3.5 Fish

Surface waters within the project area support various species of fish, including two federally and state-listed endangered species, shortnose sucker (*Chasmistes brevirostris*) and Lost River sucker (*Deltistes luxatus*), both of which are found in the Lost River watershed in proximity to the project area. Water for the Energy Facility would be taken from a deep aquifer that does not have a connection to surface waters. Because there would be no withdrawals from surface water bodies, construction and operation of the Energy Facility would not affect fisheries resources in the area.

The information presented in this section is based on the studies and analysis conducted for the SCA as amended by Amendments No. 1 and No. 2, filed with EFSC on July 25, 2003, and October 15, 2003, respectively.

3.5.1 Affected Environment

3.5.1.1 Aquatic Habitat

The project area is located within the Klamath Ecological Province (East Cascades Ecoregion), on the eastern side of the Cascade Mountains. The Facility site lies within the Klamath River Basin. Aquatic habitats in the proximity to the analysis area include the Lost River, freshwater marsh, seasonal wetlands, sedge wet meadows, wet meadows, stock ponds, and agricultural canals.

The Lost River watershed is a closed, interior basin covering approximately 3,000 square miles of the Klamath River watershed in southern Oregon and Northern California. The headwaters originate east of the Clear Lake Reservoir in Modoc County, California, and flow approximately 75 miles to the Tulelake Sump. Seasonal flows in the Lost River are controlled by releases from the Clear Lake Dam. The Lost River was the only fish-bearing perennial habitat observed in proximity to the analysis area.

Several intermittent creeks were observed during field surveys. These creeks were dry at the time of the field survey, but had defined bed and bank features. Most of the drainages either lacked vegetation or contained only sparse upland vegetation within the channel. Several irrigation canals have been excavated to facilitate surface drainage and water transport for agricultural crops and pasture lands in the basin areas. These channels appear to be routinely maintained and were largely devoid of vegetation.

Freshwater marsh habitat was characterized by a mosaic of perennial, emergent monocots, and areas of open water. Species such as cattail (*Typha latifolia*) and bulrush (*Scirpus* sp.) are found in the deeper areas where sedges (*Juncus* sp.) and rushes (*Carex* sp.) are found in the seasonally-flooded areas around the perimeter of the marsh. These wetlands occur on the somewhat poorly-drained soil formed in alluvial lacustrine sediments. A hardpan is present between 20 and 40 inches and the water table is typically shallow, ranging from 1.0 to 3.5 feet below ground surface (NRCS, 1985).

Sedge wet meadow habitat is characterized by seasonal inundation, with surface water present during the winter and early spring, but absent by the end of the growing season. This habitat type occurs on soil derived from weathered diatomite, tuff, and basalt (NRCS, 1985). The vegetation is characterized by a dense cover of low-growing monocots such as sedges and rushes. A few forb species such as dock (*Rumex crispus*), mouse-tail (*Myosurus minimus*), and Bach's downingia (*Downingia bacigalupii*) were observed along the outer margins during field surveys, but accounted for only a minimal amount of the total vegetative cover. Aquatic buttercup (*Ranunculus aquatilus*) was present where there was open water.

Wet meadow habitats occurred on poorly-drained clay soil that formed in sediments from weathered tuff and basalt (NRCS, 1985). This habitat is characterized by the presence of surface water during the winter and early spring, and the absence of water during the summer months. Characteristic vegetation includes species such as tufted hairgrass (*Deschampsia cespitosa*), Baltic rush (*Juncus balticus*), and sedges (*Carex* spp.). Some areas have been disked and planted with pasture grasses such as tall fescue, timothy (*Phleum pratense*), and meadow foxtail (*Alopecurus pratensis*).

Stock ponds were observed in areas where berms had been constructed within natural drainages to retain water for livestock. The hydrology in these areas was variable, with some ponds containing several inches of water and other areas dry at the time of the survey. Vegetation in these areas included sedges, rushes, aquatic buttercup, and dock.

Groundwater in the vicinity of the proposed project is contained in a shallow aquifer system and a deep aquifer system. Groundwater quality within the shallow aquifer varies to some degree depending on local soil conditions and degree of connectivity between ground and surface waters. Since July 1991, fecal coliform has been found in several of the town of Bonanza's domestic wells. According to OWRD, studies compiled by Klamath County hypothesize that consecutive drought years forced farmers and ranchers to irrigate more heavily with groundwater. The aquifer drawdown permitted infusions of Lost River water, which carried in the contaminants.

The proposed project, however, would utilize deep zone groundwater. The deep zone groundwater is of high quality, with very low dissolved solids and no parameters suggesting interaction with shallow groundwater and surface water. Two aquifer tests demonstrated a lack of impact to the shallow aquifer and surface water from pumping groundwater out of the deep aquifer (see Section 3.3.1.2 for more details on the aquifer tests).

3.5.1.2 Shortnose Sucker and Lost River Sucker

Shortnose Sucker. The shortnose sucker was listed as Endangered on July 18, 1998. This species is endemic to the upper Klamath Basin of southern Oregon and northern California. Shortnose suckers are found in numerous lakes and rivers throughout the region including Upper Klamath Lake, the Clear Lake Reservoir, Gerber Reservoir, Tulelake, the Klamath River, and the Lost River system. Primarily a lake-dwelling fish, the shortnose sucker spawns between February and May in river habitats with gravelly substrates such as the Sprague, Wouldiamson, and Wood Rivers, as well as Crooked Creek and the Clear Lake watershed. Shoreline areas with a mosaic of open water, emergent vegetation, and woody structures are important for larval development. The shortnose sucker is a bottom feeder whose diet includes detritus, zoo plankton, algae, and aquatic invertebrates.

Historically, shortnose suckers were abundant throughout the Klamath Basin (Federal Register, 1998)). However, dams, diversion structures, irrigation canals, and development of the Klamath Basin has resulted in habitat fragmentation and population isolation. Additional factors leading to the population decline include loss of wetland habitat, hybridization, predation, and competition from exotic fish species and poor water quality. Hyper-eutrophication of lake habitats appears to be a principle factor in poor recruitment of this species (Federal Register, 1998).

The shortnose sucker has been reported in the Lost River above Harpold Reservoir, approximately 4 miles southeast of the Energy Facility site and at Big Springs approximately 2.5 miles north of the Energy Facility site (USFWS, 1993). No fish-bearing streams or lakes were identified in the immediate project area.

Lost River Sucker. The Lost River sucker was listed as Endangered on July 18, 1998 (USFWS, 1993). This species is endemic to the upper Klamath Basin of southern Oregon and northern California. The Lost River sucker is found Upper Klamath Lake, Clear Lake Reservoir, Tulelake, the Klamath River, and the Lost River up to the Anderson-Rose Dam. The Lost River sucker has also been reported in the Lost River above Harpold Reservoir, approximately 4 miles southeast of the Energy Facility site and at Big Springs approximately 2.5 miles north of the Energy Facility site. The Lost River sucker is a lake-dwelling fish that spawns between February and May in tributary rivers and streams with gravelly substrates. Shoreline habitats with open water intermixed with emergent vegetation are important for larval and juvenile development. This species feeds on a variety of aquatic invertebrates, algae, detritus, and zoo plankton found on lake bottoms.

Dams, diversion structures, irrigation canals, and development have resulted in habitat fragmentation and population isolation. Competition and predation by exotic species, wetland drainage, poor water quality, and eutrophication have also contributed to the decline of this species.

The nearest populations of the Lost River sucker are known from the Sprague River and Upper Klamath Lake, both of which are approximately 20 miles to the north and west of the project area, respectively. No fish-bearing lakes or streams are present in the project area.

3.5.2 Environmental Consequences and Mitigation Measures

The elements of the proposed Facility that could affect fisheries resources would be construction or operation practices that diverted surface waters, impaired water quality, or damaged aquatic habitat.

<u>Impact 3.5.1. Construction of new access roads along the electric transmission line would result in less than 0.5 acre of impact to intermittent creeks.</u>

<u>Assessment of Impact</u>. Access roads for the electric transmission line would cross three intermittent creeks. During construction of the access roads, culverts would be placed in the channel at creek crossings to allow uninterrupted seasonal water flows and eliminate potential damage to creek channels from construction and operation maintenance vehicles.

No other impacts to salmonids, other fish, or aquatic habitats are expected as a result of construction, operation, and retirement of the proposed Energy Facility. Less than 0.5 acre of wetland would be impacted by access roads along the electric transmission line. Aquatic resources along the natural gas and water supply pipeline would be avoided by using conventional bore techniques. No water or wastewater would be discharged to seasonal or perennial aquatic habitats, and no surface water would be withdrawn for construction or operation activities. As demonstrated by the aquifer testing, deep system withdrawals would not impact shallow system water levels and there would not be a discharge or process water/wastewater to the shallow groundwater system or surface water. Facility operations would not have an impact on existing groundwater quality or surface water quality.

Recommended Mitigation Measures. Construct access roads and install culverts during summer months when water is not flowing in the creek to avoid the presence of fish and minimize erosion and sedimentation.

In addition to the above mitigation measure, a number of mitigation measures have been incorporated into the proposed project as described below.

- Workers would be given environmental training to inform them of wildlife and habitat issues. This training would include information about sensitive wildlife, plants, and habitat areas as well as the required precautions to avoid and minimize impacts.
  - Maps would be prepared to show sensitive areas that are off-limits during the construction phase.
  - Signs would be posted around the perimeters of any sensitive habitat areas to be avoided.
- Following construction, topography and vegetation would be returned to preconstruction condition or better in areas of temporary disturbance. In areas where natural vegetation is removed, native perennial bunchgrasses and sagebrush would be planted according to a revegetation plan.
- Revegetation seed mixes and habitat enhancement locations would be developed in consultation with ODFW.
- Grading and clearing of vegetation would be limited to the minimum extent necessary for practical and safe working areas.
- In addition, permanently disturbed habitat would be restored, enhanced, and protected in accordance with ODFW habitat mitigation goals and pursuant to a revegetation plan.
- The water supply well system would be isolated from the shallow zone aquifer and surface water features.
- Sidecast material would remain within the construction corridors.
- Silt fencing and other barriers would be employed to limit lateral spread of soil when material must be sidecast in habitat areas within the construction corridor.
- Gates would be installed on the new access roads to restrict unauthorized access.

- Construction vehicles would remain on the roadbed and road shoulder whenever possible.
- Erosion control measures to be employed during Facility construction include:
  - Installing sediment fence or straw bale barriers at downslope side of excavations and disturbed areas
  - Straw mulching and discing at locations adjacent to the road that have been affected
  - Providing temporary sediment traps downstream of intermittent creek crossings
  - Planting designated seed mixes at affected areas adjacent to the road
- Areas that are affected by the construction would be seeded when there is adequate soil moisture. They would be reseeded in the spring if a healthy cover crop does not grow. The sediment fence and check dams would remain in place until the affected areas are well vegetated and the risk of erosion has been eliminated.
- Construction activities would be regulated by an erosion control plan and NPDES General Construction Permit 1200-C, which would require best management practices to minimize impacts from erosion or other impacts to soil.
- Measures to be employed in order to reduce the potential for water and wind erosion and sediment runoff include:
  - Limiting haul trucks to designated roadways
  - Using temporary erosion and sediment control measures, such as silt fences, straw bales, mulch, and slope breakers, and maintaining these features throughout construction and restoration
  - Watering or covering exposed soil, stockpiles, and roads during construction
  - Installing permanent erosion control measures, as necessary, during construction, cleanup, and restoration
  - Stripping and separately storing topsoil for replacement and replanting after installation of pipelines not buried within roads
  - Revegetating construction areas

3.5.3 Cumulative Impacts

The proposed Facility would have no adverse effect on fish and would not contribute any cumulative impacts to this element of the environment.