A-S1, A-S2, R-S1, R-S2 & R-S3: AESTHETIC AND RECREATION RESOURCES

INTRODUCTION

The Alaska Energy Authority (AEA) is preparing a License Application that will be submitted to the Federal Energy Regulatory Commission (FERC) for the Susitna-Watana Hydroelectric Project (Project) using the Integrated Licensing Process (ILP). The Project is located on the Susitna River, an approximately 300-mile long river in the Southcentral Region of Alaska. The Project's dam site will be located at River Mile (RM) 184. The results of this study will provide information that will serve as the basis for preparing Exhibit E of a license application (18 CFR 4.41) and for use in FERC's National Environmental Policy Act (NEPA) analysis for the Project license, along with other required approvals including those of the Bureau of Land Management and State of Alaska.

Construction and operation of the Project would affect recreation resources by increasing uses, altering portions of the Susitna River and adjacent land, and restricting or increasing access. These activities would result in changes in the nature of the recreation experience, changes in hunting or fishing opportunities, and/or changes in other recreation opportunities. Temporary recreation impacts could be generated by construction personnel, traffic, materials, staging areas, and noise. The Project would also have positive recreation impacts. The proposed access roads and transmission line corridors, reservoir, and recreational facilities would provide new recreational opportunities to the public.

Construction and operation of the Project would substantially alter the aesthetic resources. The currently remote and largely undisturbed Susitna River valley could become an area of increased human activity, noise and development. Temporary visual and noise impacts would be generated by construction personnel, traffic, materials, staging areas, and worker camps. The dam and reservoir would become the most prominent visual feature in the previously natural setting of the middle Susitna River basin. These structures would be viewed by Project personnel, support staff, recreationists in the area, and also viewed from aircraft. The Project would also have positive visual impacts. The access roads, reservoir, and recreational facilities have the potential to provide new recreational and viewing opportunities to the public (AEA PAD 2011).

STUDY OBJECTIVES

The study objectives for the 2012 Recreation and Aesthetics Program focus on the identification, collection, and synthesis of recreation and aesthetic resource information that will inform the formal study planning process. Information will also be used to guide Project design and mitigation of construction, operation and maintenance activities to minimize impacts. Coordination across social resources (e.g., cultural, subsistence, and socioeconomic) from the study's outset is an essential component of the Program.

2012 work will concentrate on data collection, and an evaluation of the comprehensiveness and applicability of existing data. An evaluation of further measures that may be required to collect

appropriate data will also be provided for application in 2013/14. Both resource areas (recreation and aesthetics) include 2012 field reconnaissance, because early validation of recreation uses, trails, and viewpoints will be essential to other resource areas, and for gaining input from the public. The 2012 Study Plan integrates comments from agencies (primarily contributed by the National Park Service for these resources), the Pre-application Document (PAD), and a data gap analysis prepared in 2011.

Recreation

2012 Recreation Resources Objectives

- Data collection
- Land use management regimes
- Interviews with user groups, vendors, and incidental Project area contacts
- Recreation inventory and capacity
- Project area access – trails and ROW
- Geo-referenced mapping
- Field reconnaissance
- Current recreation uses, activity, and demand
- Evaluation of future original data collection methods
- Identification of future trends and issues

Aesthetics

2012 Aesthetics Resource Objectives

- Review of project description and proposed facilities
- Determination of preliminary analysis area
- Assessment of management framework
- Initiation of interdisciplinary coordination
- Review of baseline data
- Selection of preliminary Key Observation Points (KOPs) or Key Viewing Areas (KVAs)
- Field observation
- Data management
- Define existing soundscape

STUDY AREA

Evaluation of the potential direct and indirect effects of the development and operation of the Project focuses on those recreation and aesthetic resources within a defined study area, a subset of the Southcentral Region. The study area will include most of the upper Susitna River basin for analysis of recreation and aesthetic resources that may be affected by the Project. This boundaries of this area will be adjusted slightly as new information is obtained by working with the social sciences work group members and through additional agency consultation. A subset of the larger study area that will be used to evaluate direct impacts and will include the areas to be occupied by the main Project features , including the powerhouse, air strip, construction camp and staging area; the study area surrounding the area that would be inundated by the reservoir; all new road and transmission corridors; and downstream areas that

would be affected by changes in the Susitna River's flow regime due to project operations. As noted by the National Park Service (NPS 2012) "the entire downstream reach of the river could be included in the study area, because the combination of the dam's effect on sediment transport, the proposed winter load-following flows, and substantial reduction in late spring breakup flows is likely to have a major impact on channel morphology, woody riparian vegetation, and snow and ice cover. This will affect not only the supply of huntable and fishable species, but also boating access and recreational experience, and winter access to and across the river" (NPS 2012).

EXISTING INFORMATION

Recreation

A data gap analysis report of socioeconomics, recreation, air quality and transportation was prepared in August 2011 (HDR 2011). That report along with the 1985 Amended Draft License Application Exhibit E provides substantial information about recreation resources in the Project vicinity.

The Southcentral Region contains a more developed transportation system than other portions of the state. Paved highways and gravel secondary roads provide access to many cities and villages in the region, and to recreation areas. Use of planes to reach areas not accessible by road is also prevalent. The Alaska Railroad also provides access to the study area. These transportation systems, combined with the population concentration, make the region's recreational opportunities more accessible and, therefore, more heavily used than in other portions of Alaska.

There are a wide variety of state and national park lands within the region. Recreational facilities and dispersed use areas in the Southcentral Region that are of particular relevance to the analysis of potential Project effects include those along the George Parks Highway, the Denali Highway, and along the Alaska Railroad corridor.

The proposed Susitna-Watana Hydroelectric Project is within the northwest sector of the Bureau of Land Management's (BLM) Glennallen Field Office planning area. The planning area includes approximately 7.1 million acres in eastern Alaska, including approximately 5.5 million acres of lands that are selected by the State of Alaska or Alaska Native Corporations.

The Nelchina Public Use Area covers about 2.5 million acres in the Talkeetna Mountains of Southcentral Alaska. The Public Use Area was established by the Alaska legislature in 1985 and is managed by the ADNR Division of Mining, Land, & Water. The Nelchina Public Use area is the biggest legislatively designated area on state land in Alaska.

Most of the lands surrounding the proposed Susitna-Watana Project are currently owned by the Cook Inlet Region, Incorporated (CIRI). Approximately 30,421 acres within the Project boundary study areas are managed by the BLM. The Recreation Opportunity Spectrum (ROS) Class on lands managed by the BLM in the vicinity of the proposed Susitna-Watana Hydroelectric Project is "Primitive". These lands are characterized by an essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. Multiple trails and routes exist in the Susitna-Watana Project area.

Several ANCSA 17(b) easements are located in the Susitna-Watana Project vicinity. These easements, reserved and managed by the federal government, provide access through private Native lands to public lands and waters.

Aesthetics

The 1985 Susitna Hydroelectric Project FERC License Application (APA 1985) included a detailed assessment of the aesthetic resources in the vicinity of the proposed Project. This assessment included a description of landscape character types; notable natural features; viewers and views; aesthetic value ratings; visual absorption capability; and composite ratings. The study is summarized in AEA's 2011 Pre-Application Document for the project. No prior baseline studies of noise or lighting in the area have been completed.

Landscape Character Types -- Landscape character types identified in the vicinity of the proposed include:

- Mid Susitna River Valley
- Susitna River Near Devil Creek
- Susitna River
- Vee (River) Canyon
- Susitna Upland Wet Tundra Basin
- Portage Lowlands
- Chulitna Moist Tundra Uplands
- Chulitna Mountains
- Wet Upland Tundra
- Talkeetna Uplands
- Talkeetna Mountains
- Susitna Upland Terrace
- Susitna Uplands

Notable Natural Features -- Notable natural features that may serve as destinations for visitors and residents seeking recreation opportunities were identified. Although most notable features would not be directly affected by the project (PAD 2011), they will be reviewed during the baseline assessment. Identified notable natural features include the following:

- *Devils Canyon* - Devils Canyon surrounds an 11-mile stretch of the Susitna River. It begins just downstream of the mouth of Devil Creek and ends approximately 1.5 mi upstream of Portage Creek. High volumes of glacial water, steep inaccessible canyon walls and large boulders highlight this turbulent and dynamic landscape. Four sets of rapids, known collectively as Devils Canyon rapids, encompass approximately five miles of the canyon. These rapids are Class VI (the most difficult rating) on the International Whitewater Scale. Between the Class VI rapids, the fast moving whitewater is rated Class II or Class III. Because of the extreme challenge that the rapids present, few kayakers are known to have attempted to run Devils Canyon.

- *Waterfalls* - Two large waterfalls pass through narrow gorges on Devil Creek, just upstream of its confluence with the Susitna River. Vertical rock walls and colorful vegetation punctuate the settings.

- *Stephan Lake*, - Stephen Lake is a large waterbody located at the base of the Talkeetna Mountains. There is a fishing/hunting lodge and several cabins (collectively known as Stephan Lake Lodge) along its shore. Wetlands and gentle hills covered with mixed woods and tundra comprise the lake's natural shoreline. Stephan Lake is used as a starting place for kayaking and rafting on the Talkeetna River. A trail leads southwest from the lake to nearby Murder Lake and Daneka Lake.

- *Tsusena Creek Falls* - A spectacular rocky canyon covered with mixed woods and tundra, and a series of rapids and cataracts provide the backdrop for Tsusena Creek Falls. The falls are located on Tsusena Creek, approximately three miles above its confluence with the Susitna River.

- *Tsusena Butte Lake* - Located at the edge of the Chulitna Mountains, Tsusena Butte Lake was created by a glacial moraine. The Tsusena Creek valley includes a large variety of tundra landscapes and colorful rock formations.

- *Deadman Creek Falls* - Similar to other tributary falls that flow into the Susitna River, Deadman Creek Falls occurs in a steep, small-scale rocky canyon.

- *Fog Lakes* - The Fog lakes are a series of large, linear lakes on the south side of the Susitna River. They occur in a gently rolling to flat landscape covered with wetlands, mixed forest, and open tundra vegetation.

- *Big Lake and Deadman Lake* - Big Lake and Deadman *Lake* are picturesquely set between three large, tundra-covered buttes. Many outstanding views from the lakes into the middle Susitna River basin exist. Two long lakes, surrounded by glaciated mountains, are located in a narrow valley known as Caribou Pass. Wetlands and tundra cover the valley floor where the middle fork of the Chulitna River has its headwaters.

- *Vee Canyon* - Vee Canyon is a narrow, vertical, rocky canyon that encloses the Susitna River for over a mile. Located upstream of the confluence with Jay Creek, the canyon includes a double hairpin bend, a deeply cut channel, and a stretch of whitewater rapids. The canyon's steep ridges, varied coloration, and rock formations make it a visually interesting feature.

Existing Viewers - Existing viewers in the vicinity of the Project include hunters, anglers, guides, flyers, boaters, packrafters, motorists, and hikers. Concentrated at places such as Stephan Lake, many of these viewers are attracted to the area because of its remote setting and recreational opportunities. The Parks Highway has been recognized as both a National and Alaska State Scenic Byway. Significant foreground (0-0.5 mile from viewer), middleground (0.5-3 miles from the viewer), and background (greater than 3 miles) views of the Project vicinity were identified as part of the previous FERC licensing. Panoramic views, which incorporate middleground and background landscape elements, include:

- From the Parks Highway, looking northwest towards the Alaska Range.

- From the Denali Highway, looking north towards the Alaska Range.

- From the Big Lake and Deadman Lake vicinity, looking south across the Susitna River towards the Talkeetna Range.

- From high ground located north of the Susitna River and west of its confluence with Tsusena Creek, looking south across the Susitna River towards the Talkeetna Range.

AGENCY RESOURCE MANAGEMENT

Relevant resource management goals for agencies with jurisdiction over recreation and aesthetics resources to be studied are guided by several environmental laws, including National Historic Preservation Act, Outdoor Recreation Act, Wild and Scenic Rivers Act, National Trails System Act, Federal Land Planning and Management Act, National Environmental Policy Act, Clean Water Act, and the Federal Power Act.

Project studies are designed to meet FERC licensing requirements, but may also be relevant to recent, ongoing, or planned resource management activities by other interested agencies. Relevant plans include (HDR 2011):

- South Denali Environmental Impact Statement and Record of Decision (National Park Service [NPS] 2006).
- Susitna Matanuska Area Plan (Alaska Department of Natural Resources [DNR] in draft 2010).
- Alaska's Outdoor Legacy Statewide Comprehensive Outdoor Recreation Plan 2009–2014 (DNR 2009b).
- Division of Parks and Outdoor Recreation Ten Year Strategic Plan 2007–2017 (Alaska Division of Parks and Outdoor Recreation [DPOR] 2007).
- Denali State Park Management Plan (DPOR 2006).
- Cultural Resource Management Plan for the Denali Highway Lands (VanderHoek 2005).
- Alaska Recreational Trails Plan (DNR 2000).
- Susitna Basin Recreation Rivers Management Plan (DNR 1991).
- Susitna Area Plan (DNR 1985).
- Matanuska- Susitna Borough (MSB) Comprehensive Development Plan (MSB 2005).
- MSB Trails Plan (MSB 2008).
- Mat-Su Comprehensive Economic Development Strategy (TIP Strategies Inc. 2010).
- MSB Parks and Recreation Open Space Plan (MSB 2000).
- Talkeetna Comprehensive Plan (MSB 1999).
- Chase Comprehensive Plan (MSB 1993).

METHODS AND ANALYSIS

Recreation Resources

A data gap analysis was prepared for recreation resources in 2011 (HDR, 2011). A summary is provided below:

RECREATION	
Existing Recreation Facilities	
REC-1: Reasonably foreseeable future recreation facilities	• Demand for and carrying capacity of proposed projects in South Denali Region EIS and Denali State Park Management Plan • Potential future use of private land in project area (including development of private recreation facilities)
REC-2: Update private facilities information	Update of 1985 Lodge Owner Survey to assess status and use of privately owned lodges in project area
Current Recreational Use of the Project Area	
REC-3: Update recreation survey study	Information on current users
REC-4: Identify Alaska Railroad passengers and whistlestop use in project area	Number of passengers using whistlestops to access project area for recreation purposes
REC-5: Update lodge owner survey	Number of annual guests at lodges within project area
REC-6: Update air taxi survey	• Number of air taxi operators using project area • Number of annual recreational users transported via air taxi • Key facilities and areas for recreation activities via air taxi
REC-7: Update guide survey	• Number of hunting clients using GMU 13A and 13E • Key areas used for hunting
REC-8: Update survey of boaters exiting at Susitna Landing, Talkeetna Boat Launch and Airstrip, and Willow Creek	• Number of boaters exiting at each site • Types of boats used • Types of recreation activities
REC-9: Evaluation of current and future commercial use of project area	• Number of clients using project area businesses • Key areas used for recreation activities • Planned commercial operations and use
Recreation Trends and Future Demand	
REC-10: Update projected demand for recreation opportunities in project area	• Current annual per capita recreation days in various recreation activities • Projected annual per capita recreation days in various recreation activities

The 2012 Recreation Resources Study (RSS) will evaluate whether sufficient data exists to adequately fill the identified gaps, and describe existing and future visitor use levels and patterns, preferences, impacts, and demand in the Project area, and regional area. The 2012 RRS will analyze current recreational use and opportunities in the Project area and region, in

order to begin analysis with a comprehensive baseline and context. Study elements are listed below.

Data Collection

All study elements include a synthesis of existing recreation data, which will be evaluated for incorporation in the analysis. This includes visitor data, recreation uses and levels, and GIS mapping.

Land Use Management Regimes

An analysis of land use resource management will be conducted and mapped (GIS).

Interviews with User Groups, Vendors, and Incidental Project Area Contacts

Previous attempts to contact potential users of the Project area, and vendors (such as lodge owners, for example) were unsuccessful. However, engagement of those groups in the process is essential for both participation in the Project, and for data that informs recreation demand. It is also important for other resource areas, especially socioeconomics. For those reasons, much emphasis will be placed on this element for 2012.

Thirty to 40 telephone executive interviews will be conducted with prominent and representative organizational leads, asking for information about:

- Past and current plans, programs, business operations, membership, activity, etc.
- Areas of highest recreational interest (and why)
- Recreation infrastructure used or needed
- Identify any trends and data sources in recreational use (i.e., visitors, hunting, boating, trails, etc.)
- Information about other projects proposed in the study area that could directly or indirectly affect recreation, tourism, or access to the previously inaccessible areas
- Referral of other contacts or memberships to be included in survey research
- Information as requested for use in the socioeconomics resource report
- Information needed in other resource areas

An incidental observation form will be developed so that field workers, if they encounter a recreationist, can gather on-site information. The form will include:

- Name of observer/recorder and what field study they are affiliated with
- Location of activity (charted on map)
- Date and time of observation
- Weather (general)
- Number of people in group
- Activity description
- Transportation/access type, route, and passengers
- Guided (y/n)
- Other anecdotal observations

Recreation Inventory and Capacity

There are no existing developed recreation facilities on the Susitna River at the Watana Dam site. In the broader Project area, both public and private recreation facilities exist. These are primarily located along the road system. Access to these facilities is provided by road vehicles, all-terrain vehicles (ATV) and off-road vehicles (ORV), foot, airplane (float, ski, and wheeled), snowmachines, skis, and snowshoes (DNR 2011, as cited in HDR 2011).

Public facilities in the Project area include facilities along the Parks Highway in Denali State Park, along the Denali Highway, and along the Alaska Railroad right-of-way. In addition, the Parks Highway has been recognized as both a National and Alaska State Scenic Byway; driving along the Parks Highway for pleasure and sightseeing purposes is a major recreational use of the area. Both the Parks and the Denali highways are used for recreational activities, including wildlife viewing, mountaineering, hiking, dog mushing, guided tours, snowmobiling, and bicycling (DNR 2008, as cited in HDR 2011).

In Denali State Park, recreation facilities attract a variety of visitors, both tourists and Alaska residents, each year. Facilities include 118 campsites at the Byers Lake, Lower Troublesome Creek, Denali Viewpoint South, and Denali Viewpoint North campgrounds; picnic areas; the Alaska Veteran's Memorial Visitors Center; public use cabins; scenic pullouts; a boat launch at Byers Lake; four trailheads; and 48 miles of interconnected trails (DPOR 2010, as cited in HDR 2011). Use of motorized vehicles is restricted to maintained roads and parking areas within the state park; snowmachines may be used in the park when snow depth is sufficient. Park land use designations and trail management also restrict the use of bicycles and pack animals on most trails within the state park (DPOR 2006, as cited in HDR 2011).

The Denali Highway also has several roadside recreation facilities located within the Project area. The Denali Highway area is managed by the Bureau of Land Management (BLM) and the State. State land is open to Generally Allowed Uses as defined by the state (DNR 2009a, as cited in HDR 2011), which include many recreational activities such as hiking, camping, and ATV use. BLM lands generally are open to similar general uses, including recreational uses. Along the highway, the BLM manages several recreational facilities, including a roadside campground at Brushkana Creek (22 sites with water, toilets, and trails), picnic facilities, a boat launch at the Denali Highway Bridge over the Susitna River, and numerous turnouts and viewpoints available for scenic viewing and rustic camping (BLM 2008, as cited in HDR 2011).

Private recreation facilities in the Project area include private lodges and cabins. Most facilities are near the road or railroad corridors, although access to some of these facilities is provided by boat, floatplane, or wheeled plane.

Fly in lodges in the Project area include:

- Stephan Lake Lodge located on Stephan's Lake. The lodge advertises hiking and fishing and is accessible by float plane.
- High Lake Lodge located on High Lake offers wheeled plane access and advertises fly-in fishing, unguided hunting, and hiking.

- Tsusena Lake Lodge on Tsusena Lake is accessible via float plane. Operation status is unknown.
- Clear Creek Lodge. Exact location and operation status is unknown.

Lodges along the Denali Highway include:

- Alpine Creek Lodge at MP 86 operates year-round, and offers ATV tours, snowmachining, photography, wildlife viewing, fishing, and hiking.
- Gracious House at MP 82 offers flight-seeing, snowmachining, and unguided hunts.
- Additional lodges on the eastern end of Denali highway lie outside the Project area.

Lodges along the Parks Highway in the Project area include:

- Byers Creek Lodge at MP 144 offers fishing, hiking, and wildlife/bird watching.
- Mt. McKinley Princess Wilderness Lodge at MP 132 offers lodging, dining, and tour packages in conjunction with Princess Rail Tours.
- Mary's McKinley View Lodge at MP 134 offers dining and lodging.

Private cabins also exist on Clarence Lake, Portage Creek, Stephan Lake, High Lake, Big Lake, and Daneka Lake. While many of these lodges and cabins are known to be in good condition and operable, the status of some is currently unknown. In addition to these lodges and camps, a substantial Boy Scouts Explorer Camp with nationwide draw is planned for the south end of Curry Ridge. In addition to private lodges, multiple commercial recreation and tourism operations use the Project area (HDR 2011).

Recreation facilities in the Project Area will be inventoried, described, and their locations mapped according to GIS coordinates and study standards.

Project Area Access – Trails and ROW

There is a network of trails in the Project area, some designated, and others user-defined. Multiple trails and routes exist in the Project area. The state of Alaska has formally identified six Revised Statute (RS) 2477 trails in the Project area. Many of these were and still are used to access mining claims, fishing and hunting areas, or remote cabins from communities such as Chase, Curry, and Hurricane that exist along the rail corridor. Use of these trails is governed by the generally allowed uses defined by the state (DNR 2009a). Recognized RS 2477 public right-of-way trails in the Project area include (HDR 2011):

- Susitna River Trail (also referred to as the Gulkana/Denali Winter Trail, Revised Statute Trail [RST] 294): Access to this trail is from the Denali Highway where the highway crosses the Susitna River. The trail travels southeast, following the Susitna River to its junction with the McLaren River. This trail continues up the McLaren River and ultimately connects with trails originating from the Lake Louise area (DNR 2011, as cited in HDR 2011). The trail is approximately 125 miles long.

- McWilliams/Gold Creek Trail (RST 469): This trail is accessed from the Gold Creek railroad station at Mile 263 of the Alaska Railroad. The trail heads east, following the base of the hills, climbs the plateau south of the Susitna River, and then continues south-southeast toward mining claims on John Creek. The trail is approximately 36 miles long (DNR 2011, as cited in HDR 2011).
- Indian River-Portage Creek Trail (RST 100): This trail is accessed from the Chulitna station at Mile 274 of the Alaska Railroad. It heads eastward, crossing the Indian River, and continuing east to cabins on Portage Creek. The trail is approximately eight miles long (DNR 2011, as cited in HDR 2011).
- Murder Lake North to Ridgeline Trail (RST 80): This trail is accessed from Murder Lake and heads northwest to a ridge. The trail is approximately two miles long. This trail has historically been used for berry picking and hunting access purposes (DNR 2011, as cited in HDR 2011).
- Stephan Lake to Murder Lake Trail (RST 61): This trail connects the south shore of Stephan Lake to Murder Lake. The trail is approximately one-half mile long and has been used for access between landowners on Stephan Lake and Murder Lake, and as a recreational trail to access fishing on Murder Lake (DNR 2011 as cited in HDR 2011).
- Stephan, Murder, and Daneka Lakes Connector Trail (RST 377): This trail is accessed from the west end of Stephan Lake, and heads southwest to Murder Lake. It then continues southward, crossing Prairie Creek and terminating at Daneka Lake. It is used to access cabins and for recreational fishing, hiking, and hunting (DNR 2011 as cited in HDR 2011).
- Curry Landing Strip to Lookout Tower Trail (RST 1509): This trail is accessed from the Curry Station along the Alaska Railroad right-of-way and travels west to the lookout tower. The trail is used to access a viewpoint with views of the Alaska Range and Mt. McKinley (DNR 2011 as cited in HDR 2011).

In addition to RS 2477 trails, additional trails exist in Denali State Park and along the Denali Highway. These include:

- Kesugi Ridge Trail: Access to this trail, found in Denali State Park, is from the Parks Highway at the Little Coal Creek, Byers Lake, and Ermine Hill Trailheads. This trail traverses the ridgeline between the Parks Highway and the Susitna River, overlooking the Middle Susitna River basin. This trail is formally designated as an Alaska State Trail (DPOR 2010 as cited in HDR 2011).
- Troublesome Creek Trail: Access to this trail, found in Denali State Park, is from the Parks Highway at the Troublesome Creek and the Byers Lake Trailheads. This trail traverses Curry Ridge but has been closed in recent years due to severe flood damage resulting in a trail washout (DPOR 2010 as cited in HDR 2011).
- Byers Lake Loop Trail: Access to this trail, found in Denali State Park, is from the Byers Lake Campground. The trail forms an easy, 4.8 mile loop around Byers Lake (DPOR 2010 as cited in HDR 2011).
- Little Coal Creek Trail, Ermine Hill Trail, Cascade Trail, all found in Denali State Park, area accessed from the Little Coal Creek, Ermine Hill and Byers Lake Trailheads,

respectively. These trails provide access from the Parks Highway to the Kesugi Ridge Trail (DPOR 2010 as cited in HDR 2011)

- Butte Creek Trail: Access to this trail is from the Denali Highway where the highway crosses the Susitna River. The trail travels west past Snodgrass lake and along Butte Creek to its headwaters at Butte Lake (MSB 2008 as cited in HDR 2011).

Trails Mapping

All identifiable tracks and trails in the general study area will be mapped from aerial photographs, and existing documents. With the assistance of the work groups and cooperating agencies, criteria will be developed to determine which tracks and trails will be designated and mapped as part of the Project study area. Uses and existence of the trails will be confirmed in the 2012 field reconnaissance. Identified ANCSA 17(b) easements will also be mapped.

Current Recreation Uses and Activity

The amount, extent, and potential impact of Project-related dispersed recreation use on the Project area's land and water resource is currently unquantified. Since the license application was developed in the 1980s, the population of Southcentral Alaska and of the MSB in particular has grown considerably, placing increasing demands on recreation areas throughout Southcentral Alaska. In addition, increases in technology and new methods of access, such as improvements to snowmachine technology, are providing increased access to the Project area. The Project area is also being used for a greater diversity of recreation activities than it was in 1985. As a result, past assessments of use of the Project area are unlikely to reflect current use amounts and trends, and need to be reevaluated and updated (HDR 2011).

Despite developments in technology and increased forms of access, recreational use of the Project area is relatively low and generally concentrated around developed recreation facilities near the road system. Access to the Project area is by airplane (float, wheel, or ski), helicopter, bicycle, ORV, road vehicle, snowmachine, foot, motorized boat, non-motorized boat, and horse or beast of burden (HDR 2011).

Current users of land in the Project area, including both recreation and commercial users, participate in a wide variety of activities. Most public land in the Project area is managed to allow the State's Generally Allowable Uses, which include mountain biking, ORV/ATV use, camping, hunting, fishing, hiking, berry picking, nature/bird watching, and photography. Along the Denali and Parks highways, campers use campgrounds and highway pullouts, stop at scenic overlooks, and use public facilities in Denali State Park (HDR 2011).

Away from the road system and developed recreation facilities, backcountry use of the land within the Project area also occurs. The remote, roadless nature of the northern Talkeetna Mountains provides a wilderness-style experience that has been described as comparable to that of the Brooks Range, but more easily accessible from the road system than other areas in Alaska. A cursory internet search reveals several personal accounts of multi-day expedition style traverses of the Talkeetna Range by independent parties. In addition, the Alaska Wilderness Classic, a wilderness adventure race which requires participants to locate their own route from set starting and ending points, traversed the southern portion of the Project area,

from Eureka to Talkeetna, in 2003, 2004, and 2005. Despite these accounts, no quantification of use of the Project area for backcountry trips exists at this time (HDR 2011).

Winter visitation and recreational use in the Project area is reduced, particularly along the Denali Highway, which is closed to ordinary highway vehicles for the season. However, the Project area is still used by snowmachiners, dog mushers, skiers, and hunters (HDR 2011).

In the late summer and fall, hunters are a dominant user group in the area. The northern Talkeetna Mountains fall within the Alaska Department of Fish and Game's (ADF&G) Game Management Unit 13. The Project area is split between Subunits 13A and 13E with the Watana Dam site being located right on the border between the two subunits. Unit 13 has a history as an area of high importance for hunting in Southcentral Alaska. It is home to the Nelchina Caribou herd as well as to some of the highest densities of black and brown bears in the region (Tobey 2008; Tobey and Schwanke 2009a, 2009b). It is also of high importance due to its proximity to population centers in Southcentral Alaska and its relative ease of access from the road system. Hunting continues to be a popular recreational activity in the Project area. Information on the number of individuals issued permits to hunt in the Project area is available for Dall sheep, caribou, and moose (Tobey and Schwanke 2009b, 2008; Bentzen 2008). For other species, game management plans only report the total number of successful hunters (HDR 2011).

The number of licensed big game hunting guides in the area provides some measure of commercial hunting activity in the Project area. A guide is required for all non-residents who hunt brown bear or Dall sheep in the area unless accompanied by an Alaska-related resident and all nonresident aliens who hunt any big game animal in the state. Currently, there are 11 guides registered to provide big game services in the Guide Use Area 13, which includes the Project area (DEC n.d., as cited in HDR 2011).

The Parks and Denali highways are used for sightseeing in packaged tours, and independent travelers often drive these roads for pleasure and to view scenery and wildlife. The Parks Highway was designated as a State Scenic Byway in 1998 from Milepost 132 to 248. An increasing number of both package tour and recreational travelers also travel on the Alaska Railroad through the Project area for similar purposes (HDR 2011).

The DNR collects commercial recreation day use registrations from commercial operators on state land. To provide spatial information about where commercial recreation is occurring, commercial recreation data are collected and reported by the by Game Management Unit in which the activity takes place. However, there are no similar data collection efforts evaluating non-commercial recreation use. The Project area includes Subunits 13A and 13E. The commercial use of these two units from 2005 through 2010 has varied between 16,000 in 2005 to 1,600 in 2009. Use appears to be highly variable and no trends in usage patterns are evident (HDR 2011).

2012 studies will synthesize existing data. Estimates of levels ("recreation days") and types of participation (by "recreation days") in recreation uses will be generated. Recreation types will be comprehensive. The estimates will include a discussion and comparison of participation rates in activities regionally, statewide, and nationally. Recreation trends as forecasted in other studies will also be described. The reliability of the current data will be assessed.

Outdoor recreation is a key part of the way of life in Alaska. Alaskans participate in wildland recreation at twice the rate of the rest of the country; 96 percent of resident survey respondents said that parks and recreation were important or very important to their lifestyle (DNR 2009b, as cited in HDR 2011). Alaska offers a considerable amount of space and facilities for outdoor recreation. The state is home to 60 percent of the acreage of the National Park System, the nation's two largest national forests, and the nation's largest state park system (DNR 2009b, as cited in HDR 2011).

Outdoor recreation in Alaska includes a diversity of activities. In 2009, the Statewide Comprehensive Outdoor Recreation Plan (SCORP) reported that the 11 ten favorite activities Alaskans participate in include hiking, fishing, hunting, snowmachining, cross country skiing, camping, biking, ORV/ATV riding, skiing and snowboarding, and running. Other popular activities include bird and wildlife watching, dog walking, backpacking, berry picking, using playgrounds, driving for pleasure and sightseeing, recreational mining, mountaineering, whitewater rafting, spelunking, dog mushing, kayaking, power boating and participating in beach activities (DNR 2009b, as cited in HDR 2011).

Ownership of outdoor equipment, an indication of the value that Alaskans place on various types of outdoor recreation, has increased between 2004 and 2009, according to SCORP. Notably, ownership of ORV/ATV (28.5% increase), snowmachine (21.3%), hunting (17.3%), and canoe and raft (14.2%) equipment showed the largest increases in ownership (DNR 2009b, as cited in HDR 2011). Within the Southcentral Region, access to recreation areas is primarily along the road system; facilities such as campgrounds, trails, trailheads, cabins, and boat launches are key links that provide access from the road system to more inaccessible lands and recreation areas. Access to land for recreation is also provided by plane (float, wheeled, or ski) and boat (HDR 2011).

In addition to recreation by Alaska residents, outdoor recreation also plays a major role in attracting tourists to the state. The number of tourists visiting Alaska is expected to increase at a rate of 10 percent per year in the coming years, for both independent tour-connected visitors (DPOR 2006, as cited in HDR 2011). In recent years, the number of tourists who arrive in to Southcentral Alaska on package commercial tours, such as cruise passengers, has been increasing (DPOR 2006, as cited in HDR 2011). In the Matanuska-Susitna Borough (MSB), this has been due in large part to the opening of two large lodges, the Mt. McKinley Princess Wilderness Lodge and the Talkeetna Alaskan Lodge, which opened in 1997 and 1999, respectively. These lodges cater primarily to cruise passengers and have resulted in a more than doubling of the borough's bed tax revenues between 1999 and 2004 (DPOR 2006, as cited in HDR 2011). Through these lodges, many guests also participate in day "excursions" that include recreation activities such as sightseeing, tours, river rafting, hiking, and sportfishing (Princess Tours 2010, as cited in HDR 2011).

Demand for recreational opportunities and facilities in Alaska is increasing. The resident population of Alaska has grown over 50 percent since the 1980s. Furthermore, the resident population of the MSB has grown even faster. Growth in the MSB averaged 4% per year and the population increased by 50 percent between 1990 and 2000 (NPS 2006, as cited in HDR 2011). The population of the MSB is now more than 85,000 people and contains approximately 11% of the state's population (DPOR 2006, as cited in HDR 2011). The population of the MSB may be as high as 103,937 by 2015 (U.S. Census Bureau 2010, MSB 2000, as cited in HDR 2011). The majority of the population and expected growth in the MSB is located in within the valley area between and around Wasilla and Palmer. The increase in population of the

Southcentral Region and the MSB in particular has resulted in an increased demand for year-round recreation opportunities and facilities throughout the region (NPS 2006, as cited in HDR 2011).

Population growth has also spurred increasing development in the Southcentral Region and in the MSB in particular. Land along the Parks Highway has experienced changes in land ownership and use as federal and state land is conveyed to the MSB government, the Cook Inlet Regional Corporation, the Mental Health Trust, the University of Alaska, and private landowners. The MSB believes that this growth may have significant impacts on the availability of recreational trails in the area, as few recreational trails have been formally designated and many currently cross private property. As the level of development on private parcels increases, access to many of these trails could be blocked (MSB 2000, as cited in HDR 2011).

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) also evaluated potential recreation needs in the state of Alaska. About 74% of respondents were either very or somewhat satisfied with recreation facilities within an hour of their community. In addition, 84 percent of respondents felt that when allocating limited funds, that funds should be spent to maintain present facilities before developing new facilities. The desire to allocate funding toward existing facilities was also highlighted by the fact that the public rated maintaining existing trails, building roadside toilets, and improving the maintenance of existing facilities as the most important recreation needs in the state with 67, 63, and 58 percent, respectively, of respondents ranking these needs as very important. In contrast, just 39 percent of respondents felt that building new parks from existing state land was very important (DNR 2009b as cited in HDR 2011).

Recreation supply and demand trends identified in the SCORP and other recreation planning sources applicable to the region will be synthesized. Insofar as existing data inform estimates of levels (“recreation days”) and types of participation in recreation uses, current estimates will be generated. The estimates will include a discussion and comparison of participation rates in activities regionally, statewide, and nationally. Recreation trends as forecast in other studies will also be described. The reliability of the current data will be assessed.

River Recreation Access

Boating on the lower Susitna River is a common recreational and commercial activity. The Upper and Middle Susitna rivers are also used for whitewater boating recreation. Hydropower dams alter the timing and volume of instream flows. This regulation of natural flows in turn affects boating opportunities. 2012 data collection will include the identification, mapping, and characterization of current river recreation, including a site reconnaissance.

Identification of Future Trends and Issues

Through the literature review, scoping, and interviews, trends and issues will be identified, as well as any future recreation-related projects or land use changes. Currently, the primary use of the Project area is recreational, with limited development. It is important that issues be detected early in the process so that public concerns can be addressed and therefore guide the planning process.

Plans for future development include the South Denali Visitor Complex, which would include substantial additional campgrounds, parking, a visitor center, and trails. These developments would include trail access from the existing trail systems on Kesugi Ridge and Curry Ridge, river boat docks, trail shelters, public use cabins, raft put-in sites, and a hand tram across the Susitna River at Curry Ridge (DPOR 2006, as cited in HDR 2011). These facilities, if built, could have a large effect on increasing access to the east side of the Susitna River and increasing visitation to the Project area. The plans, including an analysis of the demand for and carrying capacity of these proposed projects will be examined to evaluate how these developments may impact recreation and access in the Project area. This information may be obtained through discussion with the DPOR and DNR (HDR 2011).

Evaluation of Data Needs

After data collection and the interviews are complete, an assessment will be conducted to determine if a statistically reliable random survey would be necessary to fulfill FERC requirements in estimating recreation supply, demand, and use. An in-person boat landing survey will also be evaluated. Other qualitative methods will also be considered, such as focus groups and web surveys. A report will be prepared that outlines potential supplemental methods, for consideration by the social science workgroup.

Aesthetic Resources

The purpose of the 2012 Study Program is to develop a comprehensive understanding of potentially affected aesthetic resources, including views, sound, and lighting. Construction and operation of the Project will affect existing aesthetic resource conditions in the area, and create new opportunities for views where they currently do not exist. Identifying detailed information about the current resource conditions will assist in the determination of the nature and extent of impacts. This will provide the opportunity to inform Project design and mitigations. Study elements are listed below.

Establish Analysis Area

The analysis area will be composed of two focus areas: (1) The viewshed of the project area under pre- and post-project conditions, and (2) common air transportation routes used for transportation and recreational air tours.

The viewshed will be determined using a GIS-based viewshed analysis tool, and refined in coordination with federal, state, and local agencies. Viewshed models will be developed for pre- and post-project conditions (including linear features such as roads and transmission lines) because of the expected change in viewshed area (i.e., creation of new views, loss of others). It is expected that this area will include the Susitna River drainage Basin, and upland areas where views of the basin are expected to change based on construction and/or operation of the proposed project. The analysis area will be sufficient in size to address all established indicators of change, and to ultimately address potential direct and indirect effects to visual resources, recreation, cultural resources, subsistence and socioeconomics. Maps displaying the viewsheds and geographic boundary of the analysis area will be created and included in the 2012 Interim Results Memorandum and the Final Technical Memorandum. Important views and vistas identified through other resource reviews will be identified and placed on the viewshed map.

Management Framework

The regulatory and management framework will be established through a review of relevant federal (i.e. BLM Visual Resource Management [VRM] data), tribal, state (i.e., Department of Natural Resources), and local (i.e., Mat-Su Borough) planning documents. Each planning document will be reviewed for relevant visual resource management standards, and scenic quality information relating to sensitive viewsheds, open space, or areas identified for visual aesthetics. The primary goal of the document review will be to identify applicable management standards. When available, relevant geospatial data and metadata will be obtained. All information compiled from this review will be documented in a Regulatory and Management Framework Report, and included as an appendix to the *2012 Interim Results Memorandum and the Final Technical Memorandum*. The report will contain maps indicating scenery management boundaries and sensitive scenic resources.

Baseline Data Review

The baseline study for visual resources includes three components: (1) review of existing Visual Resource Inventory data (VRI), including scenic quality, visual sensitivity, and distance zones; (2) Review of aesthetic value ratings and visual absorption capability completed for the 1985 Application for License; and, (3) preliminary identification of Key Observation Points (KOPs) associated with project facilities and associated linear structures (transmission lines and roads).

Existing VRI Data -- As part of the East Alaska Regional Management Plan development process, the BLM completed a visual resource inventory of BLM-administered lands within the project area. For the purpose of this scope, it is assumed that these data are available and complete, and would include information on scenic quality, visual sensitivity, and distance zones. Project-specific maps indicating VRI values for scenic quality, visual sensitivity, and distance zones will be developed, and included as an appendix to the 2012 Interim Results Memorandum and the Final Technical Memorandum.

Aesthetic Value Ratings and Visual Absorption Capability – As part of the 1985 FERC licensing procedure, landscapes within the project vicinity were evaluated for aesthetic value (high, medium, low). For the purpose of this analysis, aesthetic value was defined as a relative measure of the visual landscape based on the following four characteristics: Distinctiveness, Uniqueness, and Harmony and Balance. Visual absorption capability is defined as the relative ability of a landscape to absorb physical change. Each landscape character type was rated as high, medium, or low, based on aesthetic value, topographic enclosure, vegetative cover, ground plane color, and visibility. Each landscape character type was also evaluated through on-site examination with respect to potential project facilities. A composite rating based on the combined outcome of the aesthetic value and visual absorption capability assessments was completed.

Noise, Light, and Glare – A preliminary analysis of soundscapes within several recreation use scenarios will be conducted. The System for the Prediction of Acoustic Detectability (SPreAD) model (Reed et al, 2010) for a geographic information system (GIS) environment will be utilized. For 2012, existing light sources will be described.

Interdisciplinary Coordination

Interdisciplinary coordination is an essential component of the Aesthetics Program. Coordination with the recreation, cultural, subsistence and socioeconomic resource areas will focus on identifying locations of common or sensitive aesthetic resources. Such resources may include hiking trails, identified cultural properties, cultural vistas, and areas used by local outfitters. These areas will be targeted as part of the baseline aesthetic resource inventory, and carried through as Key Observation Points (KOPs) for the impact analysis. Information gleaned for interdisciplinary coordination will be conveyed to the Public Outreach Team to promote their understanding of potential locations / use areas with a high sensitivity to change in aesthetic resources.

Preliminary Sensitivity Analysis and Key Observation Points (KOPs)

A preliminary list of KOPs will be developed prior to implementing field work. The purpose of this list is to develop target locations to guide field reconnaissance during the 2012 study year. This list will be developed in part by identifying and mapping the 1980s KOPs and then overlaying the viewshed maps on USGS-topographic maps indicating locations of towns, travel routes, recreation destinations, and other important landmarks. It is expected that this list will be further refined, based on initial field observations. All KOPs will be evaluated within the context of how views are experienced. For example, views from roadways or from the perspective of a boater traveling downriver will be established as "linear" or "roving" KOPs. It is expected that KOPs will differ by landscape analysis factors, such as their distance from the project, predominant angle of observation, dominant use (i.e., recreation or travel), and average travel speed at which the project could be viewed. The preliminary list of KOPs will be presented to the Social Sciences Work Group for consideration. This list will be presented in tabular format, including information on location, primary viewer, expected view, and rationale for inclusion in the assessment. This table will be included as an appendix to the 2012 Interim Results Memorandum and the Final Technical Memorandum.

2012 Field Observations

Baseline data will be collected at each target KOP, and at any potential KOP identified during field reconnaissance ("opportunistic KOPs"). At each KOP, existing landforms and vegetation will be described, and GPS coordinates recorded. Photographs will be taken using camera specifications suitable for producing simulations of the proposed project. Additional information necessary to describe access, existing lighting, noise, and movement will be recorded.

NEXUS BETWEEN PROJECT AND RESOURCE TO BE STUDIED AND HOW THE 2012 RESULTS WILL BE USED

Construction and operation of the Project will affect recreation and aesthetic resource conditions in the area. Identifying detailed information about the current resource conditions will assist in the determination of effects and potential mitigation planning for the Project. The 2012 information gathering activities will help address Project issues and inform the development of formal study plans The following issues for aesthetics and recreation were identified in the PAD that are being addressed by recreation and aesthetic studies:

A1: Potential effects on visual resources due to Project development and operation.

R1: Potential flow-related effects to river access and navigation within and downstream of reservoir.
R2: Potential changes in the timing and extent of winter use of the river corridor due to Project-related changes in ice cover.
R3: Potential effects on fishing opportunities due to the Project.
R4: Potential effects on hunting and trapping opportunities due to the Project.
R5: Potential effects of recreation use by construction workers on fish and wildlife in the Project vicinity.
R6: Potential need to accommodate and manage increased recreation use due to increased access to the Project area.

The gathering of existing aesthetic and recreation resource information will help provide information necessary to carry forward analysis of these issues.

PRODUCTS

Separate reports will be prepared for aesthetics and recreation resources.

2012 Interim Results Memorandum.

Data. All original data collected in the field in 2012 will be quality checked and delivered to AEA.

Final 2012 Technical Memo. A technical memo summarizing all of the 2012 results will be presented to resource agency personnel and other licensing participants, along with spatial data products. All map and spatial data products will be delivered in the two-dimensional Alaska Albers Conical Equal Area projection, and North American Datum of 1983 (NAD 83) horizontal datum consistent with ADNR standards.

SCHEDULE

2012 Schedule

Recreation Resources	
Data Collection – synthesis of information	**June 1, 2012**
2012 Interim Results Memorandum*	**June 29, 2012**
Field Work	**July 15, 2012**
Interviews	**August 30, 2012**
Inventory/Capacity Recreation Facilities	**August 30, 2012**
Recreation Demand	**September 15, 2012**
Identification of Issues/Trends	**September 15, 2012**
Evaluation of projection methods (possible survey)*	**September 9, 2010**
GIS/mapping*	**November 9, 2012**
Final Technical Memorandum on 2012 Activity	**November 9, 2012**
Aesthetic Resources	
Data Collection – Existing Information (VRI)	**June 1, 2012**

Identification of Sensitive Resources	**June 1, 2012**
2012 Interim Results Memorandum*	**June 29, 2012**
Field Work	**July 15, 2012**
Identify Key Observation Points	**September 15, 2012**
Early Identification of Project Effects	**September 15, 2012**
GIS/Mapping, Photography*	**November 9, 2012**
Final Technical Memorandum on 2012 Activity*	**November 9, 2012**

*Deliverable

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