewshed measured from 100-200 randomized points across reservoir surface
- Transmission line and access road alignments centered on right-of-way (ROW) polygons from October 26, 2012, specifications
- Elevation data obtained from a 10-meter resolution, resampled mosaic of Interferometric Synthetic Aperture Radar (IfSAR) 5 meter digital surface model DSM

The following input parameters were obtained from AEA's PAD (AEA 2011):

- 300-foot ROW width where transmission line and access roads could be co-located
- 100-foot ROW width where only transmission line or road is sited
- 32-foot road cross section

The following assumptions were made regarding Project specifications of access and transmission lines:

- 1-mile transmission tower spacing (span)
- 100-foot-tall transmission tower

5.1.1.2. Viewshed Model Results

A description of each modeled viewshed is provided below, including prevailing topographic features that shape each polygon. Table 5.1-1 summarizes the area of each viewshed by distance zone and land status.

5.1.1.2.1. Denali Corridor Viewshed

The Denali Corridor viewshed is the largest of all modeled viewsheds, measuring approximately 1,144 square miles. At a coarse scale, the viewshed appears large in scale large and broad, with views extending to the background distance zone. Approximately 454 square miles (40%) are within the foreground/middleground distance zone (0 – 5 miles), 388 square miles (34%) are within the background distance zone (5 – 15 miles), and 301 square miles (26%) are within the seldom seen distance zone (15+ miles)(Figure 5.1-1). The majority (76%) of this viewshed includes lands managed by the State of Alaska (870.5 square miles). Smaller proportions are managed by federal agencies (56.5 square miles, or 5%) or lands owned by members of the CIRWG (216.5 acres, or 19%). The northernmost portion of the Corridor parallels the Denali Highway in an east-west trajectory. The viewshed in this area is largely constrained to the foreground-middleground distance zone by the topography of the Alaska Range to the north and the Chulitna and Talkeetna Mountains to the south. Though largely discontinuous, the viewshed of the northwest portion of the Corridor extends to the southwest along the foothills of the Alaska Range, northwest of the Chulitna River. This portion of the viewshed is largely situated in the background and seldom seen distance zones and is primarily confined to higher elevation areas.

Where the Corridor runs north-south from the Denali Highway to the Susitna River, the viewshed is constrained by the Chulitna Mountains to the west and higher elevation areas of the Wet Upland Tundra to the east. Near the southern terminus of the Corridor, the viewshed extends across the Chulitna Moist Upland Tundra and higher elevation areas of the Tsusena River drainage to the background and seldom seen distance zones. To the south, the viewshed extends across the Susitna River, where it is limited by the Talkeetna Mountains.

5.1.1.2.2. Gold Creek Corridor Viewshed

The Gold Creek Corridor viewshed encompasses approximately 628 square miles. The viewshed appears large in scale, with enclosure provided by surrounding mountains. The majority (50%) of the viewshed in within the foreground/middleground distance zone (0 – 5 miles) (312 square miles). The remaining 220 square miles (35%) are within the background distance zone (5 – 15 miles), and 95 square miles (15%) are within the seldom seen distance zone (15+ miles) (Figure 5.1-2). Approximately 0.25 square miles (less than 1%) and 378 square miles (60%) of this viewshed are located on federally administered and state-owned lands, respectively, with the remaining 250 acres (40%) on lands owned by members of the CIRWG. To the north, the

viewshed extent is primarily limited by the Chulitna Mountains. To the southeast, the viewshed extends across Susitna Upland Terrace Landscape Characteristic Type (LCT) to the Talkeetna Mountains, where higher elevations and topography create enclosure to this viewshed. To the southwest, the viewshed extent is primarily limited to the foreground/middleground distance zone due to the high-elevation and topography of Kesugi Ridge and Curry Ridge in Denali State Park. Substantial portions of the eastern face of Kesugi Ridge and Curry Ridge, including small portions of the Kesugi Ridge Trail, are within the viewshed. These ridges limit views of the Corridor from other popular areas of the park, such as Byers Lake and Lower Troublesome Creek Campground, located on the west side of the Park.

5.1.1.2.3. Chulitna Corridor Viewshed

The Chulitna Corridor viewshed encompasses approximately 693 square miles. The viewshed appear large in scale, with views extending across the broad terrain of the upland tundra. Approximately 250 square miles (36%) are within the foreground/middleground distance zone (0 – 5 miles), 305 square miles (44%) are within the background distance zone (5 – 15 miles), and 138 square miles (20%) are within the seldom seen distance zone (15+ miles) (Figure 5.1-3). Approximately 1.5 square miles (less than 1%) and 461 square miles (66%) of this viewshed are located on federally administered and state-owned lands, respectively, with the remaining 231 square miles (33%) on CIRWG lands. To the north, the viewshed extent is limited by the Chulitna Mountains. To the east, the viewshed extent is limited by the Gulkana Uplands, located southeast of Watana Creek and north of the Susitna River. Remaining portions of the viewshed located to the east are restricted to high-elevation. Views from the south are largely limited by the high ridges on the south side of the Susitna River as well as the Talkeetna Mountains.

5.1.1.2.4. Dam and Reservoir Viewshed

The dam and reservoir viewshed encompasses approximately 414 square miles. Due to the incised topography of the Susitna River drainage, the majority of the viewshed (248 square miles, or 60%) is located within the foreground/middleground distance zone (0 – 5 miles). Approximately 128 square miles (31%) are within the background distance zone (5 – 15 miles), and 38 square miles (9%) are within the seldom seen distance zone (15+ miles) (Figure 5.1-4). The majority of the viewshed is located on State of Alaska-owned lands (365 square miles, or 88%) The remaining 49 square miles (12%) is located on lands owned by members of the CIRWG. There is less than 1 square mile of federally administered lands within the dam and reservoir viewshed. Generally, the dam and reservoir viewshed extends on either side of the inundation zone by approximately 2 to 8 miles, limited by the rolling terrain on either side of the river. The viewshed does extend further to the north on the higher-elevation points of the Wet Upland Tundra LCT and north and south on the higher-elevation points of the Talkeetna Mountains. Views from the west are generally limited by the Chulitna Mountains and hills of the Chulitna Moist Tundra Uplands, approximately 11 miles west of the western end of the reservoir.

5.1.1.2.5. Susitna River Viewshed

The modeled viewshed for the Susitna River, from the proposed dam site to 5 miles downstream, encompasses approximately 13.7 square miles. Like upriver portions of the river, the majority of the viewshed (11 square miles, or 65%) is within the foreground/middleground distance zone (0

– 5 miles). Approximately 4 square miles (23%) are within the background distance zone (5 – 15 miles), and 2 square miles (12%) are within the seldom seen distance zone (+15 miles) (Figure 5.1-5). Approximately 4.9 square miles (36%) of this viewshed are located on state-owned lands, with the remaining 8.8 square miles (64%) on lands owned by members of the CIRWG lands. There are no federally administered lands within the dam and reservoir viewshed. The viewshed is primarily centered on the river, extending approximately 1.5 miles from the river centerline as a result of steep valley walls. Some areas of the Chulitna Wet Upland Tundra LCT to the north and the Susitna Upland Terrace and Talkeetna Mountain LCTs to the south are also within the viewshed; however these areas are discontinuous with the rest of the viewshed.

5.1.2. Comprehensive Plan Review

Lands within the primary and secondary study areas are owned and/or managed by federal, state, and local agencies and jurisdictions, and lands owned by members of the CIRWG. A total of 30 planning documents/websites, listed below, were identified as having a nexus to the primary and/or secondary study area.

Local

- City of Palmer Comprehensive Plan (City of Palmer 2006)
- City of Wasilla Comprehensive Plan (City of Wasilla 2011)
- Denali Borough Comprehensive Plan (Denali Borough 2009)
- Denali Borough Code Chapter 19 Zoning (Denali Borough 2013)
- Matanuska-Susitna Borough Code Title 17: Zoning (MSB 2013a)
- Parks, Recreation, and Open Space Component of the Asset Management Plan (MSB 2001)
- Mat-Su Trails and Parks Master Plan (MSTPF 2013)
- Economic Development Strategic Plan (MSB 2010)
- Matanuska-Susitna Borough Comprehensive Development Plan 2005 Update (MSB 2005a)
- Chase Comprehensive Plan (MSB 1999a)
- Chickaloon Comprehensive Plan (MSB 2008a)
- Core Area Comprehensive Plan, November 2007 Update (MSB 2007)
- Glacier View Comprehensive Plan 2008 Update (MSB 2008b)
- Glacier View Comprehensive Plan – Sheep Mountain Sub-District (MSB 2006)
- Sutton Comprehensive Plan, November 2009 Update (MSB 2009)
- Talkeetna Comprehensive Plan (MSB 1999b)
- Willow Area Comprehensive Plan (MSB 2013b)
- Y Community Council Area Comprehensive Plan: Taking Part in Our Future (MSB 2005b)

State

- State of Alaska. Municipal Government Structure Webpage (State of Alaska 2013)
- Susitna Area Plan (ADNR 1985)
- Susitna Matanuska Area Plan (ADNR 2011)

- Cultural Resource Management Plan for the Denali Highway Lands, Central Alaska (ADNR 2005)
- Susitna Basin Recreation Rivers Management Plan (ADNR 1991)
- Statewide Comprehensive Outdoor Recreation Plan (ADNR 2009)
- Ten-Year Strategic Plan, Division of Parks and Outdoor Recreation (ADNR 2006b)
- Scenic Resources along the Parks Highway: Inventory and Management Recommendations
- Denali State Park Management Plan (ADNR 2006a)
- George Parks Highway Scenic Byway Master Interpretive Plan (ADNR 2012)

Federal

- Bureau of Land Management East Alaska Resource Management Plan (BLM 2006a)
- Bureau of Land Management Ring of Fire Management Plan (BLM 2006b)
- Final South Denali Implementation Plan and Environmental Impact Statement (NPS 2006)

Standards and guidelines contained in federal and state management plans with a direct nexus to areas within the modeled viewshed and the primary study area are summarized below.

5.1.2.1. Federal Land Management Plans

Approximately 1,600 square miles of land within the primary study area is under the federal management/authority status of the BLM and National Park Service (NPS). The proposed Project footprint would cover approximately 46.7 square miles of BLM-administered land (see Figure 5.1-6) (BLM 2013). The modeled Project viewshed contains BLM-administered lands managed by the East Alaska RMP (BLM 2006a) and the Ring of Fire Management Plan (BLM 2006b) and NPS-administered lands managed per the South Denali Implementation Plan (NPS 2006). The South Denali Implementation Plan focuses on views of Denali Peak; however, no management objectives for visual resources are provided.

5.1.2.1.1. BLM –Administered Lands

Visual Resources

Visual resources on BLM-administered lands are managed per the Visual Resource Management (VRM) System (BLM 1986). The VRM system provides the framework by which to manage visual values by classifying all BLM-administered lands into one of four VRM Classes.

The proposed Project is located within lands managed per VRM Class II, III, and IV Objectives, defined by the East Alaska RMP (BLM 2006a) and Ring of Fire RMP (BLM 2006b) (Figure 5.1-7). The BLM VRM designations do not apply to private, state, or other public lands within these planning areas. The majority of the BLM land within the proposed Project footprint is classified as VRM Class IV, with the exception of lands surrounding the Denali and Chulitna Corridor, where lands are classified as VRM II and III (Figure 5.1-7).

Recreation Opportunity Spectrum

The ROS is a classification system used to create and maintain different recreation experiences suitable for a variety of land and visitor types. The majority of the area within the proposed Project footprint (45.1 square miles) is classified as primitive in the ROS. This is followed by Semi-Primitive Motorized, which covers approximately 27.2 square miles of the proposed Project footprint. The remaining 3.6 square miles of BLM land within the Project footprint is within the Roaded Natural, Remote Developed Lakeside, and Semi-Primitive Non-Motorized ROS Classes, respectively. Evidence of the "sights and sounds of man" could extend beyond the Project footprint to include larger areas within Primitive, Semi-Primitive or other ROS classes.

5.1.2.2. State Land Management Plans

Approximately 8,200 square miles of land within the primary study area is under state management/authority status. The proposed Project would occupy approximately 47.9 square miles of state-owned lands (BLM 2013) (Figure 5.1-6). The State of Alaska Department of Natural Resources (ADNR) manages the majority of lands within the primary study area under the Susitna and the Susitna Matanuska Area Plans (ADNR 1985 and ADNR 2011, respectively). Both area plans contain area-wide land management policies and policies applicable to specific Management Units within each planning area. Area plans also contain land management goals. Goals are the general condition the department is trying to achieve, whereas guidelines are specific directives to be applied to land and water management decisions as resource use and development occur (ADNR 1985). Additional management framework is provided for special areas through specific Management Plans, typically designed to address congressionally designated areas (i.e., recreational rivers).

Susitna Matanuska Area Plan

The Susitna Matanuska Area Plan identifies recreation and scenic resources as one of the 11 resource and land use categories with specific guidelines. The plan identifies a goal that includes both developed and undeveloped lands for outdoor recreational opportunities, noting that the protection of several resources, including visual resources, is important for recreation and maintaining, where appropriate, the isolation and unique wilderness characteristics of the planning area. This goal pertains to the planning area as a whole. The North Parks Highway Region is the only land management unit within the modeled viewshed that has management intent specific to scenic resources. This region includes most land immediately adjacent to the George Parks Highway and Alaska Railroad from the Matanuska-Susitna Borough boundary at Broad Pass near Cantwell, south to the railroad bridge over the Susitna River downstream of Devils Canyon (see Figure 5.1-8). Most state land in this region is managed for its wildlife habitat, settlement, and for multiple uses. Within the North Parks Highway Region, there are three tracts of land totaling approximately 3,104 acres located just east of the railroad near the western terminus of the proposed Chulitna Corridor, for which the management intent is to protect and maintain fish and wildlife habitat, associated hydrologic values, and scenic values.

Susitna Area Plan

The Susitna Area Plan (ADNR 1985) is a regional-level land use plan that covers approximately 15.8 million acres and provides guidance for the use and management of state-owned land within the "Susitna Area." This plan contains broad goals, management guidelines, and implementation

procedures to ensure the future vision for lands within the study area is executed. The Susitna Area Plan recognizes the economic driver for the community is based on its proximity to many recreational/open space and remote wilderness areas. Much of the Susitna Area Plan was replaced by the Susitna-Matanuska Area Plan, except for the Denali Highway Area (Figure 5.1-8). Goals and management guidelines with a visual resource aspect are summarized below.

Recreation Opportunities
The plan does not identify any management guidelines specific to scenic resources; however the protection of natural features, recreation areas, cultural and historical sites, fish and wildlife habitat, and scenic areas is acknowledged as important to maintain recreation values over time for future generations.

Dispersed Recreation Activities
The plan designates large areas to support dispersed recreation activities such as cross-country skiing, hiking, tent camping, snowmobiling, and dog mushing. These areas also offer protection for scenic vistas and aesthetic values, in part, through retention in public ownership of the majority of state-owned land in the study area.

Settlement
The plan identifies management guidelines to retain public ownership of lands with unique natural features and preserve public access to those sites. Additionally, any land disposal offerings along popular sightseeing routes will be selected and designed to minimize impacts on scenic vistas.

Transportation
The plan includes management guidelines to consult the Scenic Resources along the Parks Highway (ADNR 1981) study during planning of any management activities that are likely to result in significant changes to the visual quality along this route.

Talkeetna Mountains Subregion – Denali Highway Management Unit
The Denali Highway Management Unit is generally bounded on the south by the Susitna River and generally extends on both the north and south sides of the Denali Highway. The protection of scenic quality along the Denali Highway is one of the two major objectives for the management unit.

Denali State Park Management Plan

The Denali State Park Management Plan (ADNR 2006a) provides guidance for management of parklands and development of recreational facilities. The plan establishes goals and objectives for the Park organized into four categories: environmental, cultural, recreational, and tourism. Within various goals and policies, views of Denali and the Tokositna Glacier are considered particularly key and linked to the importance of the Park. However, the protection of specific views is not enforced through this plan.

Nelchina Public Use Area

The Nelchina Public Use Area comprises 2.5 million acres in the Talkeetna Mountains. The Public Use Area was established in 1985 by the legislature (ADNR 2000). The area is committed to public ownership and recognized to have outstanding opportunities for hunting, fishing,

recreation, and mining. Although a management plan for the area has not yet been developed, one of the reasons for its creation was to "perpetuate and enhance public enjoyment of fish and wildlife and their habitat including fishing, hunting, trapping, viewing, photography."

Scenic Byways

Additionally, there is one scenic byway, the George Parks Highway, within the primary study area. Management and use of the George Parks Scenic Byway is guided by the George Parks Highway Scenic Byway Corridor Partnership Plan (Alaska Department of Transportation and Public Facilities 2008) and the George Parks Highway Scenic Byway Master Interpretive Plan (ADNR 2012). These plans are not regulatory documents but provide recommendations and guidance for preserving the visual qualities of the byway and promote its use. These plans are not discussed further in this section as they do not hold any regulatory authority.

5.1.3. Landscape Character Types

Lands within the primary and secondary study areas were classified by LCT based on shared attributes of landform, vegetation, water, and cultural modification. This classification provides a framework to understand the relative abundance of coarse-level landscape attributes across the study area. A total of 13 LCTs identified in the Susitna-Watana PAD (AEA 2011) were field-validated in 2013. During this assessment, geographic boundaries of LCTs were refined, and areas within the primary and secondary study areas that had not been identified in the PAD were classified (Figure 5.1-9). A total of 31 LCTs have been identified. Assessment and refinement of character attributes and geographic boundaries of identified LCTs is ongoing. The preliminary LCTs classified within the primary and secondary study area are listed below:

- Chulitna – Nenana River Valley
- Portage Lowlands
- Kesugi-Curry Ridge
- Devils Canyon
- Talkeetna River Valley
- West Talkeetna Foothills
- Talkeetna Mountain High Peaks
- Susitna Upland Terrace
- Wet Upland Tundra
- East Talkeetna Foothills
- Upland West of Lakes
- Vee (River) Canyon
- Upland North
- Northeast Upland Hills
- Susitna Upland Wet Tundra Basin
- Southeast Wetland Plain
- Chulitna Mountains
- Chulitna Moist Tundra Uplands
- Mid Susitna River Valley
- Talkeetna Uplands
- Susitna River Valley

- Southern River Valley
- Talkeetna River Mountain Valley
- Susitna River
- Talkeetna Mountains
- Uplands South of Talkeetna Mountains
- Susitna Uplands
- Susitna- Maclaren Lowlands
- North Wetland Lakes
- Northeast Forest Few Lakes
- Southeast Wetland Lakes

The distribution of Project components across LCTs was calculated to better understand the relationship between Project siting and identified landscape attributes. This information, combined with analysis goals specific to Project components, will inform the selection of ALs chosen for photosimulations. The total acreage is based on the Project footprint and does not include additional areas used for construction-related activities (i.e., staging, laydown, or housing) or areas within the viewshed of the proposed Project. Likewise, these calculations do not include potential viewshed extent for these components. The actual viewshed extent will be determined based on the results of the impact analysis. The distribution of Project components across LCTs is summarized below, and in Table 5.1-2.

5.1.3.1. Reservoir

The proposed reservoir would be sited primarily within LCT associated with the Susitna River, with a relatively small portion of this project component extending to upland character types. The footprint of the reservoir (at capacity) would occupy 16,513 acres, or 28% of the Susitna River LCT, and 4,820 acres (22%) of the Susitna River Canyon LCT. The reservoir at capacity would occupy approximately 1% of the Susitna Upland Terrace (2,135 acres), and less than 1% (77 acres) of the Susitna Uplands. Locations where the reservoir extends to upland LCTs correspond to the lower reaches of Watana and Kosina Creek where these tributaries would be inundated at maximum reservoir elevation (2,050 feet).

5.1.3.2. Dam and Camp Facility Area

The proposed dam and camp facility area would primarily be sited within the Susitna River LCT, with the facility footprint occupying a small percentage of this LCT (4,729 acres, or 8%). The dam and camp facility would also occupy portions of the Wet Upland Tundra (3,199 acres or 1%) and Susitna Upland Terrace (1,651 acres or 1%). Portions of the facility located in upland LCT include areas used for access, construction staging, and related infrastructure.

5.1.3.3. Denali Corridor

The proposed Denali Corridor would be sited primarily within the Wet Upland Tundra LCT, with the footprint covering approximately 17,406 acres (6%) of this LCT where it runs north/south between the Denali Highway and the Susitna River. The portion of the Wet Upland Tundra LCT crossed by the proposed Corridor is located at its western edge; along the toe slope of the Chulitna Mountains. Less than 1% (2,610 acres) of the proposed Corridor extends into a

narrow pass on the eastern edge of the Chulitna Mountains LCT. Where the proposed Corridor parallels the Denali Highway, it would also occupy approximately 10% (5,921 acres) of the Chulitna and Nenana River Valley LCT.

5.1.3.4. Chulitna Corridor

The proposed Chulitna Corridor would primarily be sited within the Chulitna Moist Tundra Uplands LCT, with the footprint covering approximately 13,554 acres, or 12% of this LCT. The Chulitna Corridor footprint would also occupy approximately 45% (4,405 acres) the Portage Lowlands LCT, including a crossing of Portage Creek. The proposed Corridor would occupy less than 1% of the Wet Upland Tundra (1,369 acres), Susitna River (259 acres), and Susitna River Valley (101 acres) LCTs.

5.1.3.5. Gold Creek Corridor

The proposed Gold Creek Corridor would primarily be sited within the Susitna Upland Terrace LCT, with the footprint covering approximately 5% (7,962 acres) of this LCT. This LCT extends in a generally northeast-southwest orientation, and includes areas located to the north and south of the Susitna River. The Gold Creek Corridor occupies the northern edge of this LCT south of the Susitna and north of the Fog Lakes complex and Stephan Lake. To the east of the Susitna Upland Terrace LCT, the Corridor would occupy 12% (4,182 acres) of the Devils Canyon LCT along the south side of the Susitna River. The Corridor crosses numerous steep and incised tributaries draining to the main stem Susitna from the south. Smaller percentages of the Mid Susitna River Valley LCT (4% or 3,826 acres), and the Talkeetna Uplands (1% or 2,527 acres) would also be crossed by the Gold Creek Corridor. Portions of the Mid-Susitna River Valley LCT coincide with the location of the existing Chugach Electric transmission line, including where this transmission line crosses the Susitna.

5.1.4. Field Investigation

The visual resource team spent a total of 24 field days collecting data in the field over four seasons in 2013 (excluding pre-field logistics and travel). Field seasons occurred in winter, spring, summer, and fall of 2013. Seasons are defined by the solstice and equinox as follows:

- Winter –December 21 to March 20
- Spring – March 20 to June 20
- Summer –20 June to September 22
- Fall – September 22 to December 21

During the 2013 field season, a total of 135 ALs were visited across all four seasons. No safety incidents occurred during the 2013 field season. Table 5.1-3 provides a seasonal field data summary and Figure 5.1-6 shows the locations of all ALs visited during the 2013 field season. The map set provided in Appendix A shows each location in more detail.

5.1.5. Selection of Analysis Locations

Prior to each field season, target ALs were identified systematically by the aesthetics team. The primary objective was to establish ALs that address Analysis Goals stated in RSP Section 12.6.4. To achieve this goal, ALs were selected to assess proposed Project components in the context of analysis factors such as existing land use and viewer location, seasonality, LCT, and landscape visibility. ALs were also selected to address potential future land use and associated viewing opportunities. With these factors taken into account, ALs were distributed according to land status and used to develop a list of ALs to target during fieldwork. In most cases, ALs focused on one Project component (i.e., Dam and associated facilities; the Denali Corridor; the Gold Creek Corridor; and the Chulitna Corridor); however, in some cases, more than one component could be assessed from the same location, thereby introducing a secondary analysis focus. Specific locations were subject to adjustment in the field based on site-specific conditions. For example, some ALs were not accessible via helicopter, or were deemed unsuitable because views were precluded by tall vegetation. In other instances, new ALs were identified while in the field based on attributes of the study area that were not apparent through the desktop review. Factors influencing selection of ALs are discussed below.

5.1.5.1. Existing Land Use and Viewer Location

As part of baseline data collection, an assessment of the distribution and abundance of specific viewer types was initiated through interdisciplinary coordination with recreation resources. This effort focused primarily on identifying those viewer groups with a direct nexus to the primary study area, with emphasis on the modeled viewshed. Interdisciplinary coordination with recreation, subsistence, socioeconomics, cultural resources, and transportation is ongoing, and will be used to assess adequacy of ALs to assess potential viewers and viewer locations within the study area. A total of three Focus Groups will also be held to better understand viewer type and location.

A variety of consumptive and non-consumptive uses of the study area were identified, including recreation and subsistence-based hunting, trapping, and fishing, ATV riding, aviation/flightseeing, bicycling, boating (motorized and non-motorized), camping, dog sledding and skijoring, hiking/backpacking, nordic skiing, snowmachining, and sightseeing and wildlife viewing (Study 12.5). These activities are distributed across the study area and largely coincide with access, landscape character attributes, and seasonality.

Relevant information on viewer groups and viewer locations collected to date is summarized below.

5.1.5.1.1. Trails-Based Viewers

The primary study area contains a wide variety of trails, ranging from informal, unmaintained routes to formal, regularly maintained or groomed trails. Though the trails inventory is ongoing (see Recreation Resources Study (Study 12.5)), information collected to date provided location data used to inform our understanding of trails-based viewing opportunities. Detailed information on the trails and access point inventory is provided in Recreation Resources Study

(see ISR Study 12.5). Visual Distance Zones are presented in Figure 5.1-10 Information relevant to the Aesthetics Resources Study is summarized by geographic region, below.

Talkeetna and Southern George Parks Highway - Approximately 20 miles of trails exist within the vicinity of the Talkeetna Mountains. These trails extend from Petersville to the Talkeetna Mountains, providing access to hunting areas, mining claims, and remote sites (MSB 2008c). These trails are also widely used by local residents for access to residences and recreational cabins in the community of Chase, for hunting and wood gathering, and also general recreation. This area is outside the modeled viewshed of the primary study area, and therefor was not targeted for placement of ALs.

Denali State Park, Northern George Parks Highway, and the Railbelt Communities of Chulitna and Gold Creek - Denali State Park's trail system provides opportunities for hiking, camping, and scenery and wildlife viewing. The Kesugi Ridge and Little Coal Creek Trails intersect the modeled viewshed and include views that extend across the Indian River drainage, the Mid Susitna River Valley and Chulitna Moist Tundra Uplands LCTs and up the Susitna River. Recreators on this trail system could experience views of construction and/or operation-related activities associated with the Chulitna and/or Gold Creek Corridors. The Curry Landing Strip-Lookout Tower Trail (RST 1509, an RS2477 ROW) connects Curry Station to Lookout Point on Curry Ridge. This trail does not intersect the modeled viewshed. North of the State Park, a winter route connects the Parks Highway to cabins north of Gold Creek via Chulitna. Residents or recreators using this trail could experience views of the Chulitna and/or Gold Creek Corridors, including the proposed rail spur and laydown areas. Two trail systems run eastward from the community of Chulitna: (1) The Indian River-Portage Creek Trail (RST 100), which extends approximately 8 miles from mile 274 of the Alaska Railroad, east to Portage Creek, and (2) the Chulitna East Route (17b easement), that connects the Alaska Railroad and the community of Chulitna to High Lakes areas of the Chulitna Moist Tundra Uplands LCT. Residents and recreators using these trails could experience views of construction and or operation-related activities associated with the Chulitna and/or Gold Creek Corridors, including the proposed rail spur and laydown areas. The McWilliams-Gold Creek Trails runs eastward from the community of Gold Creek, connecting this area to the higher-elevation plateau south of the Susitna River. This trail is also considered an "Informal Winter Trail" (see ISR Study 12.5). Residents and recreators using these trails could experience views of construction and/or operation-related activities associated with the Chulitna and/or Gold Creek Corridors, including the proposed rail spur and laydown areas.

Denali Highway - The Denali Highway extends approximately 131 miles between the communities of Cantwell and Paxson. Recreators and tourists use this roadway for scenic drives, bicycling trips, and to access remote trails that support both motorized and non-motorized recreation. Several trails within this area are located within the modeled viewshed, including: the Jack River Trail (17b easement), the Brushkana Creek Trail, the Upper Brushkana Creek trail, the 103.6 South Trail, and the multi-use, year-round Butte Lake, Deadman Lake, and Rapter Valley routes. River-based recreation on Brushkana Creek and the Nenana River also occurs during summer months.

In the winter, the Denali Highway is closed to vehicle traffic; however, it is widely used for dog sledding and snowmachine use. Viewers located on these trail systems, rivers, or on the Denali

Highway could experience views of construction and/or operation-related activities associated with the Denali Corridor, the reservoir, and the dam and associated facilities.

Lake Louise and Glenn Highway - Lake Louise is located off the Glenn Highway, in the southwestern portion of the primary study area. During winter months, recreators use the Tyone Creek Route to travel north from the Lake Louise trail system and follow Tyone Creek to its headwaters and the Susitna River. Tyone Creek Route is partially groomed by members of a snowmachine club in Lake Louise. Recreators on this route may experience views of the reservoir if they ventured off trail to higher-elevation areas. Recreators may also enter the study area through the Chickaloon-Knick-Nelchina trail system, which connects the Glenn Highway to the Susitna River via the Old Man Creek-Goose Lake Trail. Recreators on this trail system could experience views of the reservoir.

5.1.5.1.2. Waterway-Based Viewer Groups

Motorized and non-motorized boating occurs on the rivers and large lakes in the study area. For example, Mahay's is a commercial operator offering guided jet boat tours between Talkeetna and Devils Canyon. Approximately 20,000 visitors per summer take one of these tours on this portion of the Susitna River. Viewers on these tours could experience views of the Gold Creek Corridor; however, much of this corridor is shielded from the viewshed of the river by topography and vegetation. Coordination with the River Recreation and Flow and Access Study (Study 12.7) to understand recreational use of the river at the inundation zone is ongoing.

5.1.5.1.3. Remote Area Viewers

Backcountry camping is also popular, particularly in the Talkeetna Mountains. Camping is often associated with hiking, hunting, fishing, and other forms of recreational activity. It is expected that additional information on more common remote area viewer locations will be obtained through ongoing interdisciplinary coordination and Focus Groups.

5.1.5.1.4. Rail-Based Viewers

The Alaska Railroad runs through the study area, carrying passengers who are part of tour groups; residents who are accessing their property; or recreators accessing the Susitna River and adjacent streams along the route for fishing and as departure points for float trips down the river. Viewers on the rail line would experience views of the Gold Creek and Chulitna corridors, including the proposed rail spur and laydown areas.

5.1.5.1.5. Aerial-Based Viewer Groups

As much of the study area is not accessible by roads or trails, private and commercial aviation is a primary form of transportation used to reach cabins, lodges, and other locations for recreation. Flightseeing as a recreational activity is often combined with other remote fly-in activities, such as hiking, camping, fishing, and hunting. Viewers flying over any portion of the study area would experience views of project components. Additional information on common flightseeing paths will be obtained through interdisciplinary coordination and Focus Groups.

5.1.5.2. Seasonality

The distribution of ALs assessed during the winter, spring and summer seasons are summarized below. A total of 135 ALs were visited in 2013, distributed across the four seasons. Many of the same ALs were visited across all seasons; however, locations were often selected based on existing or projected (post-Project) seasonal use patterns, and therefore were only relevant to one or two seasons. For example, the high number of ALs assessed during the summer months is due to the number of trails in the primary study area that were apparent due to snowmelt. The breakdown of ALs across seasons is as follows:

- Winter – 20 ALs
- Spring – 31 ALs
- Summer – 59 ALs
- Fall – 25 ALs

5.1.5.3. Landscape Character Type

To assess potential changes in landscape character, LCPs were established across the study area. These locations were not representative of a particular viewer experience; however, they provided a standard location to assess baseline aesthetic conditions of the area and to assess potential change that could result from the proposed Project and could also be considered representative of areas of dispersed recreation or subsistence uses. The distribution of proposed project components is presented in Table 5.1-3.

5.1.5.4. Viewer Distance

Adjacent (0 < to 0.5 miles from proposed Project components) – ALs placed adjacent to the proposed Project footprint were assessed to assess views from the project i.e., experienced from proposed access roads), or from adjacent locations within .5 miles. Forty-four ALs from the 2013 field season (or 32.5%) are adjacent to the proposed Project footprint.

Foreground/Middleground (0.5 miles to 5 miles from proposed Project components) – Views of the proposed dam from the foreground/middleground distance zone were assessed, with attention given to other analysis variables, such as vegetation cover, topography, angle of view, duration of view, and viewer position. In some cases, ALs were visited multiple times during the same season to assess views under different weather conditions. The majority of ALs visited during the 2013 field season were within the foreground/middleground distance zone. Sixty-three ALs (or 47%) were laced within this distance zone.

Background (5 miles to 15 miles from proposed Project components) – Views of the proposed dam from the background distance zone were assessed at seven ALs (or 6%) during the 2013 field season. Analysis variables listed above were also considered in the assessment of visual distance zones.

Seldom Seen (15+ miles from the proposed Project components) – Views of the proposed Project from the seldom seen distance zone were not assessed during the 2013 field season. Should the results of the analysis of ALs located in background distance zones indicate potential

project visibility beyond 15 miles, location in the seldom seen distance zone will be assessed during the next study year.

5.1.5.5. Potential New Viewer Locations

Two types of ALs were used to address future land use and new viewing opportunities: (1) locations on or near the proposed Chulitna, Gold Creek and Denali corridors, and (2) views locations within the proposed inundation zone at a maximum reservoir elevation of 2,050 feet. Locations placed on the proposed Corridor represented potential "new" views that could be experienced from these travelways as a result of improved access.

Other potential new viewing opportunities were identified at vistas located in proximity to the corridors or edge of reservoir. These locations were identified by locating topographical high points within 5 miles of these Project components using modeling techniques in GIS to identify local high points within a one-mile radius. ALs were also placed in the proposed inundation zone at the maximum reservoir elevation (2,050 feet) in order to simulate potential new views that would be available to individuals positioned on the reservoir. Twenty-one ALs from the 2013 field season (or 12.5%) were placed within the proposed Project footprint.

5.1.5.6. Land Status

A total of 83 ALs were placed in state-owned land, approximately double the total of 44 ALs placed on BLM-administered lands. No ALs were placed on NPS-administered lands. Seven ALs were placed on Ahtna Corporation lands (along the Denali Highway) and one AL was placed on private land at High Lakes Lodge. The study team did not have access to CIRWG lands in 2013. Table 5.1-4 provides a summary of ALs surveyed in 2013 by land status.

Processing of fall field data is ongoing. The discussion is organized by Project component to convey the types of AL and Project component or view targeted for analysis. Each AL is labeled with a pre-fix that indicates the season the AL was visited (WN = Winter; SP = Spring; SU = Summer; FL = Fall). Numbering will be refined to be more intuitive after the fall data has been processed.

5.1.6. Summary of Analysis Locations

ALs were categorized as OPs, OAs, OCs, or LCPs (RSP Section 12.6.4). LCPs and OCs were the most abundant AL types surveyed, with each accounting for approximately 44% of the total ALs surveyed during 2013. OPs accounted for approximately 17% while OAs accounted for approximately 9% of the total ALs. The abundance of LCPs is a result of the remoteness and limited access of much of the study area. Opportunities to access the area via an existing corridor or to view the area from an established vista are limited. The high proportion of OCs results from the level of effort placed on assessing existing viewer locations along the Denali Highway and existing trails. ALs are described as follows:

5.1.6.1. Denali Corridor, Paralleling the Denali Highway

The purpose of ALs sited in the following locations is to document existing conditions looking toward the proposed Denali Corridor, and to assess potential impacts to aesthetic resources that

could result from construction and operation of the proposed Denali Corridor, including the proposed transmission line and associated right-of-way, and potential improvements to the Denali Highway.

- **Cantwell (SU153):** SU153 is located on a local thoroughfare in the Town of Cantwell. The view is directed east across Cantwell toward the Denali Highway.

- **Jack River Trail (SU171):** SU171 is located on the Jack River Trail, an existing two-track located south of the Denali Highway and the eastern end of the Town of Cantwell. The view is directed north toward the Highway and the Alaska Range.

- **Denali Highway MP 123 (WN28):** WN28 is located on the Denali Highway near MP 123. The view is directed west and is intended to represent the viewing experience of snowmachiners traveling on the Denali Highway.

- **Denali Highway MP 123 (SP01):** SP01 is located at a roadside pull-off on the Denali Highway. This AL provides views of the proposed Denali Corridor that could be experienced by roadway travelers (recreators, tourists) stopped at the pull-off.

- **Denali Highway MP 123 (SP02):** SP02 is located in the same location as WN28. The purpose of this AL is the same as listed above; however, it targets spring users of the highway (variable and weather dependent).

- **Denali Highway MP 123 (SU151 and SU172):** SU151 and SU172 are located in the same location as WN28 and SP02.The purpose of this AL is the same as listed above; however, it targets summer users of the highway. SU151 and SU172 were collected under different weather conditions to complete the evaluation under a range of conditions.

- **Denali Highway MP 123 (FL19):** FL19 is located in the same location as WN28, SP02, SU151, and SU172. The purpose of this AL is the same as listed above; however, it targets fall users, which includes an increased level of hunting access-related use.

- **Denali Highway MP 123 (SP03):** SP03 is located at the intersection of the Denali Highway and the proposed Denali Corridor, where it turns south toward the Susitna River. The view being analyzed is directed primarily to the south from the Denali Highway toward the proposed Denali Corridor. AL type is an OC, intended to represent roadway travelers on the Denali Highway.

- **Nenana River Overlook (SU173):** SU173 is situated on BLM land located north of the Denali Highway and Nenana River. The view being analyzed is directed to the south and provides the perspective of a superior (elevated) viewing position. The AL is classified as a LCP.

- **Denali Highway MP 118.5 - Nenana River Put-in (SU150)** - SU150 is located on the Denali Highway west of a put-in for the Nenana River. The view being analyzed is directed to the east along the highway. The AL is classified as an OC, intended to represent views experienced by roadway travelers on the Denali Highway. Information from this location may be extrapolated to represent an OP located at the interpretive sign at the put-in to the Nenana River.

- **Denali Highway MP 115.5 (WN1):** WN1 is located at a scenic overlook of the Nenana River on the Denali Highway (MP 115.5). The view being analyzed is directed generally to the southeast. The AL is classified as an OP, to represent views experienced when stopped at the lookout.

- **Denali Highway MP 107.9 (SP04):** SP04 is located on the Denali Highway, facing west toward where the transmission line and access road turns south toward the study area. The view being analyzed is directed to the west. The AL is classified as an OC to capture the views seen by roadway travelers traveling west on the Denali Highway.

- **Brushkana Nenana Confluence (SU147):** SU147 is located at the confluence of the Brushkana and Nenana rivers. The view is looking downriver (southwest) toward the proposed Denali Corridor where it turns southward toward the Susitna River. The AL is classified as a LCP.

- **Brushkana Creek Trail (SU146)**: SU146 is located on a small spur trail off the Brushkana Creek Trail, located north of the Denali Highway. The AL is classified as an OC.

5.1.6.2. Denali Corridor, South of the Denali Highway

The purpose of ALs sited in the following locations is to document existing conditions looking toward the proposed Denali Corridor south of the Denali Highway, and to assess potential impacts to aesthetic resources that could result from construction and operation of the proposed Corridor, including the proposed transmission line and associated right-of-way, and access road.

- **Dispersed Campsite (WN3, SP05, SU145, and FL17):** This collection of ALs is located on top of a small knoll at the end of a trail leading from the Denali Highway at a dispersed campsite, approximately 3.5 miles south of the Denali Highway. The view being analyzed is directed northwest toward the proposed Denali Corridor. The AL is classified as an OP to represent views from the dispersed campsite; however it is also considered an OA representing views experienced by more transient use in dispersed recreation and hunting. During winter and spring, the AL is considered an OA since camping is unlikely during those seasons.

- **Nenana River Basin View (SU144)**: SU144 is located in the foothills of the Chulitna Mountains, just east of the Seattle Creek Trail. View is from a superior (elevated) position, overlooking the broad wet upland tundra, the Brushkana and Nenana River Valleys, and the Denali Highway. SU144 is located approximately 4miles to the north of SU142 on the same two-track. The view being analyzed is directed northeast across the proposed Denali Corridor. The AL is classified as an OC to demonstrate views experienced by recreators using the Seattle Creek Trail.

- **Two-track Overlooking Denali Corridor (SU142 and SU174):** This collection of ALs are located on a the Seattle Creek Trail, an existing two-track originating at the Denali Highway and running southwest to the Chulitna Mountains. These ALs are situated in the foothills of the Chulitna Mountains, overlooking the Denali Corridor to the east. Though collocated, SU174 was established on a clearer day when visibility extended to the background/seldom

seen distance zone. The view being analyzed is directed east toward the proposed Denali Corridor. The AL is classified as an OC.

- **Brushkana Creek (WN4, SP06, SU141, and FL16):** This collection of ALs is located on/near a two-track trail that originates at the Denali Highway, and on/adjacent to the proposed right-of-way. These ALs also assess potential views of the Brushkana Creek headwaters from this corridor. The AL type is classified as an OC, intended to represent viewer experience from the existing two-track trail.

- **Butte Lake Trail (SU140):** SU140 is located on the Butte Lake Trail, a two-track leading to Deadman Lake from the Denali Highway. The view being analyzed is directed to the southwest toward Deadman Lake. The AL is classified as an OC.

- **Deadman Lake (WN5, SP08, SU28, and FL15)**: This collection of ALs are located on the south end of Deadman Lake, with the exception of the winter location which is on the west end. The view being analyzed is directed generally north across Deadman Lake. The AL type is classified as both an OC and OP, due to the access provided by the Butte Lake Trail, and because Deadman Lake was identified as a notable natural feature.

- **Susitna Upland Terrace LCT (SU177):** This AL is located at a high elevation point overlooking the Susitna River LCT and Susitna Upland Terrace LCP. The view being analyzed is directed generally north. The AL is classified as a LCP.

- **Wet Upland Tundra LCT (SU175):** SU175 is located on flat terrain north of Big/Deadman Lakes due east of where the proposed Denali Corridor splits. The AL is classified as a LCP.

5.1.6.3. Chulitna Corridor

The purpose of ALs sited in the following locations is to document existing conditions looking toward the proposed Chulitna Corridor, and to assess potential impacts to aesthetic resources that could result from construction and operation of the Corridor, including the proposed transmission line and associated right-of-way, access road, and – at its western terminus – the proposed rail spur and staging area.

- **Indian River Floodplain at railroad (SP13):** SP13 is located in the floodplain of the Indian River on the east side of the railroad. The AL is classified as an OC as it is meant to represent views experience by individuals within the Indian River basin.

- **Communication Tower (SP17, SU100, and FL24):** This collection of ALs are located near a communication tower site, on a ridge top above Miami Lake, and south of the proposed Chulitna Corridor. The view being analyzed is directed to the north. The AL is classified as an LCP.

- **Beaver Pond (SU165):** SU165 is located south of the proposed Chulitna Corridor, on BLM administered. The AL is situated at the eastern shoreline of an oval-shaped pond. This location is considered an OC to represent individuals on the Indian River-Portage Creek Trail.

- **Chulitna Corridor Overlook (SU77 and FL23):** This collection of ALs is located upslope of the proposed Chulitna ROW (north) on BLM-administered lands above the Indian River-Portage Creek Trail. The view being analyzed is directed to generally to the south across the Portage River drainage to the Susitna River. The AL is classified as an OC due to the Indian River-Portage Creek Trail.

- **Chulitna View (SU191):** SU191 is situated on a small knoll approximately 300 meters upslope of the proposed Chulitna Corridor. The view being analyzed is directed south across the Susitna River Valley and proposed Chulitna Corridor. The AL is classified as an LCP.

- **Portage Creek Drainage (WN24, SP09, SU44, and FL2):** This collection of ALs is located on a ridge top overlooking the Portage Creek valley, on the northwest side of the basin. The exact location of ALs differed across season due to accessibility and safety. The view being analyzed is directed south down the drainage. This collection of ALs is classified as LCPs.

- **Big Bear Lake (SU 123):** SU123 is located west of Big Bear Lake, on the upper edge of Devils creek basin. This location was targeted due to its use as a remote fly-in access point to the study area. The view being analyzed is directed to the northeast. The AL is classified as an LCP.

- **Chulitna Moist Upland Tundra (SP10, SU121, and SU122)**: This collection of ALs is located in a broad, flat to rolling wide open area on the proposed Chulitna Corridor. The view being analyzed is directed to the south, east, and west along the proposed Chulitna Corridor. The AL is classified as an LCP.

- **Above Devil Creek (SP14):** SP14 is located just east of Devils Creek, south of the proposed Chulitna Corridor ROW. The view being analyzed is directed west. The AL is classified as a LCP.

- **Chulitna Corridor - Denali View (WN23):** WN23 is located south of the proposed Chulitna Corridor. The view directed to the south/southeast along the proposed Chulitna corridor, and includes an unobstructed view of Denali National Park and Denali in the background/seldom seen distance zone. The primary purpose of this AL is to document potential new viewing experiences from the proposed Chulitna Corridor. The AL is classified as a LCP.

- **Tsusena Creek Trail (SU119 and SU120):** AL SU119 is situated on the Tsusena Creek Trail, where this existing two-track intersects the proposed Chulitna Corridor. The view being analyzed is directed south toward the proposed Chulitna Corridor. AL SU120 is located adjacent to the Tsusena Creek Trail. The purpose of this AL is to demonstrate dominant and focal views directed northeast toward Tsusena Butte from the proposed Chulitna Corridor. The AL is classified as an OC to represent views experienced from the Tsusena Creek Trail.

5.1.6.4. Gold Reek Corridor

The purpose of ALs sited in the following locations is to document existing conditions looking toward the proposed Gold Creek Corridor, and to assess potential impacts to aesthetic resources that could result from construction and operation of the Corridor, including the proposed

transmission line and associated right-of-way, access road, and – at its western terminus – the proposed rail spur and staging area.

- **Gold Reek Confluence (SU160):** SU160 is located on river right of the Susitna River on a gravel bar upriver of the Gold Creek Bridge, within the Indian River Recreation Area. Views from SU160 extend across the river to the western terminus of the Gold Creek Corridor. The view being analyzed is directed east across the river.

- **Indian River Confluence (WN12, SP29, SU161, and FL25):** This collection of ALs is located at confluence of the Indian River and Susitna River. The view being analyzed is directed to the east across the Susitna River toward the proposed corridor. The AL is classified as an OP.

- **McWilliams-Gold Creek Route (SU101):** SU101 is located on the McWilliams-Gold Creek Route, on a ridge overlooking the Susitna Valley to the north. The purpose of this AL is to assess potential change in visual resource attributes that could result from construction and operation of the Gold Creek and/or Chulitna Corridors, including the proposed transmission line, associated right-of-way, and access road. The view being analyzed is to the north and west form State of Alaska-owned lands.

- **McWilliams-Gold Creek Route Overlook (SU197 and FL1):** This collection of ALs is located on the Talkeetna Uplands LCT, south of the Susitna River. The view being analyzed is directed primarily to the north.

- **Ridge above McWilliams-Gold Creek Route (WN7, SP30, and SU31):** This collection of ALs is located upslope of the McWilliams-Gold Creek Route, south of the Susitna River. The view being analyzed is directed primarily north. The AL is classified as an OC since it is located just south of an existing route. Note that views from this location also extend to the location of the proposed Chulitna Corridor.

- **Mid Susitna River Valley (WN13):** WN13 is located upslope from the Susitna River, between the railroad and the existing Chugach Electric transmission line corridor. The view being analyzed is directed to the north / northeast toward the Gold Creek Bridge, Susitna River, and proposed Gold Creek Corridor.

- **Denali View from Gold Creek (SU190):** SU190 is located 2 miles south of the proposed Gold Creek Corridor. The view is directed to the northwest across the Susitna River to the Alaska Range and Denali. The AL is classified as a LCP under existing conditions. This location could provide opportunity for new viewing experiences under post-project conditions as a result of improved access to the area.

- **Chugach Electric (WN10):** WN10 is located on the existing transmission line corridor north of the Susitna River, upriver of the Gold Creek Bridge. The view being analyzed is directed to the south. WN10 is classified an LCP. In addition to objectives stated above, this AL was also used to understand (1) potential cumulative impacts that could result from construction and operation of the Gold Creek Corridor, and (2) visual absorption of the river valley, particularly given the varied topography of the valley wall.

- **Kesugi Ridge Trail on Curry Ridge (Denali State Park) (WN8, SP28, and SU32):** This collection of ALs is located on the Kesugi Ridge Trail on Curry Ridge. The view being analyzed is directed to the east/northeast. The AL is classified as an OC to represent recreators on the Kesugi Ridge Trail.

- **Kesugi Ridge Trail on Kesugi Ridge (Denali State Park) (WN11, SP25, and SU35):** SU35 is located on/near the Kesugi Ridge Trail on Kesugi Ridge in Denali State Park. View faces southeast toward the Susitna River drainage. The view being analyzed is directed to the east. The AL is classified as an OC, intended to represent recreators on or near the Kesugi Ridge Trail.

- **High Lakes Lodge (SP18):**SP18 is located on the southeast corner of the High Lakes Lodge property. The view being analyzed is directed generally south. The AL is classified as an OP.

- **Above High Lakes Lodge (WN22, SP19, and SU42):** This collection of ALs is located on a knoll to the east of High Lakes Lodge. The view being analyzed is directed to the east. The AL type is classified as a LCP.

- **Gold Creek Corridor from North (SU106 and SP26):** This collection of ALs is located on an elevated, rocky, bench above the Susitna River near the eastern end of Devils Canyon. The purpose of this AL is to assess potential change in visual resource attributes that could result from the construction and operation of the Gold Creek Corridor, including the proposed transmission line and associated right-of-way and access road. The view being analyzed is directed to the west toward the Devils Canyon. The AL is classified as a LCP.

- **Proposed Gold Creek Corridor (SP31, SU107, and FL4):** This collection of ALs is perched on a ridge overlooking an unnamed drainage to the Susitna River. The purpose of this AL is to assess potential change in visual resource attributes that may result from the construction and operation of the Gold Creek Corridor, including the proposed transmission corridor and access road. The view being analyzed is directed to the northwest across the proposed Gold Creek Corridor. This point is classified as a LCP.

- **Susitna River by Boat (SU164):** SU164 is located in the Susitna River channel upriver of the crosses of the Chugach Electric transmission line corridor. The view being analyzed is directed to the south across the river to upland areas. The AL is classified as an OC to represent viewers experiencing the basin by boat.

5.1.6.5. Dam and Associated Facilities

The purpose of ALs sited in the following locations is to document existing conditions for views directed toward the location of the proposed Dam and associated facilities, and to assess potential impacts to aesthetic resources that could result from construction and operation this facility. These points may also include views of the reservoir; however their primary objective is to assess conditions at the facility site.

- **Susitna Upland Terrace (SP32):** AL SP32 is located on the foothills of the Talkeetna Mountains, southeast of the proposed dam site and reservoir. The view being analyzed is directed generally to the north, and map may also include the Gold Creek Corridor. The AL

is classified as a LCP, and can also be considered an OA that is representative of dispersed recreation or subsistence.

- **High Point East of Tsusena Creek (SP22 and SU108):** SP22 is located immediately to the northwest of dam site. The view being analyzed is directed primarily to the south and southwest.SU108 is located on the east side of Tsusena Creek, on a ridge above the proposed staging area, approximately ¾-mile west (downriver) of SP22.The view being analyzed is directed primarily to the south and southwest. This collection of ALs was classified as LCPs.

- **Chulitna Corridor - View of Dam Site (WN6 and SP15):** This collection of ALs is located along the proposed Chulitna Corridor. The view being analyzed is directed to the east. The AL type is classified as a LCP. Views to the NNE include the proposed Denali corridor. Views to the E and SSE include the dam site and reservoir as well as their proposed access.

5.1.6.6. Reservoir

The purpose of ALs sited in the following locations is to document existing conditions looking toward the location of the proposed reservoir, and to assess potential impacts to aesthetic resources that could result from construction and operation this feature. In many cases, these pints included photography and data collected at ground plane on the river, and at an elevation of 2050 feet. Collection of data at this elevation will allow for an assessment of conditions following inundation of the reservoir.

- **Susitna Upland Terrace - Fog Lakes View (SU148 and SU176):** This collection of ALs is located on a knoll overlooking Fog Lakes to the northwest from a superior (elevated) viewing position. Although these ALs are collocated; however the two points were visited on two separate days to characterize different weather conditions. The view being analyzed is directed to the northwest across Fog Lakes toward the proposed Project. The AL is classified as a LCP.

- **Fog Lakes (SU168 and FL5):** This collection of ALs overlooks Fog Lakes to the north from a slightly superior (elevated) viewing position. The view being analyzed is directed northwest. The AL is classified as a LCP.

- **Above Katana Creek (SU105 and SU 193):** This collection of ALs was collocated on river left (south), on a high point above the river. This superior position provides expansive views of the Susitna River valley to the west (downriver). The purpose of this AL is to assess the potential change in visual resources that may result from construction and operation of the reservoir. The viewing being analyzed is directed to the west. The AL is classified as a LCP. Photographs were collected at this location on two separate days characterized by different weather conditions and view extent.

- **Elevated View of Reservoir from the South (SP27):** SP27 is located at a high point above the Susitna River, with views downriver and west to Denali. The view being analyzed is generally to the north toward the Susitna River valley and proposed inundation zone. The AL is classified as a LCP.

- **Susitna Valley & Watana Creek Overlook (WN26 and SP07):** This collection of ALs are classified as an LCP situated on a rocky knoll above Susitna River valley and Watana Creek

confluence. Although this AL is closer to the Denali Corridor (approximately 4-miles to the west), focus is on the Watana Creek (approximately 8.5-miles to the south). The purpose of the AL is to assess the potential change in visual resource attributes that may result from inundation of the reservoir and the mouth of Watana Creek. The view being analyzed is directed to the south. The AL is classified as a LCP.

- **Looking East toward Watana Creek (SP12):** SP12 is located on a flat area west of the proposed inundation zone of Watana Creek. The view being analyzed is directed to the east toward the proposed inundation zone of Watana Creek. The AL is classified as a LCP.

- **Reservoir View from Uplands (WN20):** WN20 is located north of the Susitna River, approximately 5 miles west of Watana Creek. The purpose of this AL is to assess potential change in visual resources that may result from inundation of the Susitna River and tributaries entering the main stem from the north. View being analyzed is directed to east-southeast. AL is classified as an OA, representative of low use and dispersed winter recreation.

- **Denali View Across River (SU194 and FL8):** This collection of ALs is located north of the Susitna River, approximately 0.9 miles from the existing river's edge and approximately 0.4 miles from the edge of the proposed reservoir. The view being analyzed is directed downriver, to the west. The AL is classified as a LCP since there is no access to this point, although this location could provide an opportunity for a new viewing experience due to its proximity to the shoreline of the proposed reservoir (at capacity).

- **Clarence Lake (SP16):** SP16 is located at the west end of Clarence Lake. The purpose of this AL is to collect data on the Susitna Upland Landscape Character, and assess area managed as Remote Developed Lakeside.

- **Jay Creek Upland (SP24):** SP24 is located above Jay Creek, near the confluence with the Susitna River. The view being analyzed is directed generally southwest toward Jay Creek. The AL is classified as a LCP.

- **South Butte Trail (SU11):** SU11 is located on South Butte Trail, above the Susitna River, approximately 1.5-miles north of the river. The view being analyzed is primarily west. The AL is classified as an OC to represent trail users.

- **Watana Creek Inundation Zone (SU14):** SU14 is located on river right of Watana Creek, within the inundation zone of the proposed reservoir. The view being analyzed is directed north (upstream) and south (downstream). The AL is classified as an OC, as recreators or individuals engaged in subsistence may use this drainage for overland travel.

- **Jay Creek Drainage (SU112 and FL11):** This collection of ALs is located on the Jay Creek trail, along a ridge situated on the west side of Jay Creek. The AL is situated adjacent to a large amphitheater-like cliff that boarder the Creek. In addition to objectives defined above, the purpose of this AL is also to assess potential impacts to visual resources that may result from the inundation at the mouth of Jay Creek. The view being analyzed is directed downriver (south) along Jay Creek toward the Susitna River. The AL is classified as a LCP.

- **Goose Lake Trail (SU110):** SU110 is located on the Goose Lake Trail, where the trail ends at the base of a high butte. The view being analyzed is directed generally to the north. The AL is classified as an OC to represent viewers located on the Goose Lake Trail.

- **Susitna River Inundation Zone - PRM 197.5 (SU114, SU115, SU116, SU117, and SU195):** This collection of ALs are located on a flat, elliptical sandy island located upriver of Watana Creek. The purpose of this AL is to document existing conditions at river level, and to collect photography that could be used to create photosimulations of the proposed reservoir. Photos were taken on the east end of the island looking east (upriver) and on the west end of the island looking west (downriver). Photographs were then collected in those same locations; however at the elevation of the proposed reservoir (2050 feet). The AL is classified as an OC to represent travel by recreators or individuals engaged in subsistence on the river.

- **Susitna River Inundation Zone – PRM 211.6 (SU111):** SU111 is located on vegetated island/sand bar within the Susitna River, upriver of its confluence with Jay Creek. The purpose of this AL is to document existing conditions at river level and collect photography that could be used to simulate the proposed reservoir at an elevation of 2050 feet. The AL is classified as an OC to represent potential use as a travel corridor.

- **Susitna PRM 221.75 (SU104):** SU104 is located in the middle of the channel, downstream of Vee Canyon. Photographs were taken on an existing gravel bar in the middle of the channel at the existing grade as well as at the proposed reservoir elevation at capacity (2,050-feet). The view being analyzed is directed to the west, downriver. The AL is classified as an OC.

- **Vee Canyon (WN21 and SP33):** WN21 and SP33 are located south of Vee Canyon on a ridge overlooking the canyon. View is from a superior position. The view being analyzed is directed to the northeast. The AL is classified as a LCP. Vee Canyon is considered a notable natural feature.

- **Vee Canyon Uplands (SU103 and FL14):** SU103 and FL14 are located on BLM-administered land south of the Susitna River, approximately 1/4-mile downriver of Vee Canyon. Views are from a superior viewing position, located above the river. The view being analyzed is directed to the north. The AL is classified as a LCP. Vee Canyon is considered a notable natural feature.

- **View toward Tsusena Butte from East (SU118):** SU118 is situated at a high point located east of the Denali Corridor northeast of Tsusena Butte. The view being analyzed is directed to the southwest. The AL is classified as a LCP.

- **Wet Upland Tundra Lakes (SP11 and SU167):** This collection of ALs are located on a rocky knoll located north of the Susitna River. This superior (elevated) viewer position provides expansive views across the Wet Upland Tundra to the Susitna River basin and Susitna Upland Terrace. The view being analyzed is directed south toward the proposed inundation zone. The AL is classified as a LCP, although it is also considered a potential new viewing opportunity due to its proximity to the Denali Corridor.

5.1.7. Baseline Data Collection

5.1.7.1. Landscape Character and Scenic Quality

BLM Planning Level Data

Scenic quality data collected as part of the VRI for the East Alaska BLM RMP planning effort in 2003 was reviewed. Based on that inventory, none of the proposed Project footprint is located in areas classified as having Class A Scenic Quality. Approximately 78.6 square miles of the proposed Project footprint was classified as Class B Scenic Quality, and 73.3 square miles was classified as Class C Scenic Quality (Figure 5.1-11).

Project Level Data

Project-level landscape character and scenic quality data was gathered through field surveys. A narrative describing AL location, Project nexus, AL purpose, viewer context, landscape visibility (distance zones), landscape character, and scenic quality attributes was compiled. Additional information on analysis factors such as scale (size relationship, proportion), dominance (attraction, visibility), distance from the Project, predominant angle of observation, dominant use (i.e., recreation or travel), and average travel speed at which the Project would be viewed was included where relevant. Photographs were collected to document baseline conditions and serve as the basis for development of photosimulations. Narratives and are provided in Appendix B of this report. Associated photographs are available for download at http://gis.suhydro.org/reports/isr.

5.1.7.2. Visual Sensitivity

Visual sensitivity was assessed as part of the VRI conducted for the East Alaska BLM RMP planning effort in 2003 (Figure 5.1-12). Based on that VRI, the majority of the proposed Project footprint is located in areas classified as having low visual sensitivity (65.9 square miles). This area corresponds with much of the interior of the study area, and the majority of the area crossed by the Project footprint. Approximately 7.1 square miles of the proposed Project footprint is located in areas classified as having high visual sensitivity. This area corresponds to locations along the Denali Highway, where viewers experience the landscape within the foreground-middleground zone, in an area frequented by recreators, individuals engaged in subsistence, and tourists. A small portion of the study area is classified as having moderate sensitivity (approximately 3.1 square miles). This area corresponds to a few areas east of the George Parks Highway and north of the Chulitna Corridor as well as a few high points scattered throughout the study area (Figure 5.1-12). Project-level data designed to inform the visual sensitivity assessment was collected through intercept surveys mail surveys, and executive interviews completed in coordination with recreation resources, socioeconomics, and subsistence resources during the 2013 study year. These data will be assessed during the second study year, and used to identify participants and direct content of Focus Groups with public agencies, (2) local tour operators/outfitters and guides/lodge owners, and (3) Alaska Native populations.

5.1.8. Photosimulations

Development of photosimulations was initiated during the 2013 study year through collection of baseline photography, and subsequent development of panoramic imagery. Panoramic photos are available for download at http://gis.suhydro.org/reports/isr.

5.2. Soundscape

5.2.1. Review Documentation and Develop Data Needs

The following are laws, ordinances, regulations, standards, and guidance that may influence the Project construction and operation noise impact assessment:

- The second edition of the Bureau of Reclamation Water and Land Recreation Opportunity Spectrum (WALROS) Handbook describes guidelines for several social setting attributes used to characterize or categorize recreation land uses or opportunities. With respect to sound, a "reasonable standard for the percent of noise disturbances per number of recreation groups" ranges from 10% for an "urban" category to 1% for a "primitive" recreation setting (Bureau of Reclamation 2011).

- Table 5.1-5 reproduces Table 2.5 from the 2006 Denali National Park Backcountry Management Plan (DNP 2006) and describes four categories of disturbance to what is otherwise natural soundscape.

- There are guidelines at the federal level that direct the consideration of a broad range of noise and vibration issues as listed below:

    - National Environmental Policy Act (42 United States Code [USC] 4321, et seq.) (Public Law-91-190) (40 Code of Federal Regulations [CFR] § 1506.5)

    - Noise Control Act of 1972 (42 USC 4910)

    - U.S. Department of Housing and Urban Development Noise Guidelines 24 CFR § 51 subpart B

    - The U.S. Environmental Protection Agency (EPA) has not promulgated standards or regulations for environmental noise generated by power plants; however, the EPA has published a guideline that specifically addresses issues of community noise (EPA 1974). This guideline, commonly referred to as the "levels document," contains goals for noise levels affecting residential land use of day-night sound level (L_{dn}) <55 a-weighted decibel (dBA) for exterior levels and L_{dn}<45 dBA for interior levels. The U.S. Department of Housing and Urban Development Noise Guidebook Chapter 2 (24 CFR Section 51.101(a)(8)) also recommends that exterior areas of frequent human use follow the EPA guideline of 55 $dBAL_{dn}$. However, the same Section 51.101(a)(8) indicates that a noise level of up to 65 $dBAL_{dn}$ could be considered acceptable.

- Occupational exposure to noise is regulated by 29 CFR 1910.95, Occupational Noise Exposure, which in summary describes requirements of an employer for implementation of feasible administrative or engineering controls, personal protective equipment, and/or a hearing conservation program to protect its employees against the effects of noise exposure when it exceeds an average of 90 dBA for an 8-hour period.

As of this writing, no State, borough or municipality laws, ordinances or regulations have been found that specifically apply to noise from hydropower facilities or their construction. Research for pertinent laws, ordinances, regulations, standards and guidance will continue through 2013, with results added and appropriately considered as part of the preliminary Project construction noise assessment and subsequent Project operation noise assessment.

5.2.2. Seasonal Surveys of Ambient Sound Levels

Soundscape ALs were often selected to coincide with ALs from the visual resource assessment, or other remote locations that were considered representative of the variety of study area landscapes and/or soundscapes. LT monitoring positions were planned ahead of each seasonal survey. Final LT monitor installation positions, within the permitted areas and within adequate proximity to pre-planned location coordinates, were determined after factoring in field conditions such as topography, helicopter access and vegetative cover. At each LT monitor installation, the sound level meter (SLM) and digital audio recorder each has its own external power source (e.g., a battery external to the device) to provide operation capacity beyond that of internal instrument batteries. Each LT monitor has been setup with the audio recorder receiving an input signal through the SLM; hence, the duration of audio recording (AR) has depended on either the battery life of the SLM or the audio recorder. However, as shown in Tables 5.2-1, 5.2-2, 5.2-3, and 5.2-4, there are apparent instances when the SLM continued to function, measuring and storing sound pressure level (SPL) data, after the audio recorder automatically shutoff due to lack of sufficient voltage from its separate power source. In most cases when this occurred, however, concurrent SPL and AR data were collected for multiple consecutive diurnal periods. In a few instances, shown as Winter LT3, Spring LT8, and Summer LT2 in Tables 5.2-1, 5.2-2, and 5.2-3, respectively, concurrent SPL and AR data were collected for less than a full 24-hour period.

In summary, and based on a preliminary analysis of baseline soundscape data collected to date (as part of customary downloading and storing survey data to off-instrument memory locations), measured SPL at the LT (Table 5.2-1 though Table 5.2-4) and ST (Table 5.2-5 through Table 5.2-8) locations appear to be generally consistent with expectations based on contributing factors such as nearby vegetative cover, topography, the proximity and characteristics of flowing water, and meteorological and other conditions experienced during the measurement periods. Some noteworthy examples of such consistency with expectations are as follows:

- During the winter soundscape survey, and as indicated by ranges of daily L_{eq} and L_{90} in Table 5.2-1, the presence of snow cover at (and remoteness of) locations LT2, LT4, and LT7 is likely responsible for the "background" L_{90} levels staying below 20 dBA.
- During the spring soundscape survey, and as indicated by narrow ranges of daily L_{eq} and L_{90} in Table 5.2-2, the proximity of a continuous source of sound—the flow of water—is evident at monitoring location LT2. Likewise, ST16 and ST20 shown in Table 5.2-8

exhibit narrow measurement value ranges, as well as near equivalency between L_{eq} and L_{90}, that one can expect when measuring sound near natural running water.

- Similar to the results from spring survey location LT2, the LT5 location from the summer soundscape survey also exhibits narrow ranges of daily L_{eq} and L_{90} in Table 5.2-3, which implies the presence of a continuous source of sound. In this case, the observed source was a creek, but at a distance from the summer LT5 monitoring position that is greater than that of the distance between spring LT2 and Gold Creek.
- The 5 dB difference between L_{eq} and L_{90} values at LT5 during the fall survey (Table 5.2-4) appears consistent with the difference in the arithmetic averages of the L_{eq} and L_{90} summer survey value ranges at the same LT5 monitoring location, thus supporting the supposition of apparent acoustical contribution of creek water flow.

Please refer to Figures 5.2-1 and 5.2-2 that show the LT and ST soundscape monitoring positions with respect to the study area.

5.3. Modeling of Project Sound Levels

Preliminary steps to develop predictive analysis of Project construction activity noise levels were completed. The purposes of this preliminary construction noise modeling effort are as follows:

- to understand what Project construction activity and/or planning information (and level of detail) is readily available;
- to identify what further information and data is needed for a more refined level of predictive analysis; and,
- to gain appreciation of what construction activities, and where in the Project study area, may have the potential to cause elevated noise levels with respect to what has been measured or monitored as part of the seasonal baseline soundscape field surveys that were completed in 2013.

Information on construction-related activity required for the proposed Project contained in AEA's PAD (AEA 2011) was reviewed. Because information contained in this document was limited, similar studies were assessed to develop a workable but preliminary set of CADNA/A model input parameters. Available information is summarized as follows:

Preliminary Application Document (AEA 2011)

The PAD (AEA 2011) contains information that generally describes Project construction activities and their locations, including:

- Site plan of the proposed dam (Figure 3.3-1 of AEAs PAD [AEA2011])
- Access road and transmission line route options (Figure 3.3-8 of AEAs PAD [AEA2011])
- Road descriptions (Section 3.3.1.10.1 of AEAs PAD [AEA2011])
- Work camp (Section 3.3.1.11 of AEAs PAD [AEA2011])
- Concrete batch plant (Section 4.4.8.1 of AEAs PAD [AEA2011])
- Barrow areas (Section 4.9.2.2 (borrow areas of AEAs PAD [AEA2011])

As the Project design develops, and for which more detailed information is anticipated during the next study year, the preliminary construction noise model parameters will be updated accordingly.

CAD files

Topographic data of the Project study area reviewed to date was limited in extent, including up to no more than a few miles from the boundaries of the proposed dam area and access road and transmission line ("t-line") corridor/route options.

5.4. Assessment of Downriver Study Area

The aesthetic resources team coordinated with the Recreation River Flow and Access Study (Study 12.7), the Fish and Aquatics Instream Flow (Study 8.5), Geomorphology (Study 6.5), and Ice Processes (Study 7.6) Studies to determine if Project-related impacts to these resources would necessitate extending aesthetic resource studies downstream of the George Parks Highway Bridge. It was determined that the results of the Open Flow Routing Model, filed with FERC on January 31, 2013, would be used for this evaluation, as this model provided an estimation of expected change in flows under extremely conservative model parameters that simulated flow releases from the Watana Dam to the Susitna River for a maximum load following operational scenario (OS-1). The results of this model are also presented in the Fish and Aquatics Instream Flow Study (Study 8.5). OS-1 is based on the assumption that the entire load fluctuation of the Railbelt would be provided by the Susitna-Watana Project, and that all other sources of electrical power in the Railbelt would be running at base load. This assumed condition is not realistic for an entire year and consequently provides a conservative estimate of downstream impacts of load represent an extreme condition that would not occur for an entire year. Annual OS-1 flow and stage hydrographs are provided for a number of locations, including the end of River Reach 3 at the George Parks Highway Bridge (Sunshine Gage [USGS 1529278]). The results of the January 31, 2013, report indicate that OS-1 changes in both stage and flow are minimal at the end of Reach 3. The report also concludes that modeled changes in stage in flow at the end of Reach 3 are exaggerated, as the Susitna River is confined to an unusually narrow channel in the vicinity of the George Parks Highway Bridge. A wider and more typical channel located downstream of Reach 3 at Project River Mile 87.1 was also measured; results indicated 12-19% less stage change in response to flow fluctuations than observed at the more narrow location at the end of Reach 3.

Likewise, modeling completed for the Ice Processes in the Susitna River Study (Study 7.6) indicated that despite potential increase in discharge during freeze-up and throughout the winter, the resulting stages would only increase about 1 ft. over the naturally occurring stage range just prior to freeze-up, which is within the "normal" range of variability. Similarly, model results for the Susitna Station indicated that increase in discharge to 30,000 and 35,000 cfs result in stages (with an ice cover) of 40.0 to 41.1 ft., respectively. During freeze-up 2012, ESS20 and the Susitna Station gage provided a direct record of the stage increase of approximately 4.8 ft. to a stage of 41.1 ft. Though higher than that recorded for 1950-2010, these levels are similar to the modeled stage at 35,000 cfs.

6. DISCUSSION

6.1. Aesthetic Resources

As set forth in RSP Section 12.6.4, baseline data collection to date has included a combination of desktop (primary and secondary study area) and field data collection (primary study area). Desktop data collection has included existing spatial and geospatial data describing aesthetic attributes, including scenic quality, visual distance zones, and visual sensitivity of the primary and secondary study areas (i.e., BLM 2006a, AEA 2011). Field data collection targeted ALs sited within the primary study area. Data collection focused on identifying existing aesthetic resource values including scenic quality, visual sensitivity, and distance zones. Baseline data collection on scenic quality and visual distance zones is approximately 95% complete (see Table 6.1-1); however, the sensitivity level analysis is a major focus of the next study year. The review of existing data collected during the sensitivity level analysis completed for RMP planning process for the BLM Ring of Fire and East Alaska RMP indicated that, although the results of this analysis are available in spatial format, no underlying data are available. The Project-specific analysis will provide data necessary to complete this analysis. This analysis will be based on data collected during Focus Groups and information gleaned through interdisciplinary coordination.

A discussion of how baseline data collected to meets objectives described in RSP Section 12.6.4 is provided below.

6.1.1. Adequacy of Analysis Locations to Meet Objectives of the Study Plan

RSP Section 12.6.4 6 provides locations considered suitable to address specific analysis goals and to achieve desired outcomes of the study program. Stated goals focused on addressing potential impacts (beneficial or adverse) to aesthetic resources and identifying new access to views or potential change in viewer experience that may result from operation of the proposed Project. Table 6.1-1 lists the analysis goals and associated locations considered in the Study Plan and identifies the ALs established during 2013 to achieve these goals. In most cases, analysis goals were achieved based on data collected in 2013; however, certain identified goals could require additional interdisciplinary coordination and/or access to lands owned by the CIRWG in order to achieve the desired outcome. As discussed in RSP Section 12.6.7, interdisciplinary coordination will occur with the Recreation Resources Study (Study 12.5), Recreation River Flow Study (Study 12.7), the Cultural Resources Study (Study 13.5), the Subsistence Baseline Documentation Study (Study 14.5), components of the Socioeconomics and Transportation study (Study 15.0), specifically Studies 15.6 and 15.7, the Geomorphology Study (Study 6.5), the Ice Processes in the Susitna River Study (Study 7.6), the Baseline Water Quality Study (Study 5.5), the Water Quality Modeling Study (Study 5.6), and the Riparian Vegetation Study Downstream of the Proposed Susitna-Watana Dam (Study 11.6). Data collected by other studies will confirm locations of common, sensitive, or valued aesthetic resources and/or areas where potential changes to biophysical processes could impact scenery attributes within the primary study area. The rationale for ongoing coordination or land access is provided in Table 6.1.1.

Ongoing interdisciplinary coordination will ensure that baseline data collection was sufficient, and included areas where resource-specific sensitivities may exist. For example, preliminary review of the Subsistence Baseline Documentation Study (Study 14.5) indicated that AL

surveyed in 2013 provide coverage of areas identified as important subsistence use areas. This type of review will occur for other resources targeted for coordination in RSP Section 12.6.7. Cross-referencing of data collected by other studies will ensure that locations of common, sensitive, or valued aesthetic resources and/or areas where potential changes to biophysical processes could impact scenery attributes within the primary study area. Information collected by these resource studies during the 2013 study year will also inform and support the systematic selection of participants for Focus Group. Coordination activities are ongoing. A status of coordination efforts is described below:

- **Recreation Resources Study (Study 12.5) (including Recreation River Flow and Access Study [Study 12.7])** – Coordination will include identification of recreational use areas, including areas of targeted use (i.e., trails, river/stream corridors, access points, State Parks) and areas of dispersed use. The adequacy of existing ALs to address aesthetic attributes of these areas will be assessed. Data pertaining to recreation use and demand, experiential preferences, and place-base value obtained from household and intercept surveys will inform the visual sensitivity analysis. Because of the integration between Aesthetics Resources and Recreation, it is expected that data will continue to be shared in an ongoing manner the next study year.

- **Cultural Resources Study (Study 13.5)** – Coordination will include identification of eligible or identified TCPs within the primary study area and establish ALs through collaboration with cultural resource study leads. It was expected that data would reviewed and shared in an ongoing manner throughout the 2 study years, recognizing restrictions applied to protect sensitive data. However, the sample available for investigation in 2013 was unexpectedly restricted by the lack of access to CIRWG lands. This is not anticipated to affect the aesthetics resources timeline since TCPs are primarily being identified through research and interviews (past and present), not through field identification. The Aesthetics Resources timeline could be affected if the list of identified TCPs is completed after the viable next field season, and if the list yields any TCPs that are considered essential to the aesthetics analysis and have not been adequately covered by previously visited ALs. The Aesthetics Resources team will coordinate with the Cultural Resources team throughout the next study year in order to avoid effects to the Aesthetics Resources Study timeline.

- **Subsistence Baseline Documentation Study (Study 14.5)** – Coordination will include identifying areas within the primary study area that are used for subsistence purposes, or to access other areas used for subsistence to establish AL for both scenery attributes and soundscape. These areas will be cross-referenced to ALs surveyed during the 2013 to determine the extent to which these areas were addressed in the 2013 effort. Additional coordination with subsistence resource study leads will review of surveys and traditional and local knowledge interview data with relevance to the visual sensitivity analysis (Q1 of next study year). During the 2013 study year, the Subsistence Baseline Documentation Study (Study 14.5) identified 37 communities located within the Susitna River watershed that were studied as part of the subsistence study. Subsistence data compiled included existing harvest amount, seasonal round, and subsistence use area data in addition to documenting sources of traditional knowledge for the 37 study communities. In 2013, the study team conducted household harvest surveys in 10 study communities and conducted

traditional knowledge workshops in seven study communities. This information is useful for the aesthetics resources study because it identifies areas where subsistence activities exist, thereby providing information on these specific viewer groups within the study area. Several areas within the study area appear to be used for subsistence activities including fishing, hunting for land-based animals and birds, trapping, and vegetation gathering. Those areas include north and south of the Denali Highway; the Susitna River and its tributaries such as Jack River, Jay Creek, Goose Creek, Kosina Creek, Seattle Creek, Gold Creek, Portage Creek, Watana Creek, and Butte Creek; smaller lakes and ponds around Miami Lake, Indian River, Fog Lakes, Clarence Lake, Deadman Lake, Lake Louise, and Big Lake. Areas within walking distance of the Denali Highway appeared to be popular for subsistence activities, particularly for vegetation gathering.

Though the subsistence study team plans to collect additional baseline data in next study year through household harvest surveys and subsistence mapping interviews, preliminary review of existing data indicates that the aesthetics study maintained solid coverage of these areas identified for subsistence activity. One variance was identified in the Subsistence Baseline Documentation Study (Study 14.5), indicating that that the data review did not include summary data from the Alaska Department of Fish & Game's Wildlife Harvest Database, as this information was not received in time. A summary of this information will be included in the Updated Study Plan. The aesthetics team will coordinate with the subsistence resource team in the next study year to finalize our AL data gap analysis; however but this variance is not expected to affect the Aesthetics Resources schedule.

- **Social Conditions and Public Goods and Services Study (Study 15.6)** – Coordination will include data on recreation and subsistence use values, quality of life, community use patterns, non-use environmental values, and social conditions of the area to inform the visual sensitivity level analysis. Socioeconomics data is expected to be available in the next study year. The socioeconomics study performed in 2013 provided information regarding non-use values, social conditions, quality of life, and community use patterns of the area that help inform the aesthetics study. Specifically,
    - Devils Canyon was identified as an aesthetic resource that may have "non-use value";
    - The rural character of the area is identified as an indicator of the quality of life for study area residents;
    - Pace of life is identified as an indicator of the quality of life for study area residents, which can be affected by traffic including snowmachines; and,
    - Community image is identified as an indicator for the quality of life for study area residents. For Talkeetna residents, continuing to be an "end-of-the-road village" and preserving historic structures are considered important or the community image.

  This study has been informed by the Social Conditions and Public Goods and Services Study (Study 15.6), as part of the 2013 work. Therefore the status of the Socioeconomics Study is not expected to delay the Aesthetics Study. The aesthetics study will also

provide information to the socioeconomics study through ongoing interdisciplinary coordination.

- **Transportation Resources Study (Study 15.7)** – Data obtained from the Transportation Resources Study (Study 15.7) was evaluated to understand anticipated changes related to transportation demands that could affect aesthetic resources. In 2013, existing transportation modes were identified and summarized. In the next study year, future conditions forecasting will be refined and potential project-related transportation effects will be identified. This information will be used by the aesthetics team to determine how these potential effects could affect aesthetics resources. River travel data was not captured through agency and individual interviews in 2013, but will be completed during the next study season. This is not expected to affect the aesthetics resources study schedule.

- **Riparian Vegetation Study Downstream of the Proposed Susitna-Watana Dam (Section 11.6)** – Coordination will be used to understand potential changes in riparian vegetation that would result in detectable changes in scenic attributes of the river corridor. Riparian instream flow data is expected Q4 of the next study year, and will be used to refine the aesthetics resources impact analysis. In 2013, the riparian resources field work and mapping was conducted to identify different ecosystem components to characterize the riparian conditions of the study area. This information will be expanded upon in the next study year. Variances in the riparian study were implemented to allow for more intensive sampling improve understanding of riparian vegetation and soils in the area. This variance is not expected to affect the aesthetics resources study schedule.

- **Baseline Water Quality Study (Study 5.5)** – Coordination will focus on identifying expected changes in water quality parameters that would be detectable to viewers situated on or near the river (3Q of the next study year). Coordination with Water Quality (Section 5.0) will focus on identifying expected changes in water quality parameters that would be detectable to viewers situated on or near the river. Water quality data is expected to be available in the next study year. In 2013, the water quality fieldwork was conducted to understand baseline water quality conditions within the study area, including turbidity and apparent color which are of interest to the visual resources analysis. The data is in the process of being reviewed and validated. Three proposed Focus Area reaches requiring access to ANCSA lands were not sampled during the 2013 study year due to lack of access. Although three Focus Areas were not sampled during 2013, this modification is not expected to affect the aesthetics resources study schedule.

- **Geomorphology Study (Study 6.5)** – Coordination with the geomorphology study will include determination of whether the geomorphic response to Project operations will result in detectable changes in downstream scenery attributes (Q1 2013 – Q4 of the next study year). In 2013, the field work and mapping was conducted to identify different ecosystem components to characterize the riparian conditions of the study area. This information will be expanded upon in the next study year. Some of the flow and stage modeling and analysis has been delayed, which will delay completion of the geomorphology analysis. The reservoir erosion assessment as described in RSP Section 6.5.4.8.2.3 (AEA 2012) will be completed during the next study year. The work was postponed due to access limitations during the 2013 field season. The aesthetics team will

coordinate with the geomorphology team throughout the study year in order to avoid delays to the aesthetics resources study schedule.

- **Hydrology-Related Resources (Study 7.0)** – Coordination with hydrology-related resources will be used to understand hydrologic conditions that may affect scenic attributes and soundscape. A major focus will be on reviewing results of the Ice Processes in the Susitna River Study (Study 7.6) to better understand expected changes in the type, distribution, and seasonality of ice cover on the Susitna River, downriver of the proposed dam (Q4 2013). Baseline data collection began in 2012 and continued in the 2013 study year. Initial existing conditions modeling was also conducted in 2013 for the ice processes study. The plans for the next study year will continue field observations of key areas and processes, continue to develop and calibrate the River1D and River2D models for existing conditions for both open water and ice covered conditions, and apply these models to the proposed project operations scenarios. The study will provide a basis for impact assessment, which will inform the development of any necessary protection, mitigation, and enhancement measures. During the 2013 field study, some changes were made to camera locations for the time-lapse camera monitoring, but these are not expected to affect the aesthetic resources study.

Several analysis goals were determined not necessary to support the impact analysis and were consequently dropped from the analysis plan. As locations identified in the Study Plan were considered preliminary, any refinement to these locations based on new information or field-based observations is not considered a variance. Rationale for this decision is provided in Table 6.1-1, with more detail on the decision to not extend the study area downriver of the George Parks Highway provided below.

6.2. Soundscape

The following discussion of study effort status is categorized by bulleted focal points listed in Section 4.6. The degree of progress towards assessing Project-induced noise effects resulting from future recreation opportunities is also discussed.

6.2.1. Quantifying Existing Soundscape Data

At a total of 23 LT locations, SPL metrics, statistical data, and AR from the four seasonal soundscape field surveys were successfully collected for multiple consecutive 24-hour periods. Of these, at least seven LT positions could reasonably be considered "co-located" and thus represent SPL and AR data collection for more than one seasonal survey, which provides the kind of data that enables both a comparison of seasonal soundscapes (and the underlying acoustical contributors) and the comparison of predicted Project operation and construction noise with a seasonally appropriate baseline setting. For example, if a particular noise-producing construction activity was expected to take place during the summer season, then available baseline soundscape data from the summer survey would likely be used for any relative (e.g., increase over existing ambient) noise impact assessment.

Tables 5.2-1 through 5.2-8 present summarized L_{eq} and L_{90} values for the LT and ST soundscape measurement locations and can offer a coarse level of insight on the magnitude of sound levels relative to one another and the likely dominant acoustical contributors to measured ambient

sound. A detailed analysis of the baseline data from each survey is currently being conducted (with expected completion by the end of 2013) and is anticipated to yield the following detailed findings and information:

- Reasonable identification of apparent significant acoustical contributors during a measurement period, including Project study activities and non-Project transportation and recreation activities that can be distinguished from the apparent "natural" background or specific naturally occurring sound events or conditions.
- Reasonable identification of apparent significant acoustical contributors attributed to naturally occurring sound events or conditions (e.g., birds or insects).
- Where and when data is available, correlation of wind speed with measured SPL and AR.
- One-third or octave-band analysis of measured sound, plotted versus time.
- Statistical values to help characterize the frequency of apparent anthropogenic sounds as a portion of entire measurement duration.

Ongoing interdisciplinary coordination with wildlife resources will occur to ensure that potentially sensitive wildlife areas are accounted for in baseline measurements collected to date.

6.2.2. Determining Consistency of Existing Soundscape with Management Objectives Pertaining to Sound

As detailed baseline soundscape data analysis is completed, consistency with management objectives can be made and reported. By way of example, the determination of frequency of apparent anthropogenic sounds during a baseline LT or ST measurement period (e.g., expressed as a percentage of time) might be compared with the vicinity's ROS or WALROS category designation on the basis of expected "reasonable standard for the percent of noise disturbances per number of recreation groups" or a similarly appropriate noise-related statistical value or characteristic traits, such as the Denali National Park Backcountry Management Plan Noise Disturbance guidelines.

6.2.3. Identifying Anticipated Changes in Soundscape

As the detailed baseline soundscape data analysis is completed, comparisons can be made with results from predictive construction and operation noise models. While some progress may be made in this regard with respect to the former before the end of 2013, any such comparisons between the analyzed baseline soundscape and future Project operations must wait until project related noise models are competed (i.e., when Project operation noise model input parameters are available).

6.2.4. Noise from Future Recreation Use and Demand Due to the Project

When the Project operation plans and corresponding expectations of future land uses in the study area are developed, predictions of noise emission from anticipated future recreation activities (e.g., new or altered ROS or WALROS designations) concurrent with Project operation can be made. Figure 6.2-1 shows how the 2013 Sound ALs were distributed among the existing ROS

designations in the study area. The Roaded Natural ROS had the most ALs (11 total), followed by Primitive (5 total), then Semi-Primitive at two ALs. Both the Special ROS and Semi-Primitive Non-Motorized ROS had one AL each.

6.3. Evaluation of Downriver Extent of Study Area

Based on the information provided in the January 31, 2013, Open Flow Routing Model, it was determined that flow and stage hydrographs under the operational scenario modeled would be within the natural range of variability at locations downriver of Talkeetna. Based on these results, it is possible that potential changes in the aesthetic attributes (visual or auditory) of the river would not be detectable. Though an extension of the study area below Talkeetna does not appear justified based on these model results, ongoing coordination will finalize this determination prior to initiation of the next study year.

7. COMPLETING THE STUDY

[As explained in the cover letter to this draft ISR, AEA's plan for completing this study will be included in the final ISR filed with FERC on June 3, 2014.]

7.1. Plans for 2014

Aesthetic Resources

Per Section 12.6.4 of the RSP, baseline data collection will continue to ensure analysis goals described in the Study Plan are achieved. Outstanding baseline data include:

- Ongoing processing of data and photography collected during the fall season.
- Assessment of baseline conditions from the whistle stop at Gold Creek and/or Chulitna.
- Assessment of ALs located on and adjacent to proposed access routes and transmission line corridors located within the Mid-Susitna River Valley LCT and the Susitna Upland Terrace LCT. This goal could be achieved once access to lands owned by the CIRWG along the Gold Creek Corridor is obtained. If access to those lands is not granted, the Aesthetics team would attempt to identify points adjacent to lands owned by members of the CIRWG, and within the same LCT.
- Completion of Project-specific visual sensitivity analysis using results of intercept surveys, mail surveys, and executive interviews (completed by recreation resources, socioeconomics, and subsistence resources) and Focus Groups held with public agencies, local tour operators/outfitters and guides/lodge owners, and Alaska Native populations (i.e., the CIRWG).
- Identification of potential design and mitigation options to address potential impacts to aesthetic resources based on a preliminary assessment of expected visual contrast of Project components.

- Review of Project components and associated Project design specifications.
- Refinement of Viewshed Analysis based on most current project configuration.
- Production of photo simulations for a subset of ALs that illustrate (1) the dam structure, (2) reservoir landscape characteristics, (3) access roads and transmission lines, (4) views of reservoir from upland areas, and (5) views of potential construction-related impacts. Simulations will be completed for all seasons and under daylight and nighttime/darkness conditions. An estimated total of 30 visual simulations will be produced.
- Completion of impact analysis using the BLM Contrast Rating procedure.
- Completion of VRI analysis to identify expected change to scenic quality, visual sensitivity, and/or distance zones that may result from operation of the proposed Project. Impacts will be evaluated by ranking each factor used to classify scenic quality, visual sensitivity, and distance zones under operational conditions, and comparing those values to baseline conditions.
- Assessment of potential change that may result from nighttime artificial lighting and/or daytime glare.
- Identification of changes in viewshed and mechanism of view to quantify the extent of changes in views and the degree to which access to views changes with the development of roads and the elevation of the viewer within the inundated portions of the reservoir.
- Assessment of potential change in visibility through coordination with Air Quality Resources.

Soundscape

The four-season soundscape survey has provided the measurement and collection of sufficient acoustical data to characterize the baseline outdoor ambient sound environment of the Project study area for a variety of representative geographic settings in which natural and anthropogenic sound sources were measured and/or observed. In summary, this diversity includes areas exhibiting very quiet soundscapes and those that are—depending on proximity and type of acoustical contributors—relatively louder. While access to lands owned by members of the CIRWG was not permitted during the survey, the baseline outdoor ambient sound environment for these areas can reasonably be characterized with findings from the survey data where the season, time period, geographic settings and the proximity, type, and magnitude of acoustical contributors (e.g., distance to flowing water and road/rail, presence of birdsong or aircraft overflight, etc.) would be considered comparable. For example, where low ambient sound levels in representative study area locations that are distant from transportation routes and natural water flows were measured; similar findings for lands owned by members of the CIRWG that shared such conditions would be expected.

When sufficient information is available regarding Project operation, a detailed Project operation noise impact assessment will be performed. As appropriate, this assessment will use baseline data collected and analyzed in 2013.

When the Project operation plans and corresponding expectations of future land uses in the study area are developed, predictions of noise emission from anticipated future recreation activities (e.g., new or altered ROS or WALROS designations) concurrent with Project operation can be made.

7.1.1. Modifications to Study Plans

No modifications to the Study Plan are required.

7.1.2. Decision Points from Study Plan

RSP Section 12.6.3 indicates that the aesthetics resource study area could be adjusted in the second study year to include areas within the river corridor located downriver of Talkeetna if 2013 studies in the lower reach indicate a possible Project-related effect on aesthetic resources in this area. AEA implemented the assessment of the downriver study area per methods described in the Study Plan with no variances during the 4Q 2013 and 1Q of the second study year. The determination of the recommended downriver extent was to be based on interdisciplinary coordination with hydrology, geomorphology, and ice processes resource leads, and include a review of modeling completed as part of the analysis of these resources contained in the ISR for Fish and Aquatics Instream Flow Studies (Study 8.5) and the Ice Processes in the Susitna River Study (Study 7.6). A determination was made that the study area for aesthetic resources does not need to be adjusted to include areas downriver of Talkeetna, as potential flow and stage changes at this location are expected to be within the natural range of variability.

RSP Section 12.6.4 indicated methods used to complete the project-level visual sensitivity level analysis. This analysis will be completed through (1) information obtained through interdisciplinary coordination with the Recreation Resources Study (ISR Study 12.5), the Recreation River Flow Study (ISR Study 12.7), the Social Conditions and Public Goods and Services Study (ISR Study 15.6), the Cultural Resources Study (ISR Study 13.5), the Subsistence Baseline Documentation Study (ISR Study14.5), and the Transportation Resources Study (ISR Study 15.7), and (2) information obtained through Focus Groups.

A total of three focus groups will be held, targeting: (1) public agencies, (2) local tour operators/outfitters and guides/lodge owners, and (3) Alaska Native populations. The selection of participants included in each Focus Group will largely depend on data obtained from interdisciplinary coordination. Preliminary review of ISRs prepared by the Recreation Resources Study (Study 12.5), the Recreation River Flow Study (Study 12.7), the Social Conditions and Public Goods and Services Study (Study 15.6), the Cultural Resources Study (Study 13.5), the Subsistence Baseline Documentation Study (Study14.5), and the Transportation Resources Study (Study 15.7) indicated these studies to be on schedule to deliver necessary supporting information to inform selection of Focus Group participants. As specific in the RSP, photosimulations will be used as supporting material for the Focus Groups. Information obtained from Focus Groups will be incorporated into potential design recommendations.

7.2. Schedule

The proposed schedule for 2014 is presented below.

Activity	2012				2013				2014				2015
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q
Viewshed Modeling					—								
Baseline Data Collection (Aesthetics and Soundscape)						—	—	—		--------	-------		
Simulation Development / Sound Modeling									--------	--------	-------		
Focus Groups										—	—		
Effects Analysis										—	—	—	
Initial Study Report							—	—	Δ				
Updated Study Report										—	—	—	▲

Legend:

— Planned Activity
Δ Initial Study Report (February 2014)
▲ Updated Study Report (February 2015)

7.3. Conclusion

Assuming that access is obtained to lands owned by members of the CIRWG, the Aesthetics Resource study plan (RSP Section12.6) in on schedule to be completed by 4Q of the second study year because of the following:

- Collection of baseline data on aesthetic attributes is approximately 95% complete.
- No variance to the Aesthetic Resource study Plan (RSP Section 12.6) has been identified for 2013, or is anticipated for the second study year.
- Progress of interrelated studies is on schedule, despite several variances identified by those resources (see ISR Study 12.6, Section 12.6.1).
- Information needed to plan for Focus Groups has been collected (see Interdisciplinary Coordination summary, ISR Study 12.6, Section 12.6.1)
- Baseline photography is complete and ready for production of photosimulations.

8. LITERATURE CITED

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9. TABLES

Table 5.1-1.Viewshed Area Breakdown by Distance Zone and Land Status[1] (Draft 1/10/2014)

Viewshed	Total Area (Square Miles)	Area Percentage Breakdown by Distance Zone			Square Miles by Land Status		
		Foreground/ Middleground	Background	Seldom Seen	Federal	State	CIRWG[2]
Denali Corridor	1,144	454	388	301	56.5	870.5	216.5
Gold Creek Corridor	628	312	220	95	0.25	378	250
Chulitna Corridor	693	250	305	138	1.5	461	231
Dam and Reservoir	414	248	128	38	0	365	49
Susitna River 5-miles Downstream of Dam	13.7	11	4	2	0	4.9	8.8

[1]Totals may not add up due to rounding.

[2]Represents lands owned by members of the Cook Inlet Regional Working Group

Table 5.1-2. Approximate Distribution of Project Components across LCT (Acres) (Draft 1/10/2014)

Landscape Character Type	Reservoir	Dam and Camp Facility Area	Denali Corridor	Chulitna Corridor	Gold Creek Corridor
Chulitna Moist Tundra Uplands	0	0	0	13,554	0
Chulitna Mountains	0	0	2,610	0	0
Devils Canyon	0	0	0	0	4,182
Mid Susitna River Valley	0	0	0	0	3,826
Northwest River Valley Area	0	0	5,921	0	0
Portage Lowlands	0	0	0	4,405	0
Susitna River	16,514	4,729	0	259	0
Susitna River Canyon	4,820	0	0	0	0
Susitna River Valley	0	0	0	101	0
Susitna Upland Terrace	2,134	1,651	0	0	7,962
Susitna Uplands	77	0	0	0	0.00
Talkeetna Uplands	0	0	0	0	2,527
Wet Upland Tundra	0	3,199	17,406	1,370	0

Table 5.1-3. Seasonal Visual Field Summary Table (Draft 1/10/2014)

Season	Trip Dates	Number of Analysis Locations	Total Days Collecting Data in the Field[1]
Winter 2013	March 6, 2013 – March 15, 2013	20	6
Spring 2013	May 13, 2013 – May 22, 2013	31	6
Summer 2013	July 13, 2013 – July 23, 2013	59	9
Fall 2013	September 22, 2013 – September 27, 2013	25	3
TOTAL		135	24

[1]Actual days collecting data in the field are shorter than trip duration as these figures do not include days where the crew could not complete field work due to weather conditions or logistical constraints. Travel days to and from Anchorage are also not included in this table.

Table 5.1-4.Analysis Locations by Land Status (Draft 1/10/2014)

Fieldwork Season	Total Analysis Locations	Analysis Locations By Land Ownership			
		Federal	*State*	*Private*	*Ahtna Corporation*
Winter	20	6	13	0	1
Spring	31	5	23	1	2
Summer	59	21	35	0	4
Fall	25	12	12	0	1
TOTAL	135	44	83	1	7

Table 5.1-5. Natural Sound Disturbance (Draft 1/10/2014)

Descriptor	Standard
Very High	Natural sounds are often interrupted by motorized noise including loud noise. Motorized noise may be audible up to 50% of any hour, and there may be up to 50 motorized noise intrusions per day that exceed natural ambient sound. Motorized noise does not exceed 60dBA.
High	Natural sounds are frequently interrupted by motorized noise, including some loud noise. Motorized noise may be audible up to 25% of any hour, and there may be as many as 25 motorized noise intrusions per day that exceed natural ambient sound. Motorized noise does not exceed 60dBA.
Medium	Natural sounds predominate in this area, but there are infrequent motorized intrusions, a few of which may be loud. Motorized noise may be audible up to 15% of any hour, and there may be as many as 10 motorized noise intrusions per day that exceed natural ambient sound. Motorized noise does not exceed 40dBA
Low	Natural sounds predominate in this area and motorized noise intrusions are very rare and usually faint. Motorized noise may be audible up to 5% of any hour, and there is no more than o motorized intrusion each day that exceeds natural ambient sound. Motorized noise does not exceed 40dBA.

Source: DNP 2006

Notes: "Audible" means audibility to a person of normal hearing. Maximum sound levels assume the measurement device is more than 50 feet from the noise source. For comparison, 40dBA is the overall sound level inside a typical residential home. 70dBA is the sound level of a vacuum cleaner as perceived by the user.

Table 5.2-1. Winter 2013 Long-Term Soundscape Survey Data (Draft 1/10/2014)

Long-Term (LT) Soundscape Monitoring Locations		Data Collection during Winter 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period (mm/dd) of SPL (Audio) Data	Daily [1] Survey L_{eq} Range (dBA)	Daily [1] Survey L_{90} Range (dBA)
Winter LT1 (Denali Highway – West)	63.366457 -148.359346	3/7-3/12 (3/7-3/8)	42 - 49	15 - 31
Winter LT2 (Denali Highway – East Campground)	63.289424 -148.067008	3/7-3/12 (3/7-3/8)	22 - 40	14 - 16
Winter LT4 (Burnt Trees / "25")	62.830469 -148.66463	3/8-3/11 (3/8-3/9)	18 - 24	15
Winter LT5 (High Lakes)	62.849341 -149.092327	3/8-3/15 (3/8-3/9)	23 - 69	15 - 37
Winter LT7 (Brushkana)	63.17352 -148.262308	3/11-3/18 (3/11-3/12)	15 - 40	15

1. Values considered were from consecutive 24-hour periods.

Table 5.2-2. Spring 2013 Long-Term Soundscape Survey Data (Draft 1/10/2014)

Long-Term (LT) Soundscape Monitoring Locations		Data Collection during Spring 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period (mm/dd) of SPL (Audio) Data	Daily [1] Survey L_{eq} Range (dBA)	Daily [1] Survey L_{90} Range (dBA)
Spring LT1 (Curry)	62.62237 -150.09857	5/18-5/24 (5/18-5/24)	24 - 51	15 - 17
Spring LT2 (Gold Creek)	62.78604 -149.65572	5/18-5/24 (5/18-5/24)	54 - 57	53 - 56
Spring LT3 (Kesugi)	62.81964 -149.75472	5/20-5/27 (5/20-5/27)	29 - 38	15 - 18
Spring LT4 (HLL)	62.84393 -149.1156	5/20-5/30 (5/20-5/21)	25 - 55	15 - 36
Spring LT5 (Burnt Trees / "25")	62.83 -148.6574	5/23-5/29 (5/23-5/29)	35 - 38	25 - 32
Spring LT6 (Watana Confluence)	62.8683 -148.2533	5/23-5/31 (5/23-5/31)	35 - 57	19 - 28
Spring LT7 (DENA HWY)	63.39105 -148.56028	5/21-5/26 (5/21-5/26)	36 - 40	16 - 25
Spring LT9 (V Canyon Backup)	62.67589 -147.527	5/23-5/31 (5/23-5/31)	35 - 42	23 - 36

1. Values considered were from consecutive 24-hour periods.

Table 5.2-3. Summer 2013 Long-Term Soundscape Survey Data (Draft 1/10/2014)

Long-Term (LT) Soundscape Monitoring Locations		Data Collection during Summer 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period (mm/dd) of SPL (Audio) Data	Daily [1] Survey L_{eq} Range (dBA)	Daily [1] Survey L_{90} Range (dBA)
Summer LT1 (Curry)	62.639139 -150.098778	7/12-7/19 (7/12-7/19)	30 - 46	17 - 28
Summer LT3 (Brushkana)	63.186111 -148.273778	7/12-7/19 (7/12-7/19)	30 - 40	23 - 27
Summer LT4 (Antler Hill)	62.882139 -148.3725	7/12-7/19 (7/12-7/19)	34 - 46	21 - 32
Summer LT5 (Fog Lakes)	62.763917 -148.417556	7/12-7/20 (7/12-7/20)	39 - 42	35 - 37
Summer LT6 (Burnt Trees / "25")	62.830111 -148.658167	7/12-7/19 (7/12-7/17)	34 - 39	27 - 28
Summer LT7 (Chu Cor)	62.869 -148.704	7/12-7/19 (7/12)	31 - 38	18 - 25
Summer LT8 (High Lakes)	62.849556 -149.093806	7/12-7/20 (7/12-7/20)	40 - 53	16 - 21
Summer LT9 (Kesugi)	62.822417 -149.761222	7/12-7/18 (7/12-7/13)	32 - 53	15 - 24

1. Values considered were from consecutive 24-hour periods.

Table 5.2-4. Fall 2013 Long-Term Soundscape Survey Data (Draft 1/10/2014)

Long-Term (LT) Soundscape Monitoring Locations		Data Collection during Fall 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period (mm/dd) of SPL (Audio) Data	Daily [1] Survey L_{eq} Range (dBA)	Daily [1] Survey L_{90} Range (dBA)
Fall LT1 (Kesugi Ridge)	62.822417 -149.761222	9/7 - 9/9 (9/7 - 9/12)	53	27
Fall LT2 (Chu Cor)	62.869 -148.704	9/7 - 9/9 (9/7 - 9/17)	37	29
Fall LT3 (Antler Hill)	62.882139 -148.3725	9/7 - 9/9 (9/7 - 9/16)	40	34
Fall LT4 (Upper V Canyon)	62.711356 -147.579455	9/7 - 9/9 (9/7 - 9/16)	30	19
Fall LT5 (Fog Lakes)	62.763917 -148.417556	9/7 - 9/8 (9/7 - 9/16)	44	39
Fall LT6 (Burnt Trees / "25")	62.830111 -148.658167	9/7 - 9/12 (9/7 - 9/16)	57 - 76	37 - 56
Fall LT7 (Swamp Town)	62.7805 -148.7414	9/7 - 9/14 (9/7)	36 - 39	19 - 25
Fall LT8 (Thoroughfare-Portage Confluence)	62.94146 -149.169973	9/7 - 9/12 (9/7 - 9/8)	39 - 40	28 - 37
Fall LT9 (Denali Hwy)	63.345244 -148.301793	9/7 - 9/14 (9/7 - 9/16)	32 - 42	22 - 26

1. Values considered were from consecutive 24-hour periods.

Table 5.2-5. Winter 2013 Short-Term Soundscape Survey Data (Draft 1/10/2014)

Short-Term (ST) Soundscape Monitoring Locations		Data Collection during Winter 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period Date (mm/dd), Start and End (hh/mm)	Survey Time Period L_{eq}(dBA)	Survey Time Period L_{90} (dBA)
Winter ST1 (Denali Hwy)	63.37185 -148.81502	3/17, 11:16 – 11:50	58	19
Winter ST2 (East Fork Chulitna Wayside)	63.15194 -149.40869	3/17, 12:40 – 13:06	58	35
Winter ST3 (Ermine Hill Trailhead)	62.82744 -149.9038	3/17, 13:44 – 14:08	62	29
Winter ST4 (Lake Louise Lodge)	62.2776 -146.5147	3/19, 10:13 – 14:24	55	32
Winter ST5 (Kesugi Ridge)	62.822417 -149.761222	3/27, 16:12 – 16:36	56	22
Winter LT3 (Stephan Lake Lodge)	62.699901 -148.911899	3/8, 14:47 – 17:04	73	16
Winter LT6 (T-line Ridge)	62.828229 -149.57262	3/9, 13:08 – 17:31	61	15
Winter LT8 (Lake Louise Lodge)	62.29161 -146.52922	3/19, 00:00 – 02:55	15	14

Table 5.2-6 Spring 2013 Short-Term Soundscape Survey Data (Draft 1/10/2014)

Short-Term (ST) Soundscape Monitoring Locations		Data Collection during Spring 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period Date (mm/dd), Start and End (hh/mm)	Survey Time Period L_{eq}(dBA)	Survey Time Period L_{90} (dBA)
Spring LT8 (Clarence Lake)	62.67531 -147.7982	5/23, 14:20 – 18:50	60	16

Table 5.2-7. Summer 2013 Short-Term Soundscape Survey Data (Draft 1/10/2014)

Short-Term (ST) Soundscape Monitoring Locations		Data Collection during Summer 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period Date (mm/dd), Start and End (hh/mm)	Survey Time Period L_{eq}(dBA)	Survey Time Period L_{90} (dBA)
Summer ST1 (Denali Hwy)	63.391257 -148.560994	7/13, 12:14 – 19:21	43	20
Summer ST2 (Campground)	63.28901 -148.06715	7/13, 12:57 – 13:18	58	47
Summer ST3 (Corridor Intersection w/ Denali Hwy)	63.346148 -148.3	7/13, 13:58 – 14:17	28	18
Summer ST4 (Cantwell)	63.38938 -148.90281	7/13, 15:04 – 15:48	60	38
Summer ST5 (Pass Creek)	62.91025 -149.71456	7/13, 16:53 – 17:16	64	38
Summer ST6 (Lower Troublesome Creek Trailhead)	62.6257 -150.22782	7/13, 17:55 – 18:10	64	46
Summer ST7 (Tangle Lakes Recreation Area)	63.05243 -146.00245	7/15, 11:27 – 11:57	42	38
Summer ST8 (Tangle Lakes Hilltop)	63.04784 -146.04586	7/15, 12:14 – 12:37	42	24
Summer ST9 (Near V Canyon)	62.687219 -147.564828	7/16, 10:12 – 10:35	41	29
Summer ST10 (Susitna River)	62.694629 -147.58501	7/16, 11:00 – 11:22	49	48
Summer ST11	62.717672 -147.599817	7/16, 11:58 – 12:24	67	32
Summer ST12 (High Point)	62.7706 -147.990248	7/16, 13:26 – 15:57	56	42
Summer ST13 (Noname 2)	62.794414 -148.972506	7/16, 14:22 – 14:35	46	30
Summer ST14 (Noname 3)	62.766731 -149.120094	7/16, 15:53 – 16:02	32	22
Summer ST15 (Staging)	62.830394 -148.573744	7/16, 16:52 – 17:14	38	29
Summer ST16 (Watana Creek)	62.860733 -148.199781	7/16, 17:46 – 18:04	66	66
Summer ST17 (Goose Lake Trail), meas. A	62.67890532 -147.683033	7/17, 9:36 – 9:47	57	24
Summer ST17 (Goose Lake Trail), meas. B	62.67890532 -147.683033	7/17, 9:56 – 10:25	67	21
Summer ST18 (Susitna Sandbar 1)	62.766093 -147.809499	7/17, 11:00 – 11:18	41	40
Summer ST19 (Jack Creek Overlook)	62.801199 -147.872121	7/17, 12:13 – 12:29	40	32

Short-Term (ST) Soundscape Monitoring Locations		Data Collection during Summer 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period Date (mm/dd), Start and End (hh/mm)	Survey Time Period L_{eq}(dBA)	Survey Time Period L_{90} (dBA)
Summer ST20 (Susitna Sandbar 2)	62.812795 -148.167027	7/17, 13:24 – 13:46	53	52
Summer ST21 (Right of Way)	62.909501 -148.544743	7/17, 15:32 – 15:54	34	30
Summer ST22 (Noname 9)	62.888567 -148.627369	7/17, 16:34 – 16:41	47	37
Summer ST23 (Noname 10)	62.905073 -148.974466	7/17, 17:18 – 17:30	36	29
Summer ST24 (Train stop - Chulitna)	n/a	7/18, 14:31 – 16:03	66	25
Summer ST25 (Train stop – Hurricane)	63.0125 -149.614	7/19, 15:20 – 15:34	79	74
Summer ST26 (moving train)	n/a	7/19, 15:35 – 15:36	75	73
Summer ST27 (Idling train @ Indian River)	Railway MP 269.9	7/19, 16:02 – 16:04	76	72
Summer LT2 (V Canyon)	62.701472 -147.534389	7/12, 12:49 – 23:59	63	32
Summer LT2 (V Canyon)	62.701472 -147.534389	7/13, 00:00 – 06:56	37	35

Table 5.2-8. Fall 2013 Short-Term Soundscape Survey Data (Draft 1/10/2014)

Short-Term (ST) Soundscape Monitoring Locations		Data Collection during Fall 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period Date (mm/dd), Start and End (hh/mm)	Survey Time Period L_{eq}(dBA)	Survey Time Period L_{90} (dBA)
Fall ST1 (Lower Troublesome Creek)	62.625797 -150.227994	9/8, 11:25 - 11:45	63	48
Fall ST2 (E. Fork Chulitna Campground South)	63.149800 -149.412111	9/8, 12:42 - 13:02	53	50
Fall ST3 (E. Fork Chulitna Campground North)	63.151580 -149.409100	9/8, 13:12 - 13:32	62	47
Fall ST4 (Dena Hwy West)	63.391056 -148.560361	9/8, 14:52 - 15:12	52	31
Fall ST5 (Dena Hwy West)	63.393617 -148.518028	9/8, 15:22 - 15:37	48	33
Fall ST6 (Dena Hwy West)	63.382592 -148.434461	9/8, 15:54 - 16:09	44	44
Fall ST7 (Dena Hwy West)	63.330739 -148.255386	9/8, 16:31 - 16:46	53	31
Fall ST8 (Dena Hwy West)	63.241500 -147.794053	9/8, 17:35 - 17:50	50	41
Fall ST9 (Dena Hwy West)	63.235542 -147.782758	9/8, 18:04 - 18:24	44	34
Fall ST10 (Dena Hwy Mid)	63.142133 -147.535900	9/8, 18:53 - 19:08	42	30
Fall ST11 (Dena Hwy Mid)	63.106511 -147.542419	9/8, 19:23 - 19:38	33	28
Fall ST12 (Dena Hwy Mid)	63.104097 -147.537431	9/8, 19:45 - 19:55	33	26
Fall ST13 (Dena Hwy Mid)	63.098422 -147.484133	9/8, 20:17 - 20:27	25	22
Fall ST14 (Dena Hwy Mid)	63.041542 -146.881583	9/9, 10:23 - 10:43	48	43
Fall ST15 (West Tangle Lakes Hilltop)	63.047814 -146.045722	9/9, 12:33 - 12:48	43	36
Fall ST16 (Tangle Lakes Rec Area Hilltop)	63.052458 -146.002281	9/9, 13:11 - 13:26	42	39
Fall ST17 (Paxson Lake Campground)	62.883639 -145.526581	9/9, 14:32 - 14:52	34	27
Fall ST18 (Soudough Creek Campground)	62.525458 -145.520997	9/9, 16:19 - 16:34	46	37
Fall ST19 (Dry Creek Campground)	62.154978 -145.476319	9/9, 17:15 - 17:30	48	42
Fall ST20 (Lake Louise - The Point Lodge)	62.288244 -146.539389	9/10, 8:57 - 9:12	47	43
Fall ST21 (Lake Louise Campground)	62.285336 -146.539717	9/10, 9:25 - 9:40	36	34

Short-Term (ST) Soundscape Monitoring Locations		Data Collection during Fall 2013 Seasonal Soundscape Survey		
Identification (URS shorthand description or name)	GPS Coordinates (decimal degrees)	Survey Time Period Date (mm/dd), Start and End (hh/mm)	Survey Time Period L_{eq}(dBA)	Survey Time Period L_{90} (dBA)
Fall ST22 (Glenn Hwy - Old Man Creek Trail)	61.960092 -147.125408	9/10, 10:49 - 11:14	46	38
Fall ST23 (Glenn Hwy - New Purinton Creek)	61.804789 -148.087128	9/10, 12:31 - 12:46	54	32
Fall ST24 (Denali View South)	62.592233 -150.238517	9/15, 11:42 - 12:02	67	44
Fall ST25 (Byers Lake Day Use Area)	62.742814 -150.128503	9/15, 12:23 - 12:43	43	37
Fall ST26 (Byers Lake Campground 1)	62.746642 -150.116689	9/15, 12:54 - 13:09	47	39
Fall ST27 (Byers Lake Campground 2)	62.748097 -150.116803	9/15, 13:19 - 13:34	47	40
Fall ST28 (Byers Lake Boat Launch)	62.744325 -150.122242	9/15, 13:44 - 14:04	56	47
Fall ST29 (Ermine Hill Trailhead)	62.827283 -149.903844	9/15, 14:27 - 14:42	57	43
Fall ST30 (Little Coal Creek Trailhead)	62.891414 -149.7469	9/15, 15:16 - 15:31	51	40
Fall ST31 (Talkeetna Boatlaunch)	62.327228 -150.111825	9/15, 17:43 - 18:03	57	46
Fall ST32 (Talkeetna Campground)	62.32635 -150.109217	9/15, 18:07 - 18:22	50	36

Table 6.1-1. Analysis Goals and Locations Considered in RSP Section 12.6.3 (Draft 1/10/2014)

	Analysis Goal	Locations Being Considered	2013 ALs
Mid Susitna River Valley	Evaluate potential impacts of transmission and access routes to aesthetic resources of the Mid Susitna River Valley.	Susitna River, view downriver from perspective of a boater.	FL25
		Susitna River, view upriver from perspective of a boater (jetboat).	SU114
		View from rail line.	Collect during second study year if permission gained from RR, or address from whistle stop.
		Upland, from perspective of existing trails.	SU197 – AL located in Talkeetna Uplands. View extends across Mid Susitna River Valley.
		Upland, from dispersed recreation and/or subsistence use areas.	Sufficient data to address this goal was collected at SU197. Should new information be obtained from either recreation or subsistence resources, additional ALs will be considered.
		Aerial views, from common flight path used for flightseeing.	The assessment of this objective is subject to information obtained through Executive Interviews completed by the Recreation Resources Study (RSP Section 12.5) and Recreation River Flow Study (RSP Section 12.7), and Focus Groups planned as part of the Aesthetics Resources Study (RSP Section 12.6).
	Evaluate new access to views of both the Susitna River Basin and the surrounding areas that may be created from access routes and transmission corridors. Evaluate each proposed route to determine where new views to focal or large-scale panoramic views would be accessible. Use viewshed modeling to support the selection of analysis locations.	Select locations on and adjacent to proposed access routes and transmission line corridors.	This goal could be achieved once access to lands owned by the CIRWG along the Gold Creek Corridor is obtained.
	Evaluate the change in appearance of downstream river attributes as a result of the proposed Project.	View downriver, from perspective of a boater. Identify islands and/or riparian areas influenced by hydrologic regimes (i.e., multi-aged stands/varied vegetation communities).	This goal will be evaluated further based on interdisciplinary coordination with components of the Instream Flow Resources (RSP Sections 8.5 and 8.6), the Geomorphology Study (RSP Section 6.5), and the Riparian Vegetation Study downstream of the Proposed Susitna-Watana Dam (RSP Section 11.6).
		View from existing winter trail toward ice bridge (note that this analysis will be coordinated to the outcome of the ice processes study).	This goal will be evaluated further based on interdisciplinary coordination with the Ice Processes in the Susitna River Study (RSP Section 7.6).
		View from upland trail, and/or dispersed recreation/subsistence use area.	This goal will be evaluated further based on interdisciplinary coordination with components of the Instream Flow Study (RSP Section 8.0, including Studies 8.5 and 8.6), the Geomorphology Study (Study 6.5), and the Riparian Vegetation Study downstream of the Proposed Susitna-Watana Dam (Study 11.6).
		At transect locations for the Ice Processes in the Susitna River Study (Study 7.6), the Geomorphology Study	This goal will be evaluated further based on interdisciplinary coordination with components of the Instream Flow Study (RSP Section 8.0,

	Analysis Goal	Locations Being Considered	2013 ALs
		(Study 6.5), and the Riparian Vegetation Study downstream of the Proposed Susitna-Watana Dam (Study 11.6).	including Studies 8.5 and 8.6), the Geomorphology Study (Study 6.5), and the Riparian Vegetation Study downstream of the Proposed Susitna-Watana Dam (Study 11.6).
		View of river valley from upland area, i.e., locations with existing view of the Mid Susitna River Basin (e.g., Denali State Park; rail line; trails).	ALs located on Kesugi Ridge (WI11, SU35, SP25, WN8, SP28, and SU32) achieved this goal; however, views were too far to discern characteristics of river channel. The need to pursue this goal further will be based on interdisciplinary coordination with components of the Instream Flow Study (RSP Section 8.0, including Studies 8.5 and 8.6), the Geomorphology Study (Study 6.5), and the Riparian Vegetation Study downstream of the Proposed Susitna-Watana Dam (Study 11.6).
Devils Canyon	Evaluate the change in the appearance, if any, of riverflow within Devils Canyon as a result of the proposed Project.	View downriver from perspective of a low flying aircraft.	This goal will be assessed further based on interdisciplinary coordination with components of the Instream Flow Study (RSP Section 8.0, including Studies 8.5 and 8.6) and the Recreation River Flow Study (Study 12.7).
		View upriver from perspective of a jet boat operator (base of Devils Canyon).	This goal will be assessed further based on interdisciplinary coordination with components of the Instream Flow Study (RSP Section 8.0, including Studies 8.5 and 8.6) and the Recreation River Flow Study (Study12.7).
	Evaluate potential impacts of transmission and access routes to aesthetic resources of Devils Canyon.	View from river canyon, south toward corridor (visibility questionable).	Both SP26 and SU106 assessed landscape attributes from upland areas. Locations within the canyon could not be accessed due to safety.
	Evaluate new access to views of Devils Canyon due to access roads and transmission corridors.	If determined that views would be accessible, select locations on and adjacent to proposed access routes.	Viewshed models indicate that Devil's Canyon is too incised to permit views of the river channel from the proposed corridors.
Susitna River / Vee Canyon	Evaluate change in mechanism of view(s) within the inundation zone.	View upriver/downriver from within Susitna River corridor (existing).	SU114; SU115; SU111; SU104; FL13; FL12
	Evaluate change in landscape features (landform, vegetation, waterform, cultural modification).	View upriver/downriver from within Susitna River corridor (existing), with analysis location established at height of reservoir.	SU116; SU117; SU195; SU104
	Evaluate change in *views of* the existing river corridor (waterform) following inundation and formation of the reservoir.	Views of the river from existing access trails and upland areas used for dispersed recreation and/or subsistence.	SU103; FL14; SP33; FL8; FL9; FL10; FL11; SU105; SU193; SU194
Susitna Upland Wet Tundra Basin	Evaluate change in *views of* the existing river corridor (waterform) following inundation and formation of the reservoir.	Views of the river from existing access trails, and upland areas used for dispersed recreation and/or subsistence.	This location was dropped from consideration as only a very small section of Goose Creek, where it intersects the Susitna Upland Wet Tundra Basin, is within the modeled viewshed. View of the upriver terminus of the reservoir was instead assessed from the mouth of Goose Creek at the Susitna River (FL12).
Portage	Evaluate change in seasonal	Views from existing trail; views from	SU77; SU23; SU165

	Analysis Goal	Locations Being Considered	2013 ALs
	attributes of river downstream of the proposed dam site as a result of varied flow regimes.	mouth of creek.	
	Evaluate potential impacts to landscape character that may result from access roads and/or transmission lines.	Views from proposed access roads and transmission lines.	SU77; SU23; SU165
	Evaluate new access to views of Portage Lowlands and Portage Creek due to access roads and transmission corridors.	Select locations on and adjacent to proposed access routes and transmission line corridors.	WN24; SP09; SU44; FL2
	Evaluate potential impacts to landscape character that may result from access roads and/or transmission lines.	Views from existing trails; dispersed recreation and/or subsistence use areas.	SU77; SU23; SU165; WN24; SP09; SU44; FL2
Chulitna Moist Tundra Uplands	Evaluate new access to views of Portage Lowlands and Portage Creek, Devils Canyon (noteworthy natural feature), Devils Creek Falls (noteworthy natural feature), the dam structure and reservoir due to access roads and transmission corridors.	Views from proposed access roads and transmission corridors.	SU123; FL3; SP15; WN6; FL21; SU121; SU122
	Evaluate potential impacts to landscape character that may result from access roads and/or transmission lines.	Views from existing trails; dispersed recreation and/or subsistence use areas.	FL22; SP13; SP17; FL24, SU100
		Views from Tsusena Butte/Lake.	The Chulitna Moist Tundra Uplands is not within the viewshed of Tsusena Lake. It was determined that Tsusena Butte could be assessed in the second study year if the area could be accessed safely. This view was assessed through SU119, located on the Tsusena Creek Trail.
		Views from Denali Highway, with emphasis on existing pull-outs/established vistas.	The Denali Highway does not travel through or near this LCT.
Wet Upland Tundra	Evaluate new access to views of Deadman Creek, the dam structure and reservoir due to access roads and transmission corridors.	Views from proposed access roads and transmission corridors.	SP06; SU141; SP08; SU28; FL15; SU120; WN5
	Evaluate potential impacts to landscape character that may result from access roads and/or transmission lines.	Views from the Susitna River.	At existing conditions, steep valley walls prohibit views from the river of areas where the proposed transmission line and/or access roads would be sited. Likewise, the inundation zone, at capacity, would not extend into the Wet Upland Tundra LCT.
		Views from rail line.	The rail line does not run through or near this LCT.
		Views from Sherman interpretive signs.	The locations of the Sherman interpretive signs do not contain views of this LCT.
		Views from existing trails; dispersed	SU141; FL16; SU145; SP05; FL17; SU142;

	Analysis Goal	Locations Being Considered	2013 ALs
		recreation and/or subsistence use areas.	SU174; FL18; SP04; SU145; SP05; FL17; SU147; SU146
Talkeetna Uplands	Evaluate new access to views of Devils Canyon, the Mid-Susitna River valley due to access roads and transmission corridors, including cumulative effects due to existing transmission corridor.	Views from proposed access roads and transmission corridors.	SP31; SU107; FL4
	Evaluate change in *views of* the existing river corridor (waterform) following inundation and formation of the reservoir.	Views of the river from existing access trails, and upland areas used for dispersed recreation and/or subsistence.	WN7; SP30; SU31; SU101; SU190; SU197
Talkeetna Mountains	Evaluate potential impacts to landscape character that may result from the dam structure, access roads and/or transmission lines.	Views from Fog Lakes.	This location was removed from consideration based on the location of the Fog Lakes relative to the proposed project and the Talkeetna Mountains.
		Views from Stephan Lake.	This location was removed from consideration based on the location of Stephan Lake relative to the proposed project and the Talkeetna Mountains.
		Views from dispersed recreation and/or subsistence use areas.	SU177; WN19; SP24; SP27
Susitna Upland Terrace	Evaluate change in *views of* the existing river corridor (waterform) following inundation and formation of the reservoir.	Views of the river from existing access trails, and upland areas used for dispersed recreation and/or subsistence.	FL7 (from trail); SU14 (view from Watana Creek – dispersed recreation and/or subsistence). This analysis goal is also supported by ALs SU194 and FL8 (view directed west) and WN20 (view directed east).
	Evaluate new access to views of Devils Canyon, the dam structure, and the reservoir (including Watana Creek) due to access roads and transmission corridors, including any cumulative effects due to existing transmission corridor.	Views from proposed access roads and transmission corridors.	This goal could be achieved once access to lands owned by the CIRWG along the Gold Creek Corridor is obtained.
		Consider views of portions of the river located directly downriver of the dam where ice formation may change as a result of Project operations.	This goal cannot be assessed from the Susitna Upland Terrace LCT unless access to lands owned by the CIRWG along the Gold Creek Corridor is obtained; however, the same outcome is achieved by using ALs WN25, SU166, and SP20 located on the north side of the Susitna River.
Susitna Upland	Evaluate impacts to landscape character when viewed from the air.	Views from common flightseeing routes.	To be completed in in the second study year based on results of 2013 recreation study.
Air Tour Routes	Evaluate change in scenic attributes of the river as a result of changes in flow volume.	Montana Creek Recreation Site.	Based on preliminary results from the ice processes study, it was determined that extending the study to areas downriver of Talkeetna was not necessary.
Susitna River, downstrea	Evaluate potential changes to aesthetic attributes related to changes in ice processes and/or river flows; note that the extent to	Montana Creek Recreation Site.	Based on preliminary results from the ice processes study, it was determined that extending the study to areas downriver of Talkeetna was not necessary.

	Analysis Goal	Locations Being Considered	2013 ALs
	which these areas are evaluated will depend on the outcome of analysis of modeling completed relating to ice processes and river flows.	Winter Trail(s) at Delta Islands.	Based on preliminary results from the ice processes study, it was determined that extending the study to areas downriver of Talkeetna was not necessary.
		Iditarod NHT Winter Trail.	Based on preliminary results from the ice processes study, it was determined that extending the study to areas downriver of Talkeetna was not necessary.

10. FIGURES

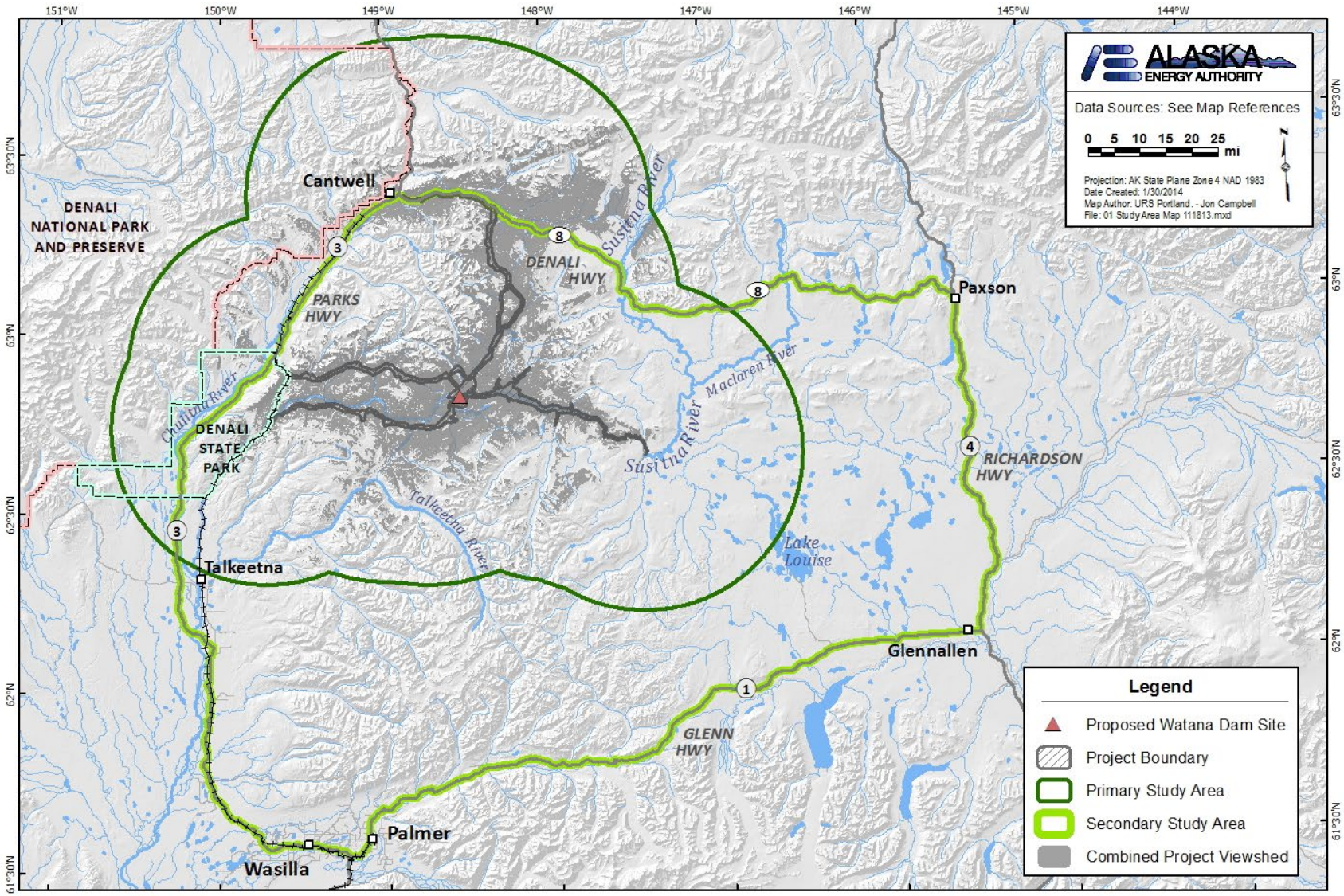

Figure 3- 1. Aesthetics Resources Study Area

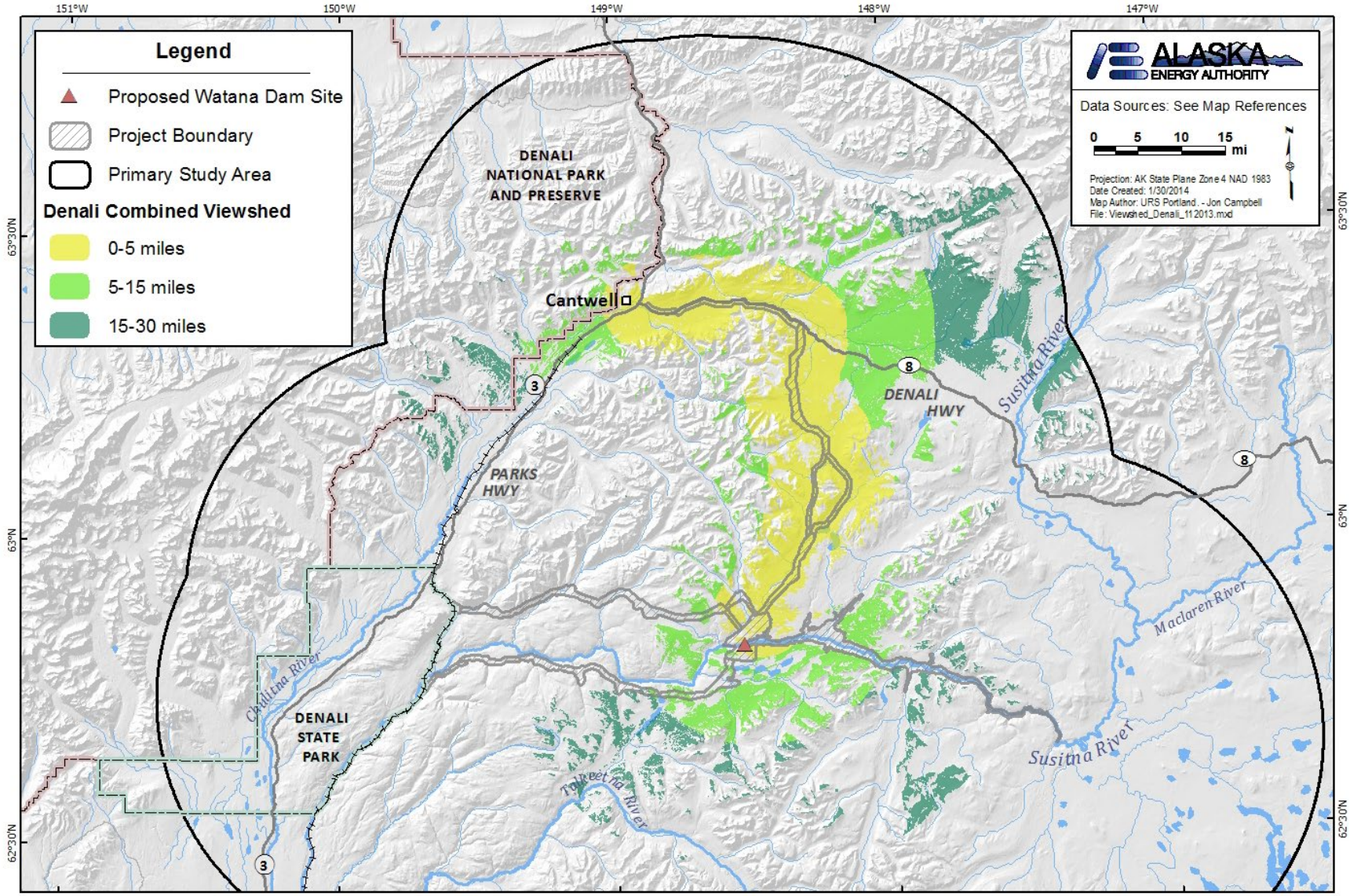

Figure 5.1- 1. Denali Corridor Modeled Viewshed

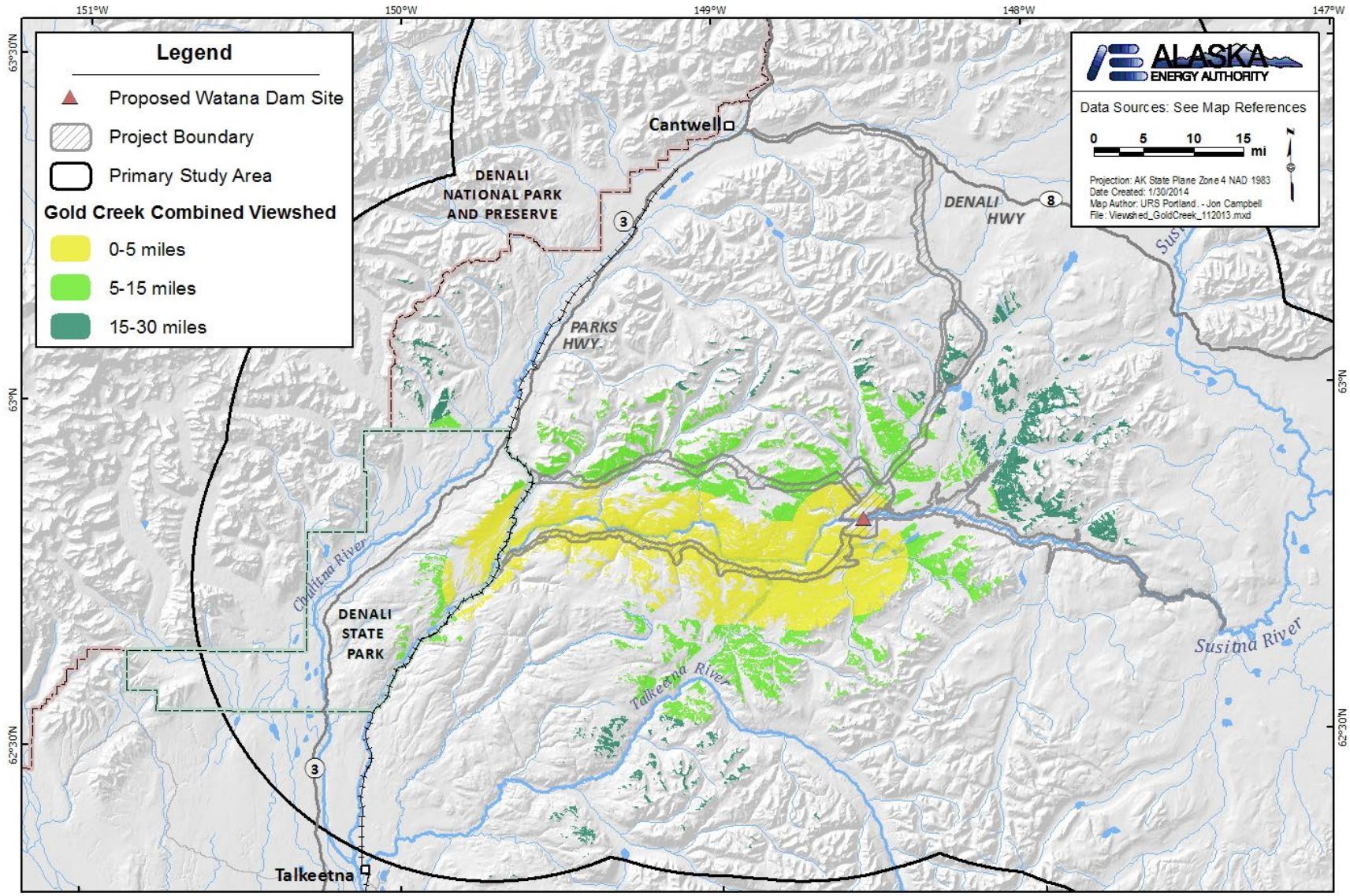

Figure 5.1- 2. Gold Creek Corridor Modeled Viewshed

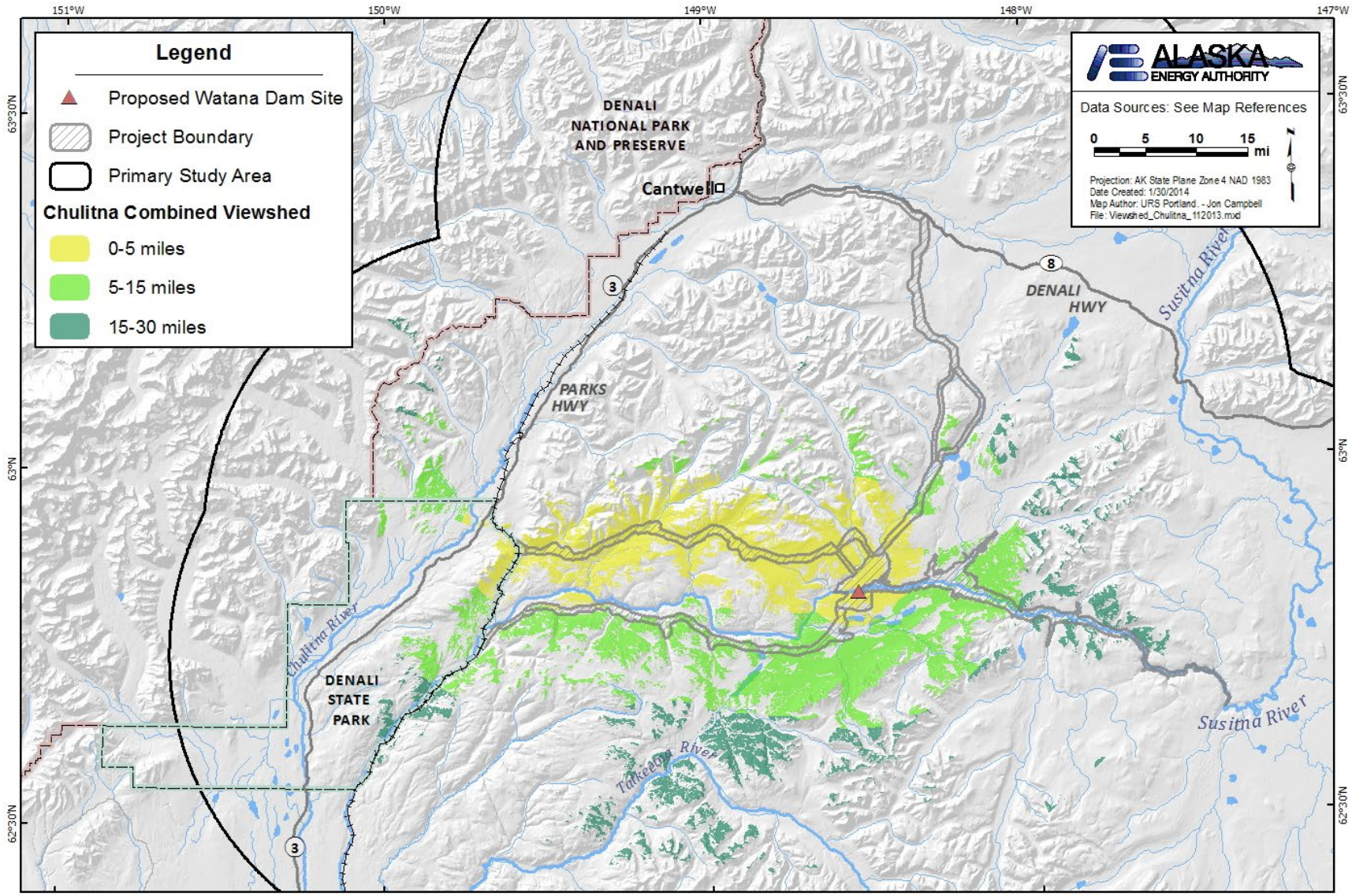

Figure 5.1- 3. Chulitna Corridor Modeled Viewshed

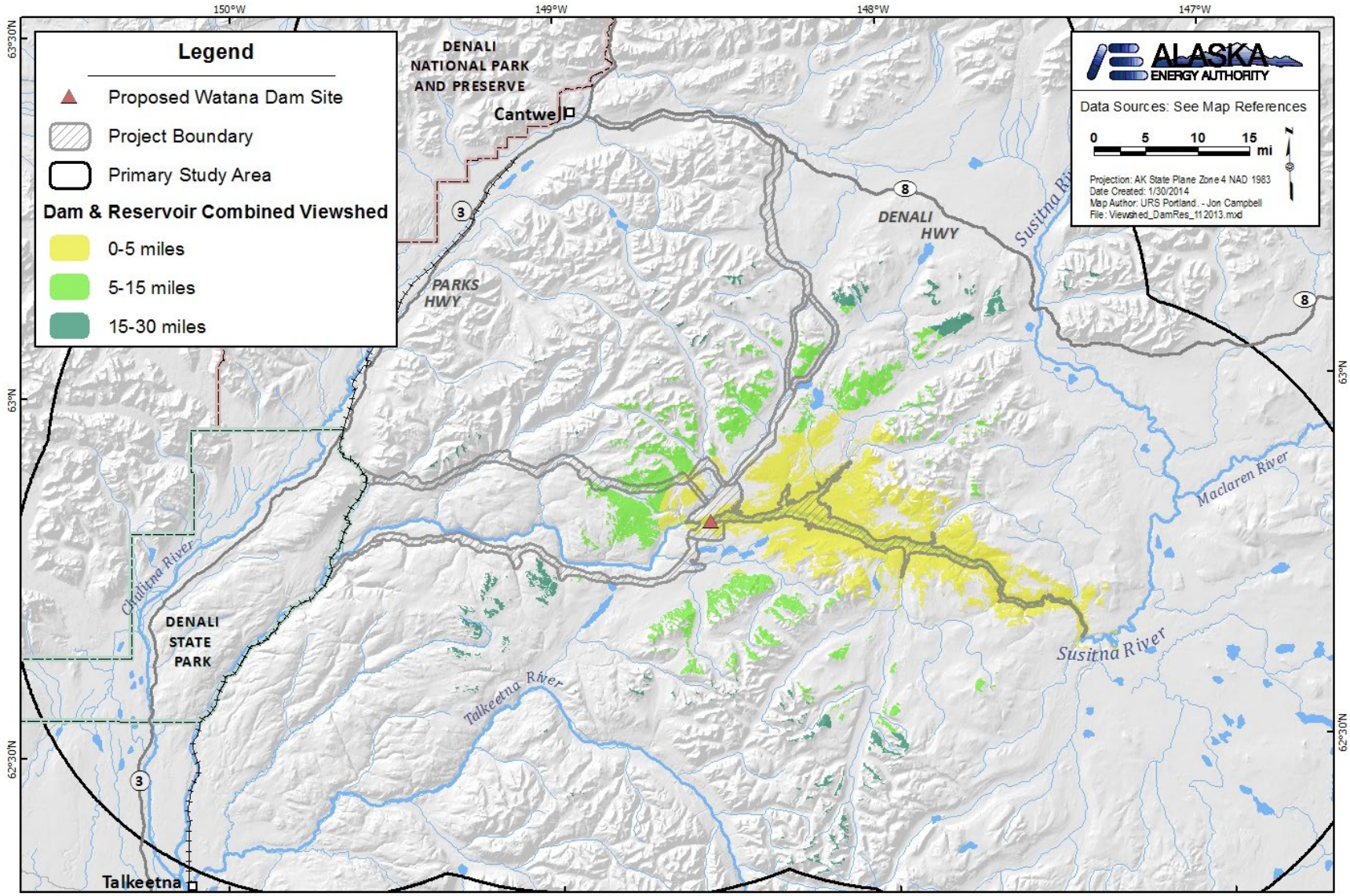

Figure 5.1- 4. Dam and Reservoir Modeled Viewshed

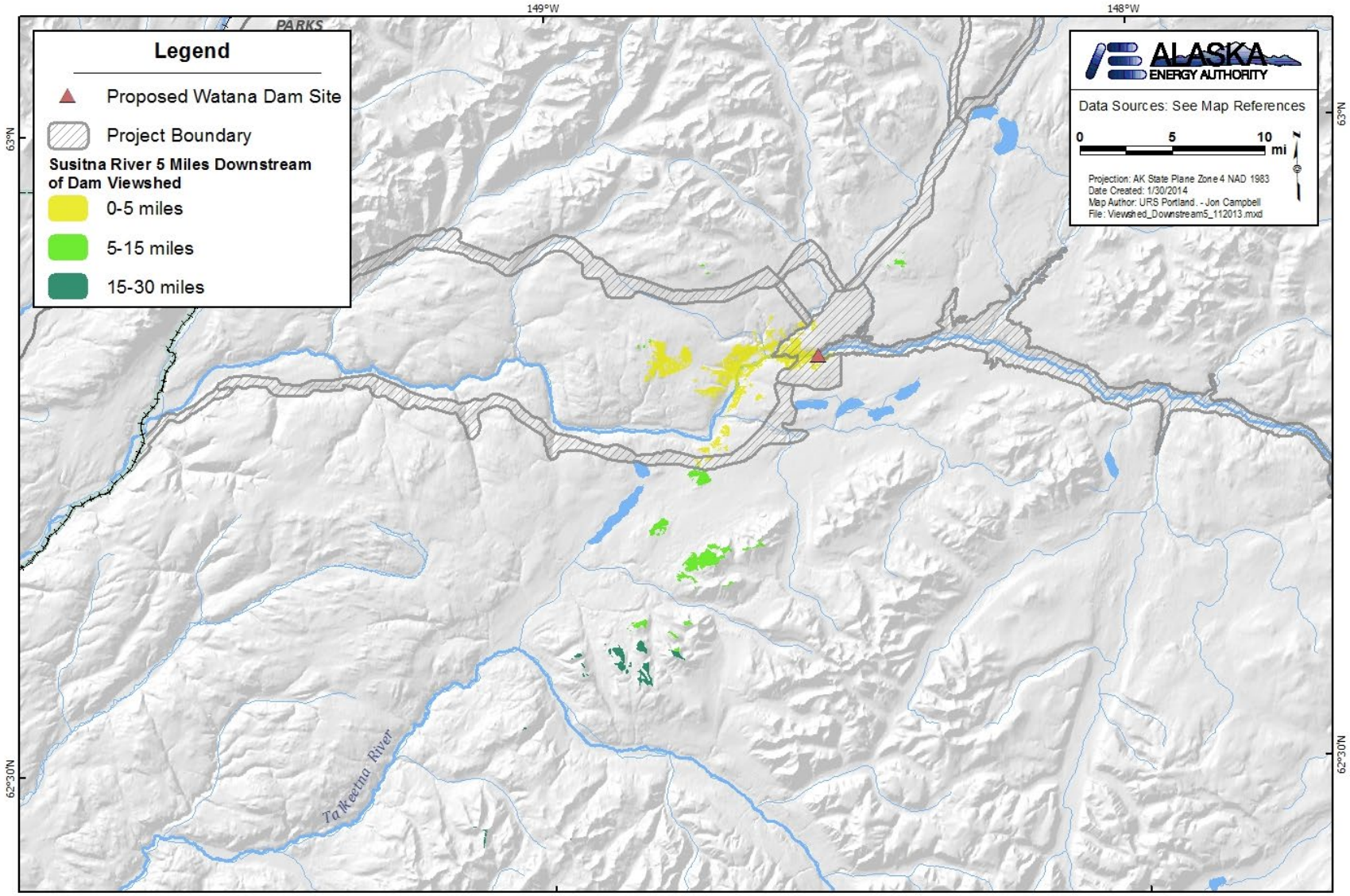

Figure 5.1- 5. Susitna River Five Miles Downstream of Dam Modeled Viewshed

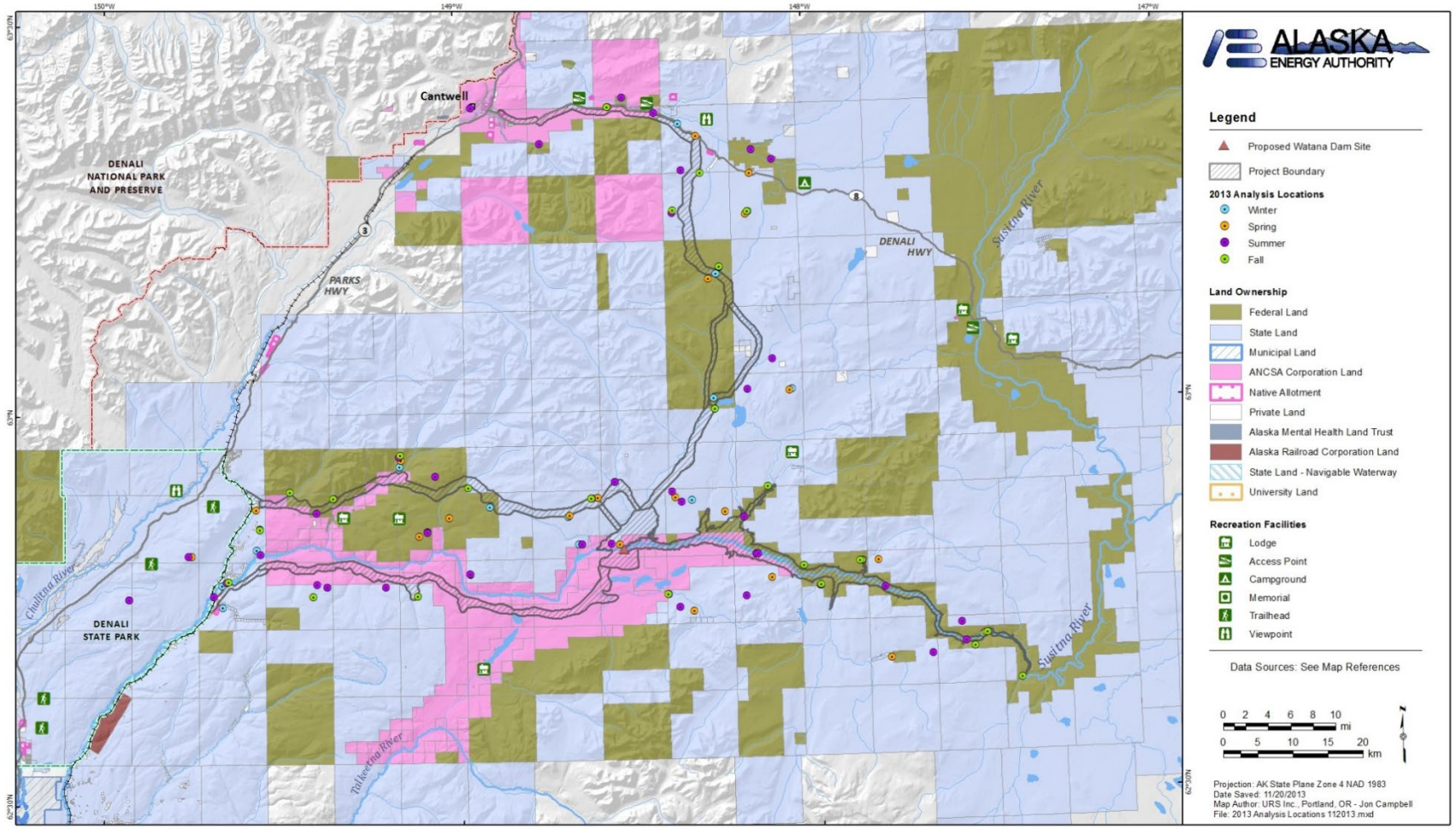

Figure 5.1- 6. Analysis Locations and Land Status

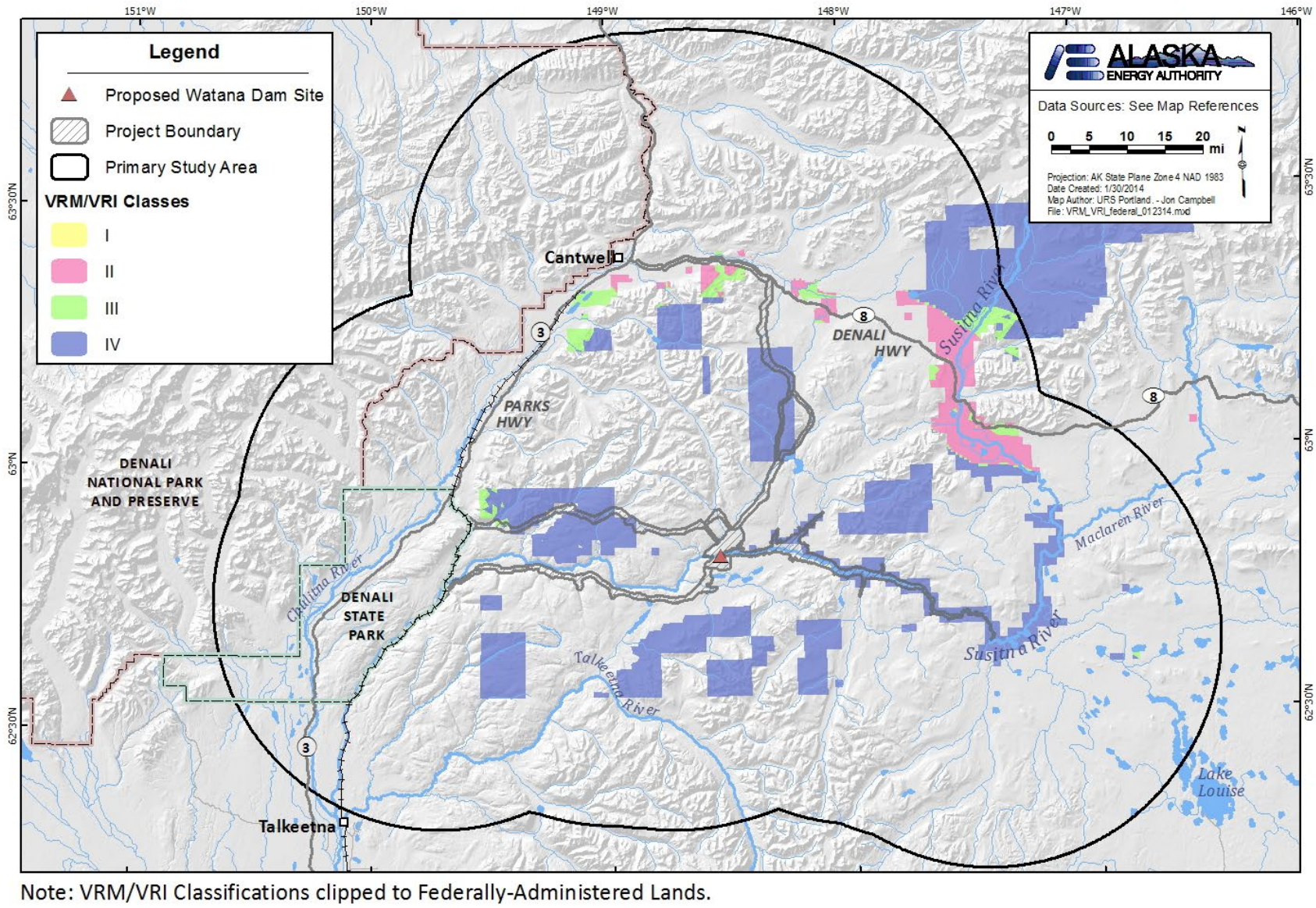

Figure 5.1- 7. Visual Resource Inventory & Management Classes

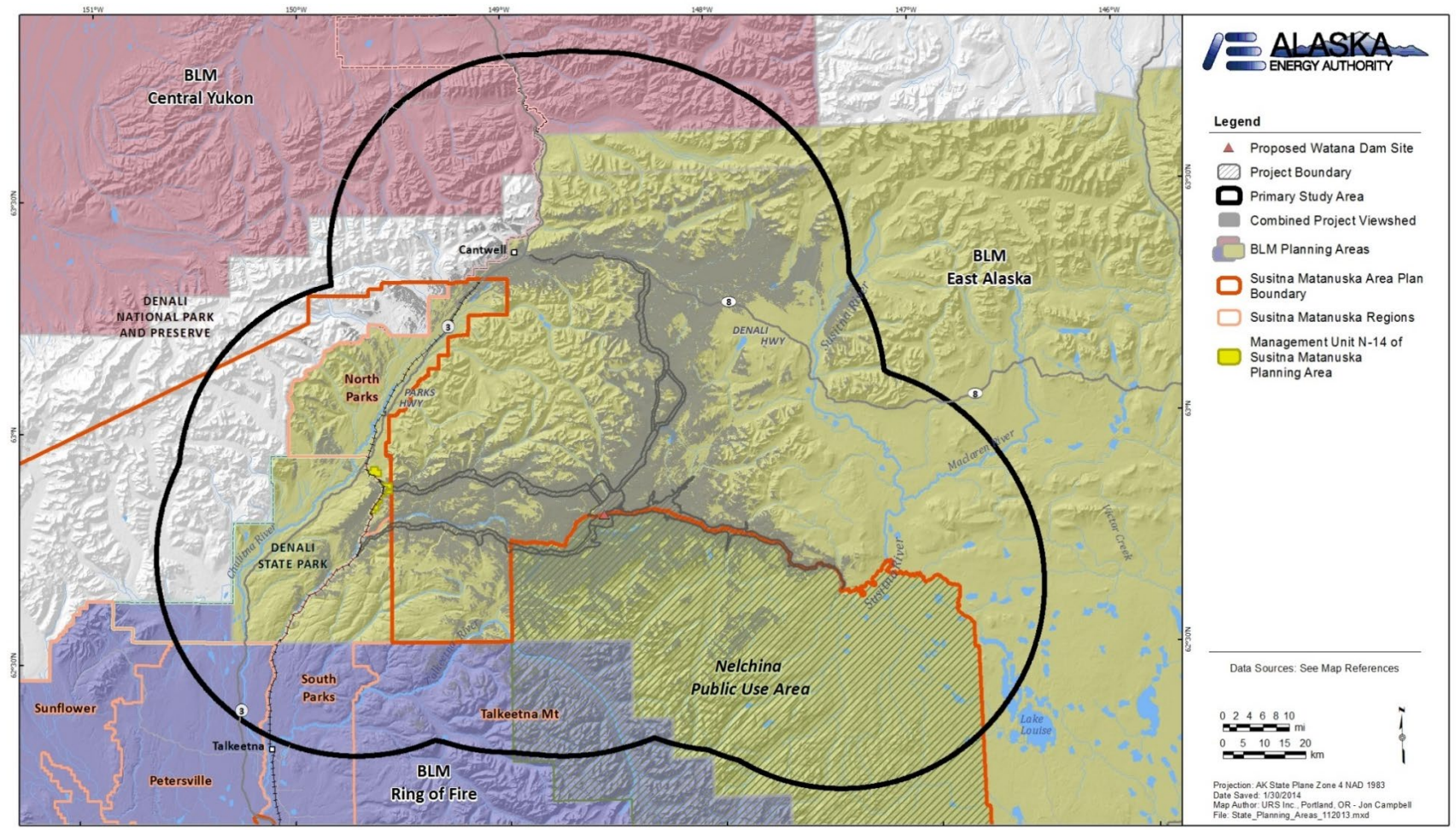

Figure 5.1- 8. Planning Areas

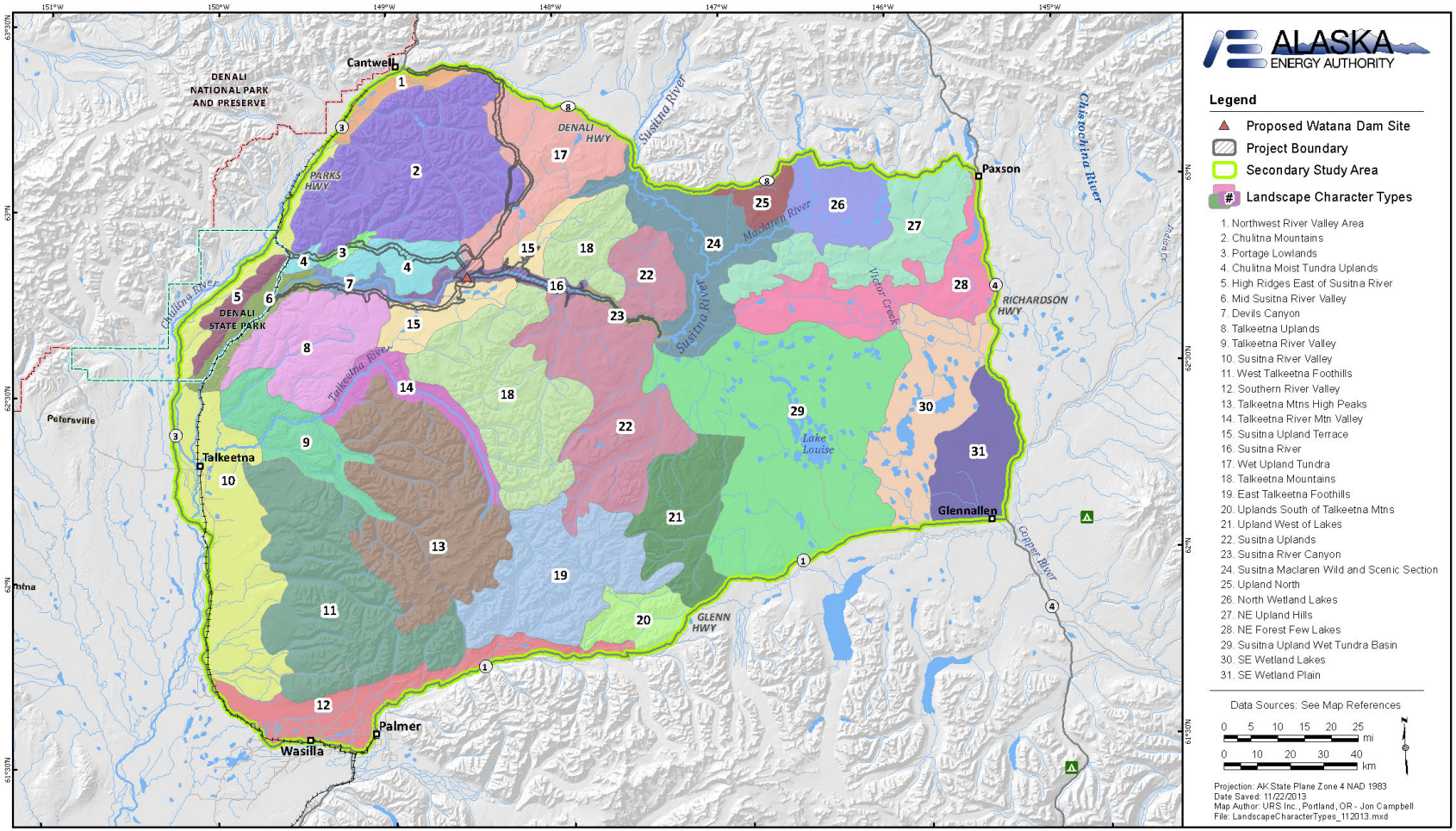

Figure 5.1- 9. Landscape Character Types

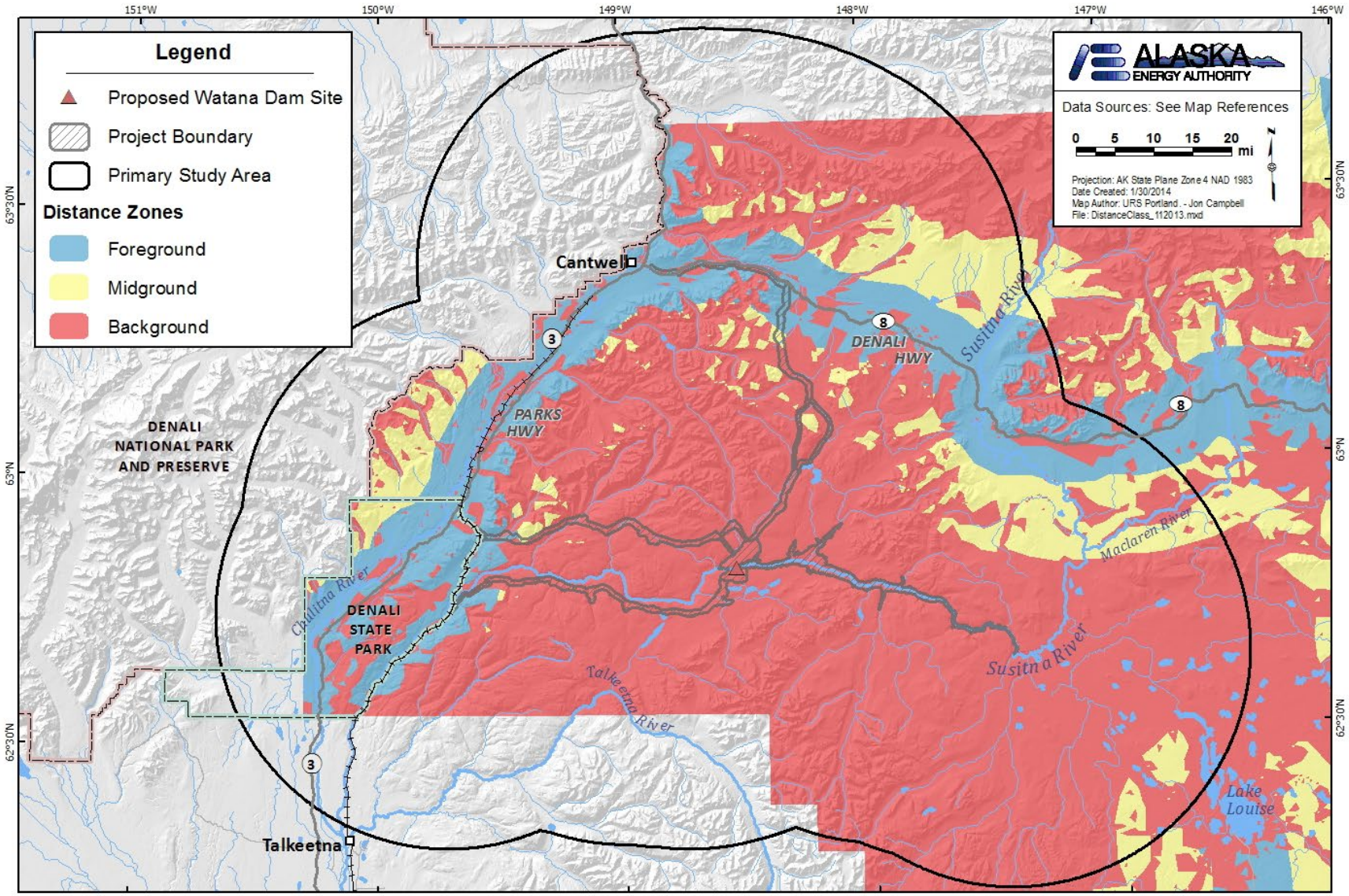

Figure 5.1- 10. Visual Distance Zones

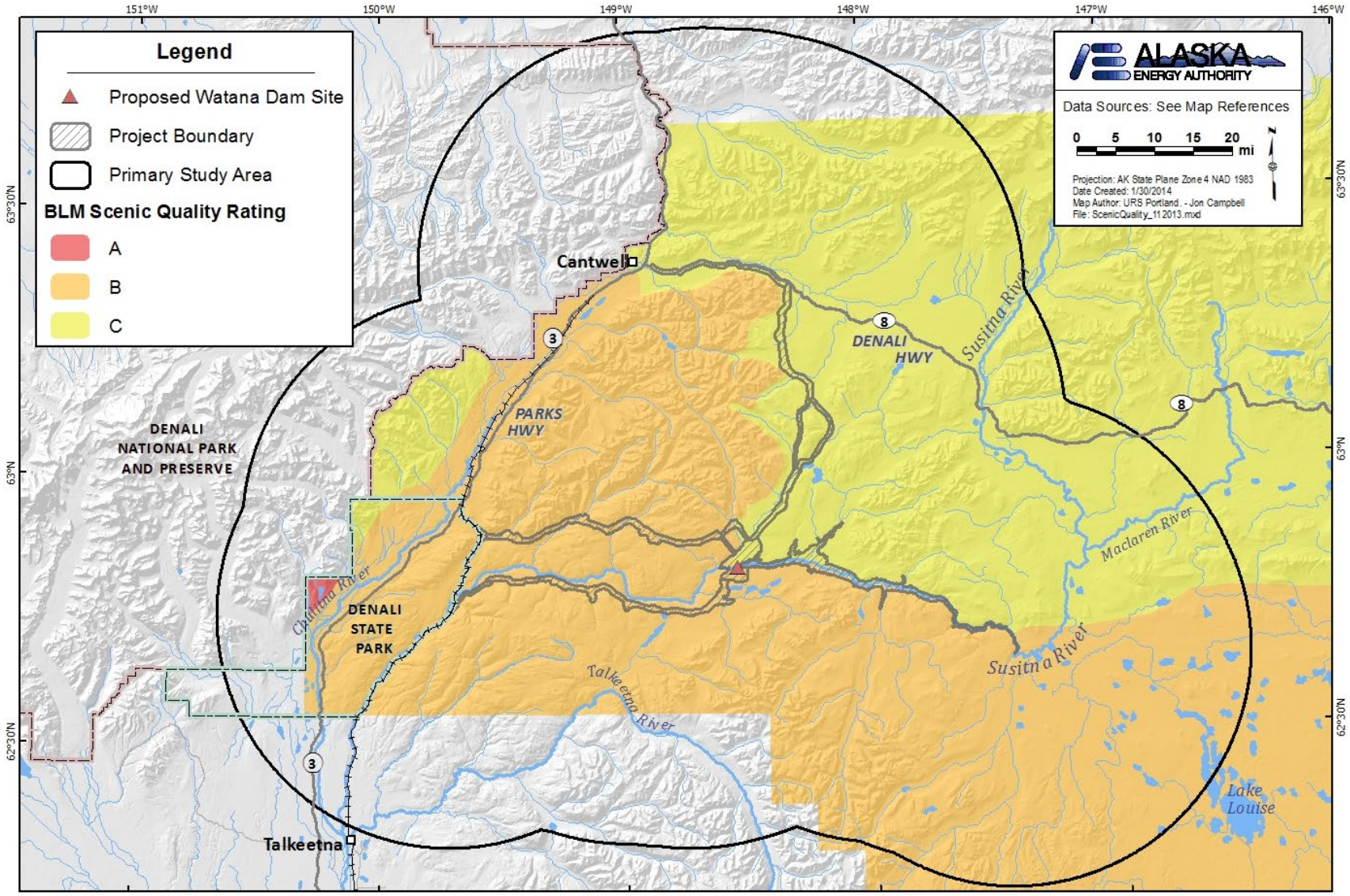

Figure 5.1- 11. Scenic Quality Rating

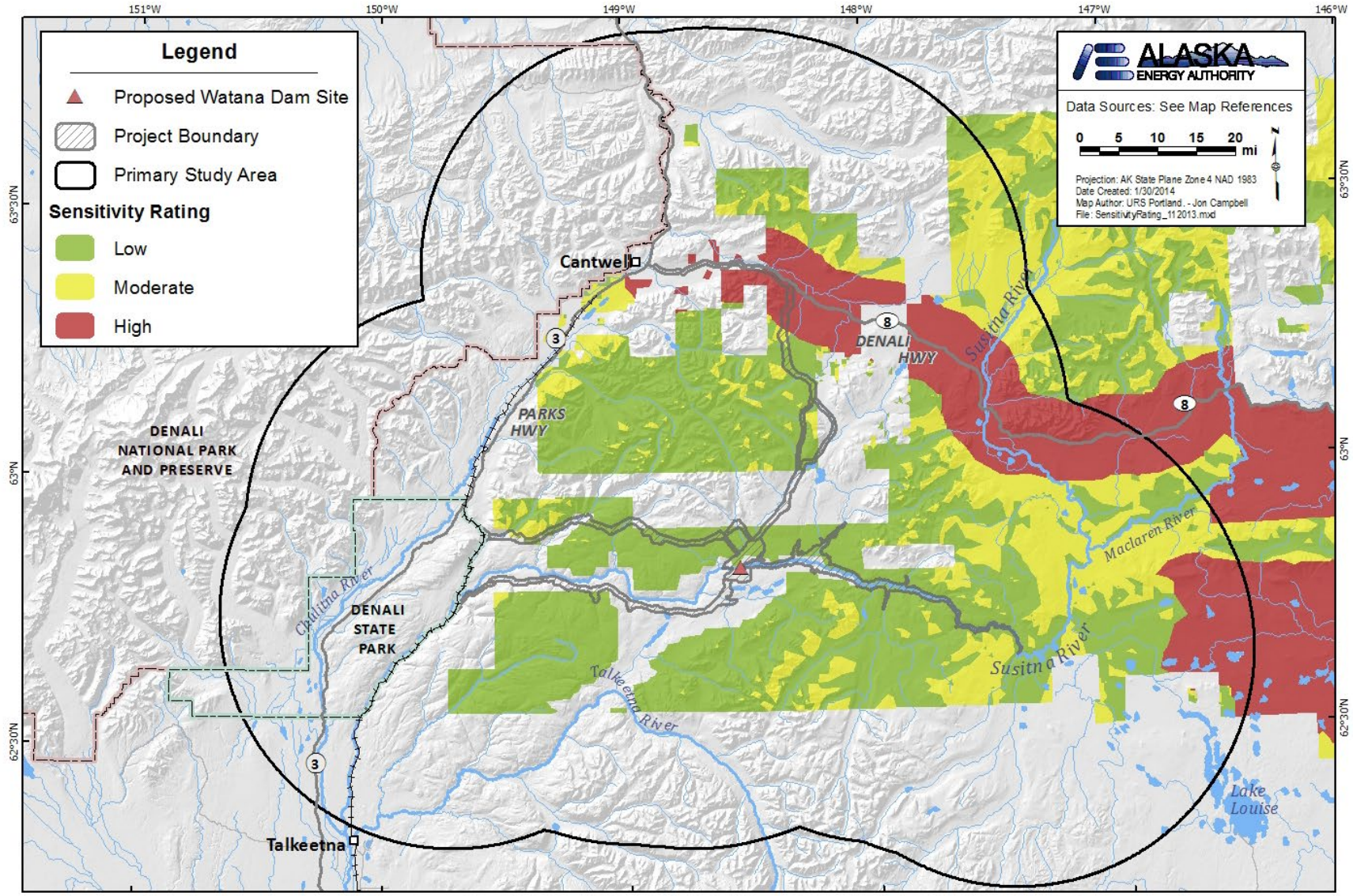

Figure 5.1- 12. Sensitivity Level Rating

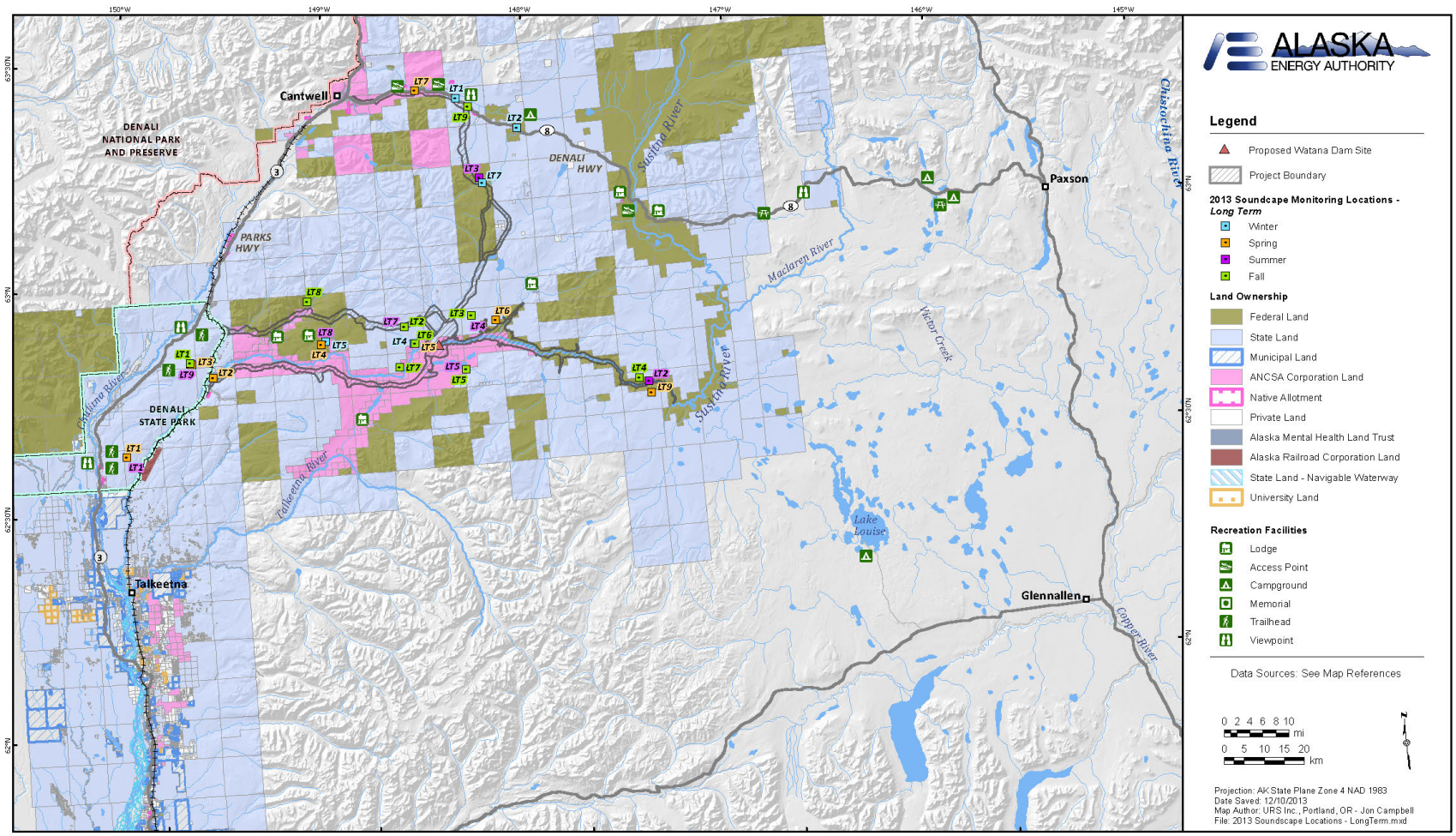

Figure 5.2- 1. 2013 Soundscape Locations – Long Term

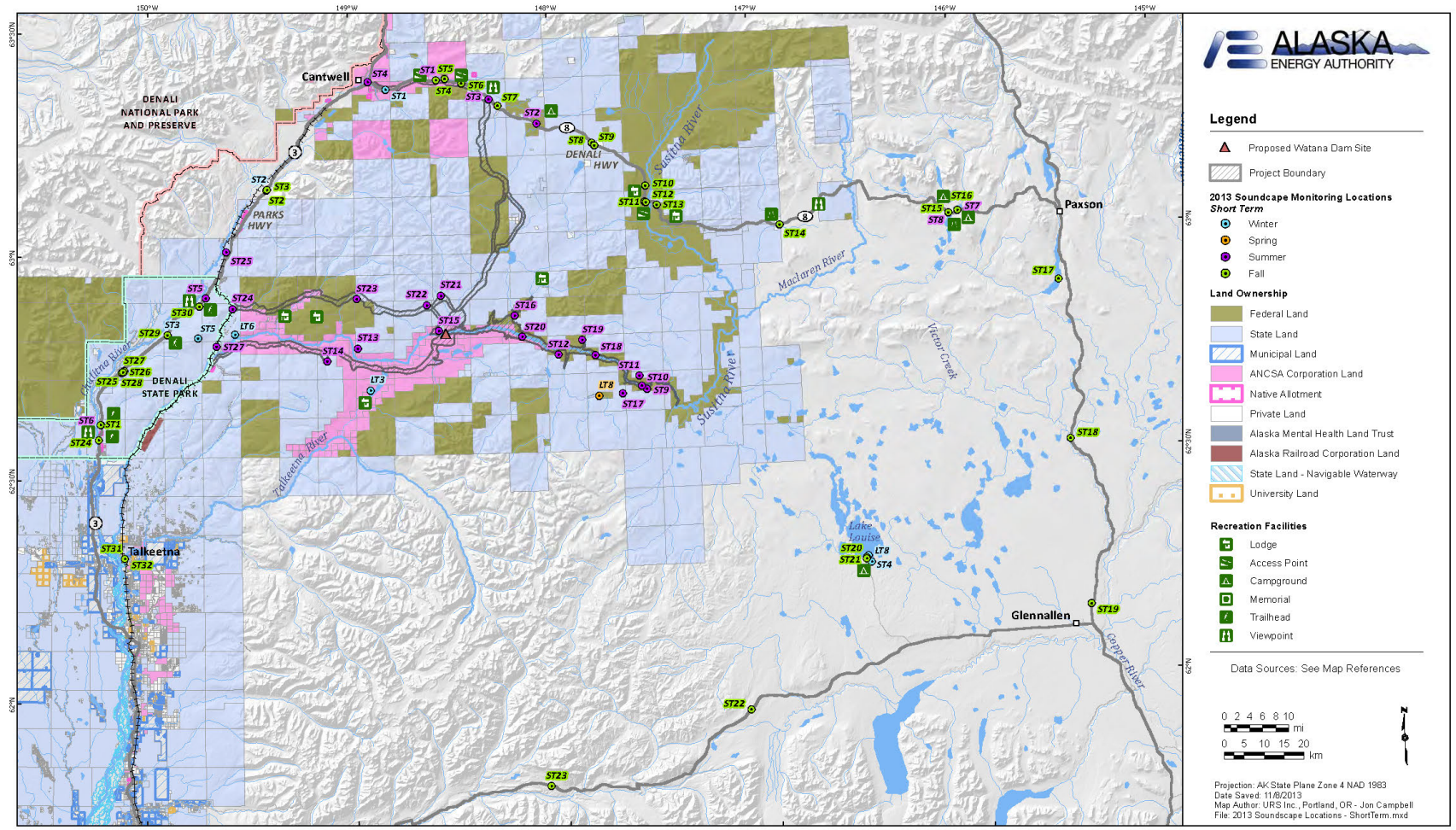

Figure 5.2- 2. 2013 Soundscape Locations – Short Term

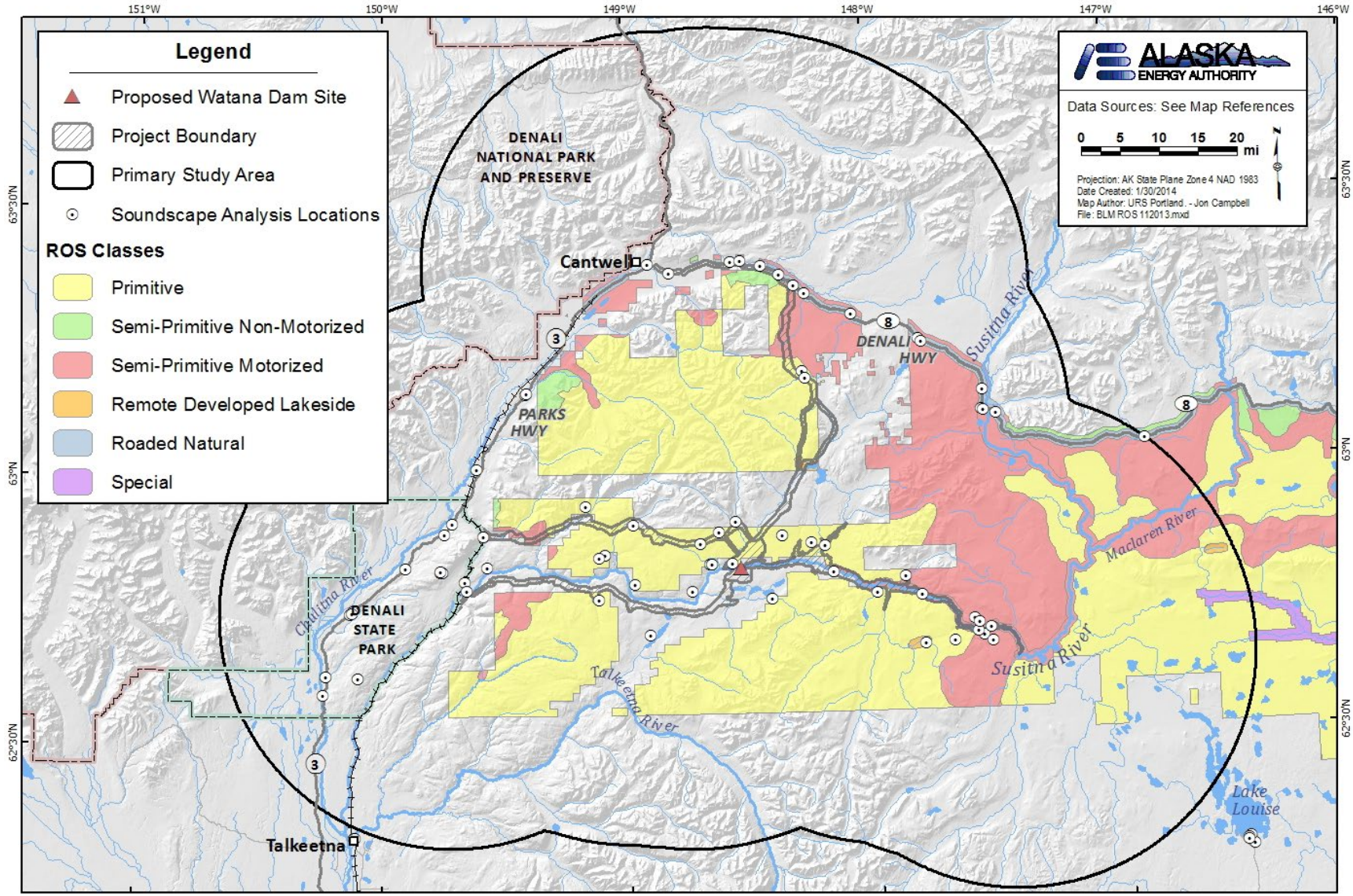

Figure 6.2- 1. 2013 Analysis Locations and ROS

APPENDIX A: AESTHETICS ANALYSIS LOCATION MAP SET

[See separate file for Appendix.]

APPENDIX B: ANALYSIS LOCATIONS NARRATIVES

[See separate file for Appendix.]