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HYDROELECTRIC PROJECT

Formal ILP Proposed Study Plan Review

9 August 2012

Prepared by ABR, Inc.—Environmental Research & Services

Botanical Resources Proposed Studies

- Vegetation and Wildlife Habitat Mapping Study

- Riparian Study

- Wetland Mapping Study

- Rare Plant Study

- Invasive Plant Study

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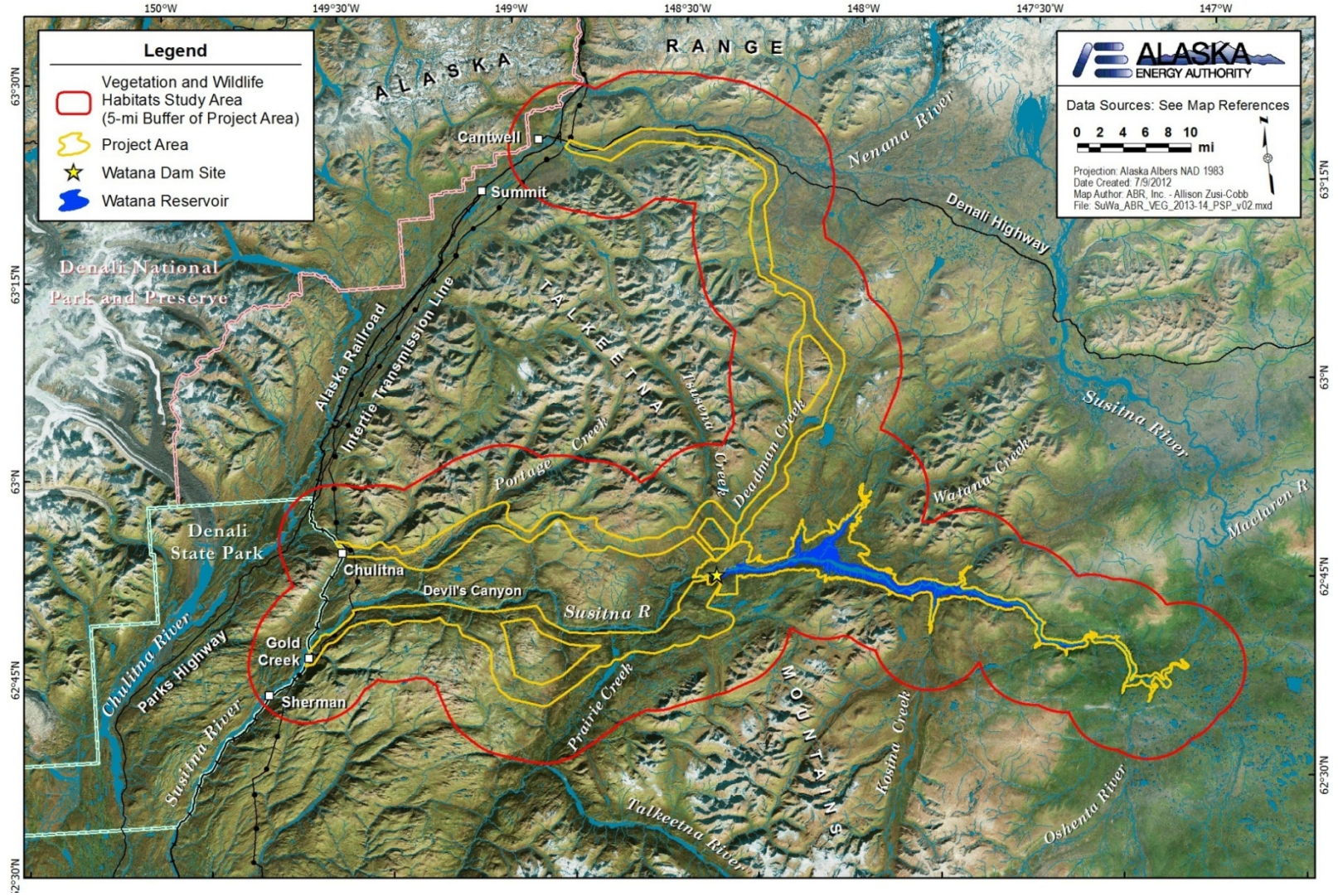# Vegetation and Wildlife Habitat Mapping Study Goals and Objectives

Goals:

- Collect data to support a quantitative assessment of habitat loss and alteration for bird and mammal species

Objectives:

- Identify, delineate, and map vegetation and wildlife habitat types in the Project area
- Quantify the potential direct, indirect, and cumulative impacts to vegetation and wildlife habitats from Project construction and operations

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Vegetation and Wildlife Habitat Mapping Study Area

Vegetation and Wildlife Habitat Mapping Study Methods

- Develop mapping materials from data collected during 2012–2014 field surveys

- Develop preliminary classification and mapping using Integrated Terrain Unit (ITU) system, which integrates vegetation, physiography, surface form, and disturbance

- Level IV Viereck Vegetation mapping

- Derive wildlife habitat classes from the ITU map data

- Field surveys July–mid August to collect data on vegetation, soils, and hydrology

- Record wildlife observations and evidence of wildlife use

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Vegetation and Wildlife Habitat Mapping Study Expected Results

- Derived habitat types will represent landscape features important to the wildlife species occurring in the Project area (food, shelter, cover, escape, nesting, etc.)

- For each species, available data on habitat use and distribution will be used evaluate relative quality of mapped habitats

- Habitat evaluation will support quantitative assessment of habitat loss and alteration for all bird and mammal species

- Direct and indirect impacts to vegetation and wildlife habitats will be quantified in ArcGIS

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Vegetation and Wildlife Habitat Mapping Study Relationship to other Studies

- Mapping studies form the basis for assessing habitat loss and alteration for all wildlife species

- Data on distribution, habitat use, or abundance from other wildlife investigations will be integrated into the impact analysis

- The wildlife study team will provide critical important input on important characteristics of quality habitats for each species

- Habitat maps will provide valuable information to guide sampling efforts for wildlife studies

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Vegetation and Wildlife Habitat Mapping Study Summary of 2012 Activities

- Field surveys were conducted 17–28 June and 29 July–9 August 2012

- Wetlands data are collected concurrently with ITU data, integrating field efforts for the various mapping efforts (wetlands, vegetation, wildlife habitats)

- Wetlands data also may be incorporated into the mapping effort for wildlife habitat, where appropriate

- Results from 2012 will be used to fine-tune future field efforts and to focus mapping efforts on important habitat features, as they are identified in the Project area

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Vegetation and Wildlife Habitat Mapping Study Discussion

- To the extent possible, the vegetation map prepared by Krieg and Associates in 1987 will be reviewed to assist with the current mapping effort; a potential limitation is landscape changes associated with fires, insect outbreaks, and permafrost degradation over the intervening 25 years

- AEA will revise the Proposed Study Plan to describe how timber volumes will be determined for those areas in the project footprint that will be inundated by the reservoir or cleared of vegetation

- Discussion and questions?

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Riparian Study Goals and Objectives

Goals:

- Collect data to support an assessment of the extent to which the Project will alter riparian vegetation, succession, wetlands, and wildlife habitats

Objectives:

- Prepare baseline maps of local-scale riparian ecotypes, wetlands, and wildlife habitat types downstream from the Watana dam

- Characterize the physical and ecological processes likely to affect vegetation succession in riparian habitats downstream from the Watana dam

- Use data to predict potential changes in riparian areas due to alterations in instream flow, ice processes, and riverine geomorphology that may result from Project construction and operations

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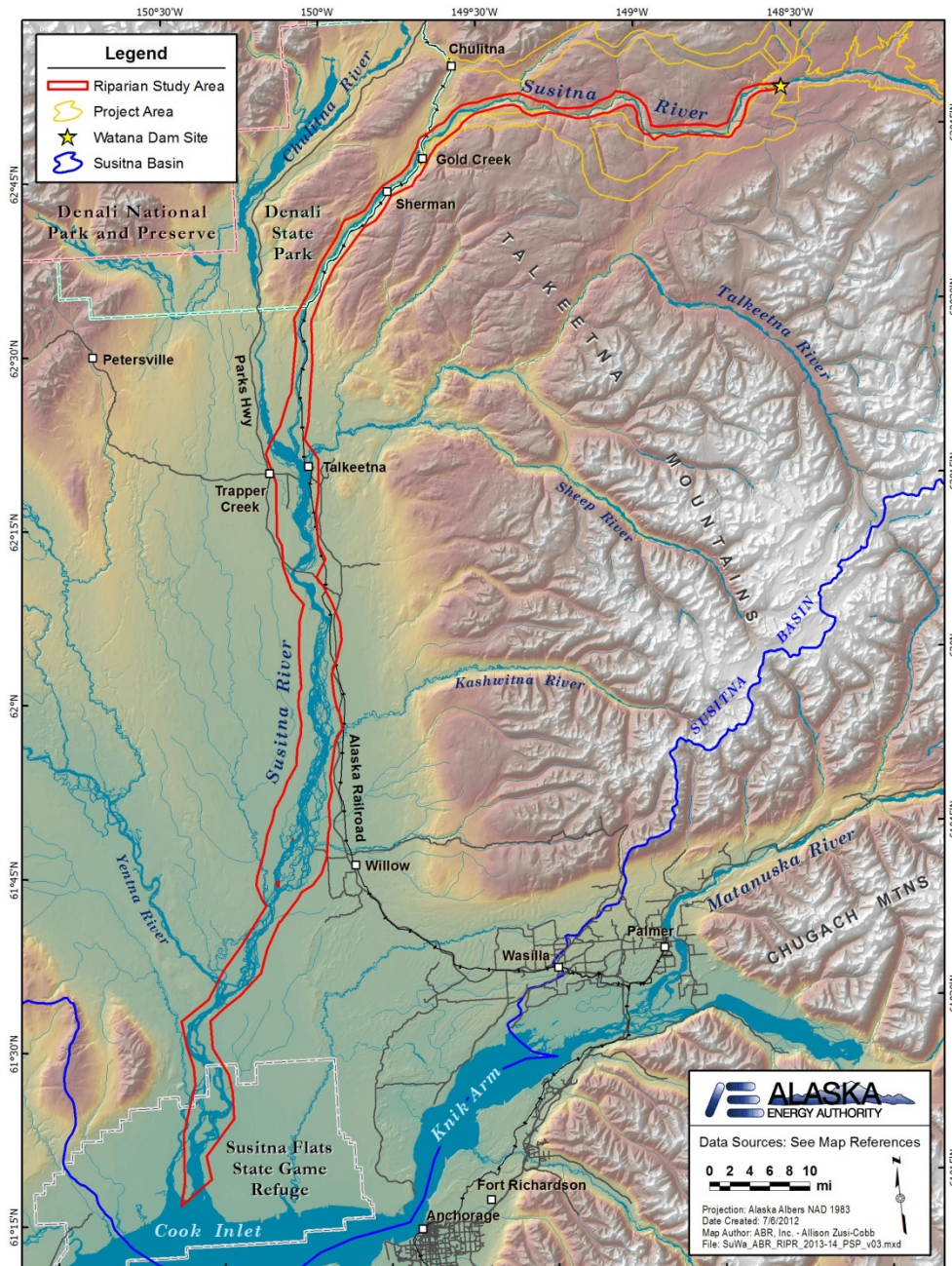
Riparian Study Area

Riparian Study Methods

- ITU mapping approach, integrating vegetation type, successional stage, geomorphology, and surface-form

- Ground reference data will be used to support aerial photointerpretation

- Field surveys in late June–July will collect data on landscape variables and vegetation (structure, height, density, DBH, age)

- Field data from 2012 will support preliminary mapping of riparian ecotypes, wetlands, and wildlife habitats that will be used to focus 2013 and 2014 field surveys

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Riparian Study Expected Results

- The Riparian Study will provide baseline data correlating habitat distribution with present-day flow, ice processes, and riverine geomorphology

- Anticipated Project-related changes in flooding and ice scour will be used to predict changes in riparian habitats, including estimates of how much of the riparian zone will transition from one successional stage to another

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Riparian Study Relationship to other Studies

- The riparian study will be conducted in close cooperation with the instream flow, ice processes, and riverine geomorphology studies

- Successional study plots will be sampled in the same stream reaches as both the instream flow and riverine geomorphology studies

- Study results will have relevance to wildlife, fisheries, and recreation resources, all of which are affected by changes in vegetative cover and wildlife habitat distribution

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Riparian Study Summary of 2012 Activities

- 88 riparian field plots were sampled 23 June to 3 July 2012
- The 2012 riparian survey focused on the active floodplain of the Susitna River between the proposed dam site and the town of Willow

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Riparian Study Discussion

- Study area boundary will be refined in consultation with resource agencies

- Effects of altered flow regime expected to decrease with distance downstream, possibly overridden by tidal fluctuations from Cook Inlet in lower reaches

- Develop consensus on study area width–100-year flood event? plus 800 m buffer? buffer based on elevation?

- Inundation zone conversion of lotic to lentic habitat will be evaluated in the Vegetation and Wildlife Habitat and Wetlands Mapping studies

- Discussion and questions?

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# Wetland Mapping Study Goals and Objectives

Goal:

- Collect data to support quantitative assessment of impacts to wetlands and wetland functions that would result from Project construction and operation, including both wetland loss and creation in the inundation area

Objectives:

- Identify, delineate, and map wetlands in the Project area in ArcGIS;
- Determine functional values for the mapped wetland types; and
- Support the assessment of impacts and development of PME (protection, mitigation, and enhancement) measures

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Wetland Mapping Study Area

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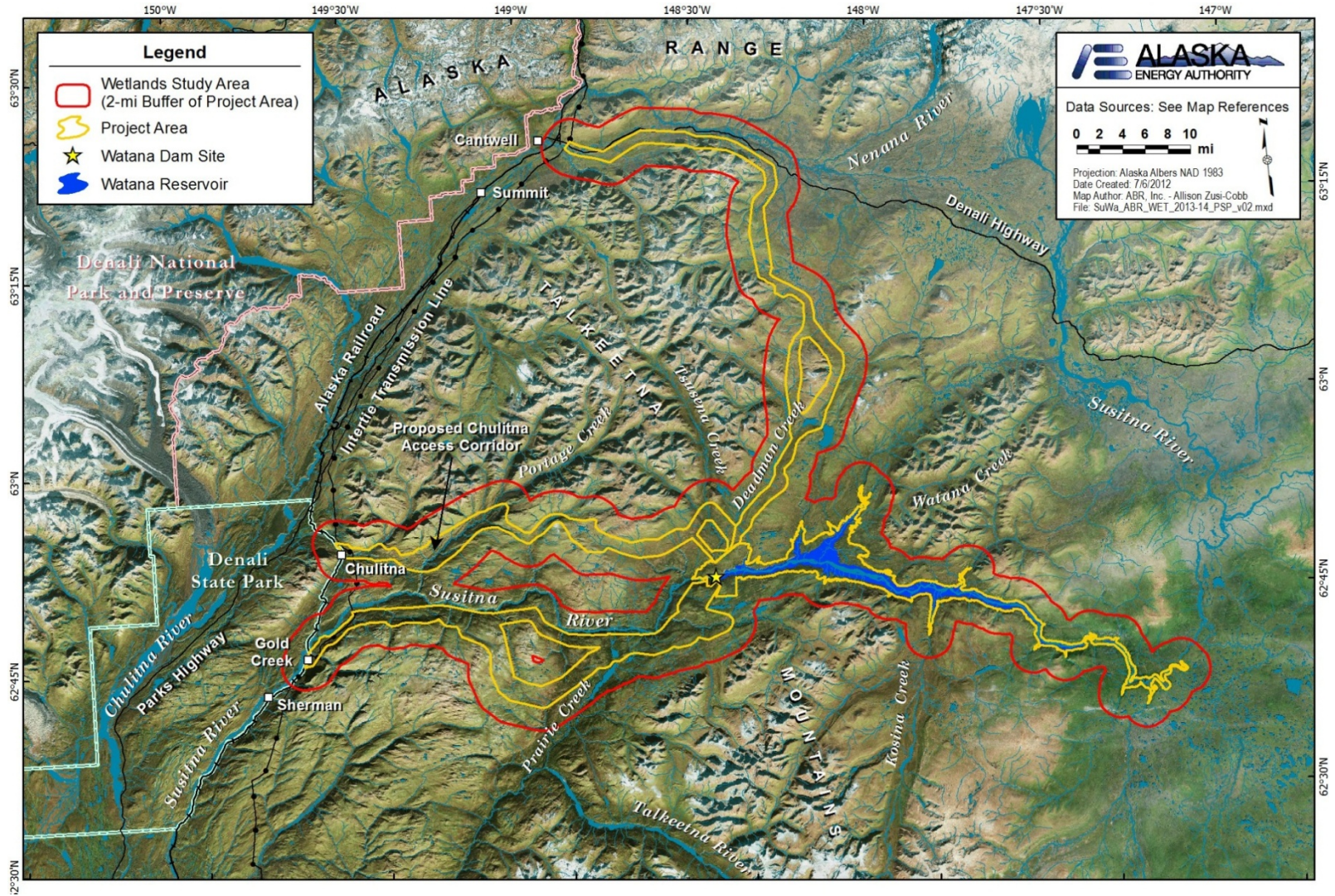
Wetland Mapping Study Methods

- Wetlands will be classified using the elements of the NWI, hydrogeomorphic (HGM) classes, and Cook Inlet basin wetland classification systems

- Viereck Level IV vegetation classes also will be assigned to wetland habitats to provide a link to the Vegetation and Wildlife Habitat Mapping effort

- Field surveys are being conducted using USACE wetland determination protocols

- Additional site data will be collected to support wetland functional assessment

- Wetland Functional Assessment will be based on HGM principles tailored to address regionally relevant functions that are important at both local and landscape levels

- Wetland Impact Assessment will quantify direct and indirect impacts to wetlands and waters

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Wetland Mapping Study Summary of 2012 Activities

- Field surveys were conducted 17–28 June and 29 July–9 August 2012
- The lack of high-resolution aerial photography for a large portion of the study area constrained 2012 efforts to some degree, but this imagery will be acquired and processed before the 2013 season

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Wetland Mapping Study Discussion

- Wetland classification system will develop a cross-walk for linking Project Wetland Functional types with Cook Inlet Basin wetland classes to ensure the two mapping efforts are seamless when ultimately joined

- Discussion and questions?

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Rare Plant Study Goals and Objectives

Goal:

- Minimize disturbance of any populations of rare plants that may occur in the Project area

- Collect data to support quantitative assessment of impacts to rare plants that may results from Project construction and operation

Objectives:

- Locate populations of the more rare vascular plant species that may occur portions of the Project area

- Estimate population sizes for rare species and map their current distributions

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Rare Plant Study Area
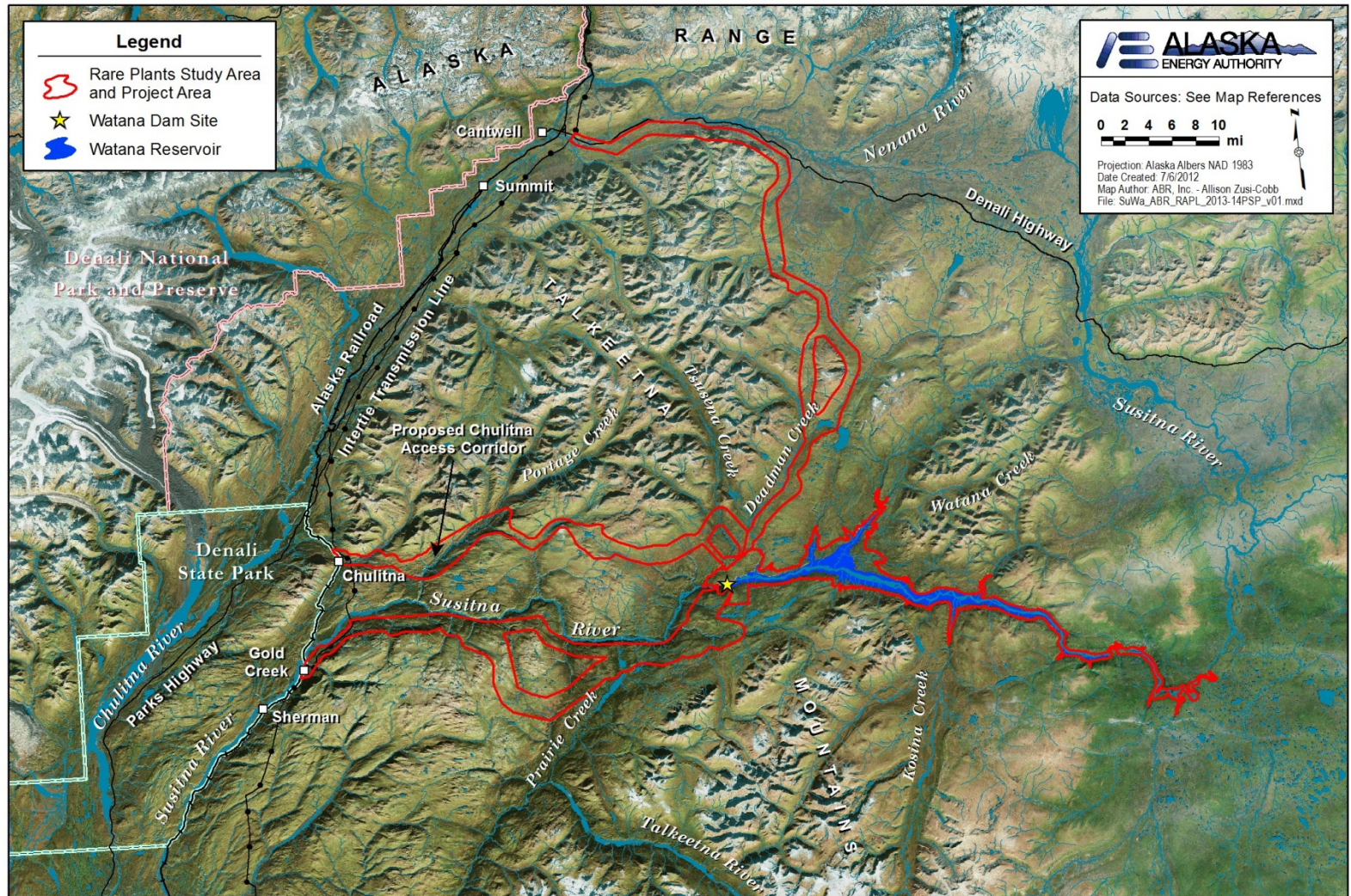
Rare Plant Study Methods

- Conduct preliminary screening to identify rare plants and their habitats that may occur in the Project area

- Focus on areas subject to construction impacts (impoundment area, access roads, transmission line, and support facilities)

- Schedule surveys as possible to match plant phenology of candidate species

- Survey suitable habitats for each species well as unique geological and terrain features and areas with high environmental gradients (numerous transitions in habitats)

- Use GIS to quantitatively assess Project impacts

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Rare Plant Study Expected Results

- The rare plant survey will identify vegetation types or habitats important for supporting rare plant species

- Data obtained will improve statewide knowledge of Alaska's rare and sensitive plant species

- Data will be used to minimize impacts to rare plant populations

- Maps of plant distributions will provide a basis for the development of rare plant monitoring programs during both construction and operational phases

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Invasive Plant Study Goals and Objectives

Goal:

- Determine the prevalence of invasive vascular plants in the Project area and nearby disturbed areas
- Collect data to support an assessment of the risk of the continued spread of invasive species as a result of Project development

Objectives:

- Identify and map locations with established populations of invasive plants
- Estimate population sizes of invasive species at mapped locations
- Assess the ecological threats associated with each invasive species

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Invasive Plant Study Methods

- Review recent aerial photography and remote-sensed imagery to identify potential "hot spots" for invasive species, including off-road vehicle trails, gravel roads, quarry sites, and other disturbances

- Survey hot spots for invasive species and estimate populations by enumerating or estimating the number of plants in each the area

- Qualitatively rank the degree of invasiveness of each species/population

- Determine ecological risk of spread of those invasives present, following protocols established by the USDA

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Invasive Plant Study Expected Results

- Maps of current distribution and abundance of invasive species in the Project area

- Identification of potential invasive species entry-points associated with current/ongoing disturbances

- Matrix table of species present and their associated USDA invasive ranking

- Ranking of present-day invasive sites by level of threat , in terms of the risk of spread to currently unaffected areas

- Identification of important pathways for spread (e.g., roads, gravel quarries, heavy equipment)

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Invasive Plant Study Discussion

- <u>Discussion and comments?</u>

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