

## **4.0 PRELIMINARY ISSUES AND STUDIES LIST**

### **4.1 Issues Pertaining to Identified Resources**

This section summarizes the issues the potential project may have on the various resources.

#### ***4.1.1 Geology and Soils***

The proposed project has the potential to disturb and in other ways impact the geology and soils of the project site. The project will require excavation and construction of two dams and reservoirs, a powerhouse and penstock, emergency spill ways, upgraded road access, and associated switchyard(s) and power lines. Each will require large amounts of material removal. In addition, the dams will require substantial placement of fill. Soils within the project area are prone to erosion due to the high gradient slopes. If proper BMPs are not in place, construction-related activities could cause rivulets, potentially releasing sediment into North Eden Creek. Sedimentation issues will be addressed thoroughly during the 401 Water Quality Certification application process, during NPDES permitting and while developing the Soil Erosion Control Plan.

#### ***4.1.2 Water Resources***

The project has the potential to affect the quantity and quality of North Eden Creek. There will be an estimated depletion of 198 acre-feet of water to offset evaporation in the upper reservoir. More significantly, operation will require daily exchange between the two reservoirs of 10,510 acre-feet of reused water. This exchange has the potential to alter the creek's qualitative thermal regime as well as increase total suspended solids due to resuspension from the beds of the upper and lower reservoirs.

#### ***4.1.3 Fish and Aquatic Resources***

##### ***4.1.3.1 Construction Issues***

Potential issues related to project construction include:

- Sedimentation of North Eden Creek from stormwater runoff
- Release of contaminants such as fuel, lubricants and other wastes into North Eden Creek due to spills from construction vehicles and equipment

##### ***4.1.3.2 Operations Issues***

Potential issues related to project operation include:

- Inundation of fish habitat in North Eden Creek through the creation of North Eden Reservoir
- Entrainment of stream fishes into the hydroelectric turbines
- Water-quality changes in lower North Eden Creek during daily flow releases from the project's lower reservoir

#### **4.1.4 Wildlife and Botanical Resources**

##### **4.1.4.1 Wildlife issues**

The proposed project has the potential to affect wildlife in three ways. First, increased human presence and noise during construction activities may disturb wildlife. Second, the displacement of shrub-steppe habitat associated with the new dams and reservoirs may permanently alter local wildlife use in the project area. Third, any new transmission developments could pose a danger to birds.

If construction occurs during nesting periods, birds may avoid or abandon nests in the area. Feeding raptors, such as bald eagles, have been shown to avoid construction activity either temporally or spatially (Stangl 1994). Construction noise and vegetation clearing during winter months on the Bear Lake Plateau has the potential to cause adverse stress to local big-game species, due to the difficulties of herd movement and/or restoration of lost energy during winter. Small mammals, reptiles, or birds that use, burrow or nest in the project area will be temporarily displaced by the positioning or burying of project features. The applicant is committed to working with state and federal resource agencies to define a final construction plan and timeline which will minimize impacts to local wildlife.

The construction of the two dams, associated reservoirs and the powerhouse will permanently displace approximately 400 acres of shrub-steppe habitat and alter North Eden Canyon's value as a wildlife corridor on the Bear River Plateau. The positioning of the North Eden Reservoir will have potential effects on ungulates migrating north-south along the Bear Lake Plateau. Portions of North Eden Canyon and all of South Eden Canyon will remain viable wildlife corridors between the plateau and Bear Lake. A wildlife habitat mitigation and vegetation restoration effort will aid in restoring portions of the shrub-steppe habitat lost. But it is assumed that upon project completion, some displaced wildlife will utilize areas of shrub-steppe habitat outside the project area.

New transmission lines may pose an electrocution risk to perching birds and a collision risk to birds and flying mammals. Transmission structures placed in known raptor feeding locations, or in areas where other hunting perches are not available, present a threat of electrocution (Kochert and Olendorff 1999; APLIC 2005). The transmission structure associated with most electrocutions is the three-phase single pole with a crossarm. Arranging lines and insulators to provide a minimum separation between conductors of 60 inches will minimize electrocution risk. Alternatively, where this is not possible, it will be effective to install elevated perches and guards to prevent perching in dangerous places (Kochert and Olendorff 1999; APLIC 2005). Lines that pose a high risk of collision include those over water, those that cross draws or other natural flyways and those placed immediately above tree tops. Transmission lines that bisect areas of high bird movement, such as lines placed between nesting and feeding habitats, also pose a collision risk (Morkill and Anderson 1991; Janss and Ferrer 2000). Species that are less maneuverable such as cranes and waterfowl are more susceptible to power line collision (Janss

2000). The transmission line will run from the powerhouse south of North Eden Reservoir to the top of the Bear River Plateau near the upper reservoir, span North Eden Canyon and continue north for approximately five miles. Because the proposed project occurs in an area where raptors are common, all transmission structures will be configured to minimize the risk of raptor electrocution (APLIC 2005). Alternate routing and/or visual markers will be considered if avian collision is identified as an issue during pre-construction consultation.

#### ***4.1.4.2 Botanical Issues***

The construction of project features such as the reservoirs and dams, the powerhouse, the penstock and the upgraded access road, will permanently displace approximately 400 acres of juniper, sagebrush and mixed native and non-native forbs and grasses. The construction of the transmission line will temporarily disturb additional vegetation on the Bear River Plateau. While sizable, the permanent displacement of vegetation is not likely to have long-term effects on the greater Bear River Plateau plant communities, as the sagebrush steppe or shrub-steppe vegetative community is well represented throughout the plateau.

Construction-related disturbance has the potential to further encourage the spread of noxious weeds both into the project area and beyond. The applicant will work closely with state and federal resource agencies to develop a noxious weed control plan and a vegetation mitigation plan for project construction and operation.

#### ***4.1.5 Wetlands, Riparian and Littoral Zone***

Site modification to accommodate hydropower is likely to impact local wetland and riparian habitat conditions within the North Eden Creek corridor. The lower dam and reservoir will inundate approximately 2.5 miles of North Eden Canyon and eliminate areas of flanking wetlands and riparian habitat.

#### ***4.1.6 Rare, Threatened and Endangered Species***

##### ***4.1.6.1 Fisheries Resources***

Potential impacts of construction on native fishes of North Eden Creek include 1) sedimentation of habitat from surface runoff; 2) disturbance to bottom sediments and other matter during intake construction; and 3) release of oil, gas or other contaminants. Impacts during operation would include 1) sedimentation of habitat due to project operation; 2) inundation of 2.5 miles of former habitat; and 3) injury or loss of fishes due to entrainment in project turbines. Potential construction and operation impacts on fishery resources are discussed in greater detail in Sections 3.3.2.1 and 3.3.2.2, respectively.

##### ***4.1.6.2 Botanical Resources***

Project construction will permanently displace approximately 400 acres of juniper, sagebrush, and mixed native and nonnative forbs and grasses. Construction of the proposed transmission

line will temporarily disturb additional vegetation on the Bear River Plateau. Construction has the potential to displace sensitive plant species that occur within the project footprint.

#### ***4.1.6.3 Wildlife Resources***

Listed as a USFWS and Utah species of concern, sage grouse can be found in the project area. Because sage grouse depend on sagebrush for both food and cover, any action adversely affecting sagebrush may limit sage grouse populations (McWilliams 2002). Habitat loss and fragmentation due to construction could therefore affect sage grouse found at the project site.

#### ***4.1.7 Recreation and Land Use***

The proposed project will be remotely located on the Bear River Plateau, two miles east of the lake and away from established recreational opportunities on Bear Lake. As such, it is expected that the project will have little impact on recreation. The primary impact will be from construction activities, as increased traffic from heavy construction equipment may disrupt or diminish recreational opportunities within the project vicinity. Also, because it may permanently alter wildlife use in the project area, displacement of some 400 acres of wildlife habitat may also impact big game and upland bird hunting, as well as bird watching and wildlife viewing.

#### ***4.1.8 Aesthetic Resources***

To minimize potential visual impacts, the project has been sited approximately two miles east of Bear Lake. It is unknown if any project features would be visible from key observation points such as the state parks surrounding Bear Lake, or from Bear Lake itself. The impact on the aesthetic resources of the Bear River Plateau and any cumulative effects on the visual character of Bear Lake will depend on how well the facility is blended into the area landscape.

#### ***4.1.9 Cultural Resources***

Project construction may disturb existing cultural or historical resources known to the project area or discovered during onsite comprehensive cultural resource assessment surveys. Project operation is not expected to affect cultural or historical resources.

#### ***4.1.10 Socioeconomic Resources***

The proposed project will have a positive impact on socioeconomic resources within the region. It is expected that the project will add substantially to the county taxable base with annual property tax payments. It will also create temporary construction jobs and permanent operating and maintenance positions. Finally, it is expected that the electrical power generated will be marketed to local utilities, making local rates more competitive and thus improving the buying power of local consumers.

#### ***4.1.11 Tribal Resources***

As there are no identified local archaeological sites or traditional cultural properties, it is expected that project construction and operation are not likely to negatively impact the interest of

tribes officially associated with the project site. These tribes are the Uintah and Ouray Ute Indian Tribe, the Northwestern Band of the Shoshone Nation, and the Shoshone Bannock Tribes.

#### ***4.1.12 River Basin Description***

The construction and operation of the proposed project will alter the flows of North Eden Creek. However, the applicant intends to conduct studies of baseline flows in North Eden Creek to determine the quantity of water available to meet both the existing demands on North Eden Creek and project needs.

### **4.2 Potential Studies**

A number of studies are proposed below to evaluate existing conditions, assess project impacts and prescribe mitigation. Specific methodologies and analyses will be developed under the guidance of various resource agencies. These agencies may in turn propose further studies during the FERC scoping process.

#### ***4.2.1 Geotechnical Study***

A geotechnical study will be performed with the principal goal of ensuring a sound foundation for the proposed dams and reservoirs. This study will address 1) the suitability of the rock for mining activities; 2) safety issues associated with proximate faults; and 3) the need to locate and extract materials necessary for the construction of various project features. This study will be conducted by a qualified engineering firm.

#### ***4.2.2 Water-Quality Monitoring and Modeling Study***

North Eden Creek has been monitored intermittently for decades but with no consistency. Available studies are therefore incomplete. The objective of the applicant's proposed study will be to quantify the amount and quality of water in North Eden Creek. The study will determine baseline conditions for monitoring changes during project construction and operation. In addition, the data will be used to build thermal and water-quality models for the proposed reservoirs. These models will be based on the U.S. Army Corps of Engineer's CE-QUAL-W2 water-quality model. As many of the parameters necessary to build these models will require new data, its collection methodology will be included in the overall study design.

#### ***4.2.3 North Eden Creek Habitat Assessment***

The objective of this field study will be to evaluate riparian and aquatic habitat in North Eden Creek within the project vicinity. The primary application will be to provide baseline data on habitat conditions below the proposed dam in and around the creek where rehabilitation is proposed. If a stream rehabilitation program were implemented, habitat changes would be monitored over a period of years to evaluate progress toward potential reintroduction of Bonneville cutthroat trout.

#### **4.2.4 Bonneville Cutthroat Trout Population Assessment**

The objective of this field study will be to evaluate the spatial distribution and abundance of Bonneville cutthroat in North Eden Creek within the project vicinity. This would include surveys above, below and within the boundaries of the proposed North Eden Reservoir. However, this study may not be necessary if recent data fulfilling those information needs can be obtained from the UDWR.

#### **4.2.5 Surveys for Sensitive Wildlife**

The objective of this field study will be to document prospective habitat for sensitive wildlife within the project area. It will also be used to document wildlife usage within the project area. The study will target species that have the potential to occur within the project area or that may find suitable habitat within the project area. These species would include but not be limited to greater sage-grouse, pygmy rabbit, western burrowing owl, willow flycatcher, loggerhead shrike and western toad.

This study includes two facets: 1) habitat delineation, and 2) diurnal wildlife observations. Habitat delineation will consist of examining the project area for habitats specifically related to sensitive wildlife. Targeted habitats include sagebrush steppe (for greater sage-grouse and pygmy rabbit), dense mixed shrubs (for loggerhead shrike), mammal burrows (for western burrowing owl), thick willow stands (for willow flycatcher) and still or slow-moving water with emergent vegetation (for western toad). Such habitats will be described and mapped. Observation will primarily target the aforementioned sensitive species, although incidental observations of other wildlife will also be recorded. Location and activity information will be included. Observations will include examination of any aquatic habitats deemed suitable for western toad breeding.

#### **4.2.6 Sensitive Plant Surveys**

The objective of this study is to identify the location of sensitive plant species within affected project areas.

#### **4.2.7 Visual Resource Study**

In cooperation with state and federal resource agencies, the applicant plans to undertake a comprehensive visual resources survey prior to project construction. The purpose of this survey will be to describe the current character of the project area landscape and if necessary, to propose measures or methods for reducing the project's visual stamp. It will also seek to determine if significant visual impacts exist from viewpoints within the greater Bear Lake area.

#### **4.2.8 Cultural Resource Survey**

The applicant proposes to establish an area of potential effect (APE) for the proposed project. Once the proposed APE is agreed upon by interested parties, a local archaeologist will be consulted to complete an onsite comprehensive cultural resource assessment survey. The purpose

of the survey and subsequent reporting will be to ensure that the project will not negatively impact any archaeological sites or traditional cultural properties.

### **4.3 Relevant Resource Management Plans**

As required by Section 10(a)(2)(A) of the Federal Power Act, 16 U.S.C. §803 (a)(2)(A), the Federal Energy Regulatory FERC must consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing or conserving any waterway affected by the project.

The FERC will accord comprehensive plan status to any federal or state plan which:

- 1) is a comprehensive study of one or more of the beneficial uses of a waterway or waterways,
- 2) specifies the standards, data, and methodology used,
- 3) is filed with the Secretary of the FERC.

The applicant has reviewed the filed documents for the states of Utah and Idaho and the United States as listed in the FERC's Revised List of Comprehensive Plans, September 2006, in order to explain how and why the project would, would not, or should not comply with the qualifying comprehensive plans as defined in 18 CFR §2.19.

Upon careful and deliberate scrutiny of the listed qualifying comprehensive plans, the applicant will now provide a justification for its decisions with regard to each of the plans listed relative to the project area (i.e., the states of Utah and Idaho and the United States).

#### ***4.3.1 Qualifying Comprehensive Plans Deemed Applicable***

The qualifying plans listed below were deemed applicable. Each plan will be listed separately with a brief explanation for its inclusion as an applicable qualifying comprehensive plan.

Utah Department of Natural Resources. 1985. Statewide Comprehensive Outdoor Recreation Plan (SCORP). Salt Lake City, Utah. December 1985. 435 pp. and appendices.

Applicable because:

It provides relevant guidance to the state's recreation facility managers for planning and prioritizing recreational resources as well as a time line for implementing the plan. In consultation with the Utah Department of Natural Resources, the applicant will comply with the provisions of the plan by utilizing them to develop and implement a recreational resource management plan for the proposed project.

Idaho Department of Health and Welfare. 1985. Idaho water-quality standards and wastewater treatment requirements. Boise, Idaho. January 1985. 72 pp. and appendices.

Applicable because: