ENVIRONMENTAL ASSESSMENT
FOR
HYDROPOWER LICENSE

Trout Creek Hydroelectric Project

FERC Project No. 848-037

Nevada

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
888 First Street, NE
Washington, D.C. 20426

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ACRONYMS AND ABBREVIATIONS

Advisory Council	Advisory Council on Historic Preservation
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
Applicant	Wells Rural Electric Company
BLM	U.S. Bureau of Land Management
CFR	Code of Federal Regulations
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
EA	Environmental Assessment
ESA	Endangered Species Act
^{o}F	degrees Fahrenheit
Forest Service	U.S. Forest Service
FPA	Federal Power Act
FR	Federal Register
FWS	U.S. Fish and Wildlife Service
HPMP	Historic Properties Management Plan
Interior	U.S. Department of the Interior
IPaC	Information, Planning and Conservation System
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
National Forest	Humboldt-Toiyabe National Forest
Nevada DW	Nevada Department of Wildlife
Nevada DWR	Nevada Division of Water Resources
NHPA	National Historic Preservation Act
PAD	Preliminary Application Document
Project	Tout Creek Hydroelectric Project
PM&E	protection, mitigation & enhancement measures
SHPO	State Historic Preservation Office
Trout Creek Project	Trout Creek Hydroelectric Project
Te-Moak	Te-Moak Tribe of Western Shoshone
Wells Electric	Wells Rural Electric Company
WECC	Western Electricity Coordinating Council

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TROUT CREEK HYDROELECTRIC PROJECT
Project No. 848-037 – Nevada

1.0 INTRODUCTION

1.1 APPLICATION

On May 18, 2016, Wells Rural Electric Company (Wells Electric) filed an application with the Federal Energy Regulatory Commission (Commission) for a subsequent license for the existing Trout Creek Hydroelectric Project (Trout Creek Project). The 125-kilowatt (kW) project is located on Trout Creek in Elko County, near the Town of Wells, Nevada (Figure 1). The project occupies land managed by the U.S. Forest Service in the Humboldt-Toiyabe National Forest.

1.2 PURPOSE OF ACTION AND NEED FOR POWER

1.2.1 Purpose of Action

The purpose of the Trout Creek Project is to provide a source of hydroelectric power. Therefore, under the provisions of the Federal Power Act (FPA), the Commission must decide whether to issue a license to the applicant for the Trout Creek Project and what conditions should be placed on any license issued. In deciding whether to issue a license for a hydroelectric project, the Commission must determine that the project will be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued (such as flood control, irrigation and water supply), the Commission must give equal consideration to the purposes of: (1) energy conservation; (2) the protection, mitigation of damage to, and enhancement of fish and wildlife resources; (3) the protection of recreational opportunities; and (4) the preservation of other aspects of environmental quality.

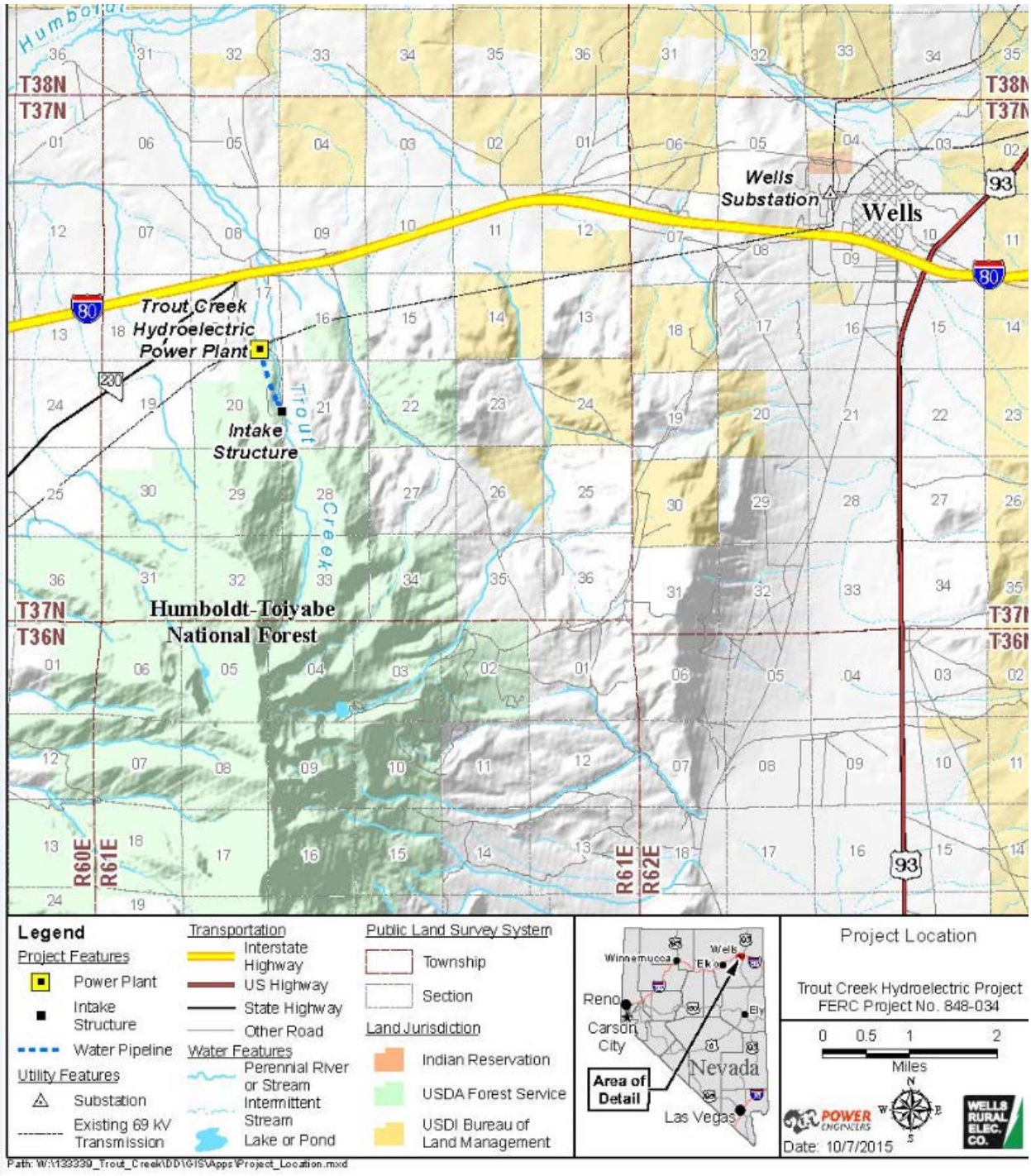

Figure 1. Location of the Trout Creek Hydroelectric Project (Source: Wells Rural Electric Company, 2016, license application).

Issuing a subsequent license for the Trout Creek Project would allow Wells Electric to generate electricity at the project for the term of the license, making electric power from a renewable resource available to the regional grid.

This environmental assessment (EA) assesses the environmental and economic effects associated with continued operation of the project and alternatives to the project, and makes recommendations to the Commission on whether to issue a license, and if so, recommends terms and conditions to become a part of any license issued.

In this EA, we assess the effects of operating and maintaining the project: (1) as proposed by Wells Electric; and (2) with staff's recommended measures (staff alternative). For the purposes of conducting our environmental analysis, we also consider the effects of a no-action alternative. Under the no-action alternative, the project would continue to operate as it does under the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. Issues addressed in the EA include the effect of project operation on aquatic resources.

1.2.2 Need for Power

The Trout Creek Project has an installed capacity of 125 kW and an average annual generation of 325,000 kilowatt-hours (kWh).

Because the project is located in the Northwest Power Pool area of the Western Electricity Coordinating Council (WECC), we looked at the regional need for power as reported by WECC to anticipate how the demand for electricity is expected to change in the region. For the period from 2017 through 2026, WECC's 2016 Long-Term Reliability Assessment forecasts the need for over 4,000 megawatts (MW) of new power resources to maintain adequate capacity reserves in the assessment area.

We conclude that power from the Trout Creek Project would continue to meet part of the existing load requirements within a system in need of resources. The project provides power that displaces generation from non-renewable sources. Displacing the operation of non-renewable facilities may avoid some power plant emissions, thus continuing an environmental benefit.

1.3 STATUTORY AND REGULATORY REQUIREMENTS

A subsequent license for the Trout Creek Project would be subject to numerous requirements under the FPA and other applicable statutes. The major regulatory and statutory requirements are described below.

1.3.1 Federal Power Act

1.3.1.1 Section 18 Fishway Prescriptions

Section 18 of the FPA provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the U.S. Department of the Interior or the Secretary of Commerce, as appropriate. No fishway prescriptions or requests for reservation of authority to prescribe fishways were filed under section 18 of the FPA.

1.3.1.2 Section 4(e) Conditions

Section 4(e) of the FPA provides that any license issued by the Commission for a project within a federal reservation shall be subject to and contain such conditions as the Secretary of the responsible federal land management agency deems necessary for the adequate protection and use of the reservation. No conditions were filed under section 4(e) of the FPA.

1.3.1.3 Section 10(j) Recommendations

Under section 10(j) of the FPA, each hydroelectric license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency. No recommendations were filed pursuant to section 10(j) of the FPA.

1.3.2 Clean Water Act

Under section 401 of the Clean Water Act (CWA), a license applicant must obtain certification from the appropriate state pollution control agency verifying compliance with the CWA. On August 23, 2017, Wells Electric applied to the Nevada Division of Water Resources (Nevada DWR) for a section 401 water quality certification for the Trout Creek Project. Nevada DWR received this request on August 25, 2017, but has not yet acted on it. The water quality certification is due by August 25, 2018.

1.3.3 Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

One federally listed species, the threatened Lahontan cutthroat trout, could occur in the vicinity of the project (FWS, 2017). While the Lahontan cutthroat trout is present within the Upper Humboldt River basin, it does not inhabit Trout Creek (Wells Rural Electric Company, 2016a). Therefore, the project would have no effect on Lahontan cutthroat trout and no further consultation is required under section 7 of the ESA.

1.3.4 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

In a letter filed August 2, 2016, the Nevada State Historic Preservation Office (Nevada SHPO) concurred with Wells Electric's determination that no historic properties would be affected by the proposed relicensing. Our analysis in section 3.3.5 of this EA concludes that each of the relicensing alternatives considered in this EA would have no potential to cause adverse effects on historic properties (i.e., significant cultural resources).

1.4 PUBLIC REVIEW AND COMMENT

The Commission's regulations (18 C.F.R. § 4.38) require that applicants consult with appropriate resource agencies, tribes, and other entities before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, ESA, NHPA, and other federal statutes. Pre-filing consultation must be complete and documented according to the Commission's regulations.

1.4.1 Scoping

Before preparing this EA, staff conducted scoping to determine what issues and alternatives should be addressed. A scoping document was distributed to interested agencies and others on April 12, 2017. The scoping document was noticed in the *Federal*

Register on April 20, 2017. On May 19, 2017, the Nevada SHPO provided written comments pertaining to the scoping document.

1.4.2 Interventions

On June 13, 2017, the Commission issued a notice accepting the application to relicense the Trout Creek Project. The notice, which was published in the *Federal Register* on June 19, 2017, set August 14, 2017, as the deadline for filing protests and motions to intervene. In response to the notice, Forest Service filed a notice of intervention on July 10, 2017.

1.4.3 Comments on the Application

A notice requesting conditions and recommendations was issued on June 13, 2017. The Nevada SHPO provided comments on July 24, 2017.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate under the terms and conditions of the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish the baseline environmental conditions for comparison with other alternatives.

2.1.1 Existing Project Facilities

The existing Trout Creek Project consists of: (1) an intake structure on a spring-fed tributary to Trout Creek; (2) a 14-inch-diameter, 715-foot-long steel pipe; (3) a debris collection box; (4) a 15-inch-diameter, 1,900-foot-long PVC pipe; (5) an 8-foot-diameter, 20-foot-high surge tank; (6) a 16-inch-diameter, 2,125-foot-long penstock; (7) a powerhouse with a 125-kW turbine-generator unit; (8) a 5- to 7-foot-wide, 30-foot-long tailrace; (9) a 4,412-foot-long, 24.9-kilovolt transmission line; and (10) appurtenant facilities. The project is estimated to generate an average of 325,000 kWh annually.

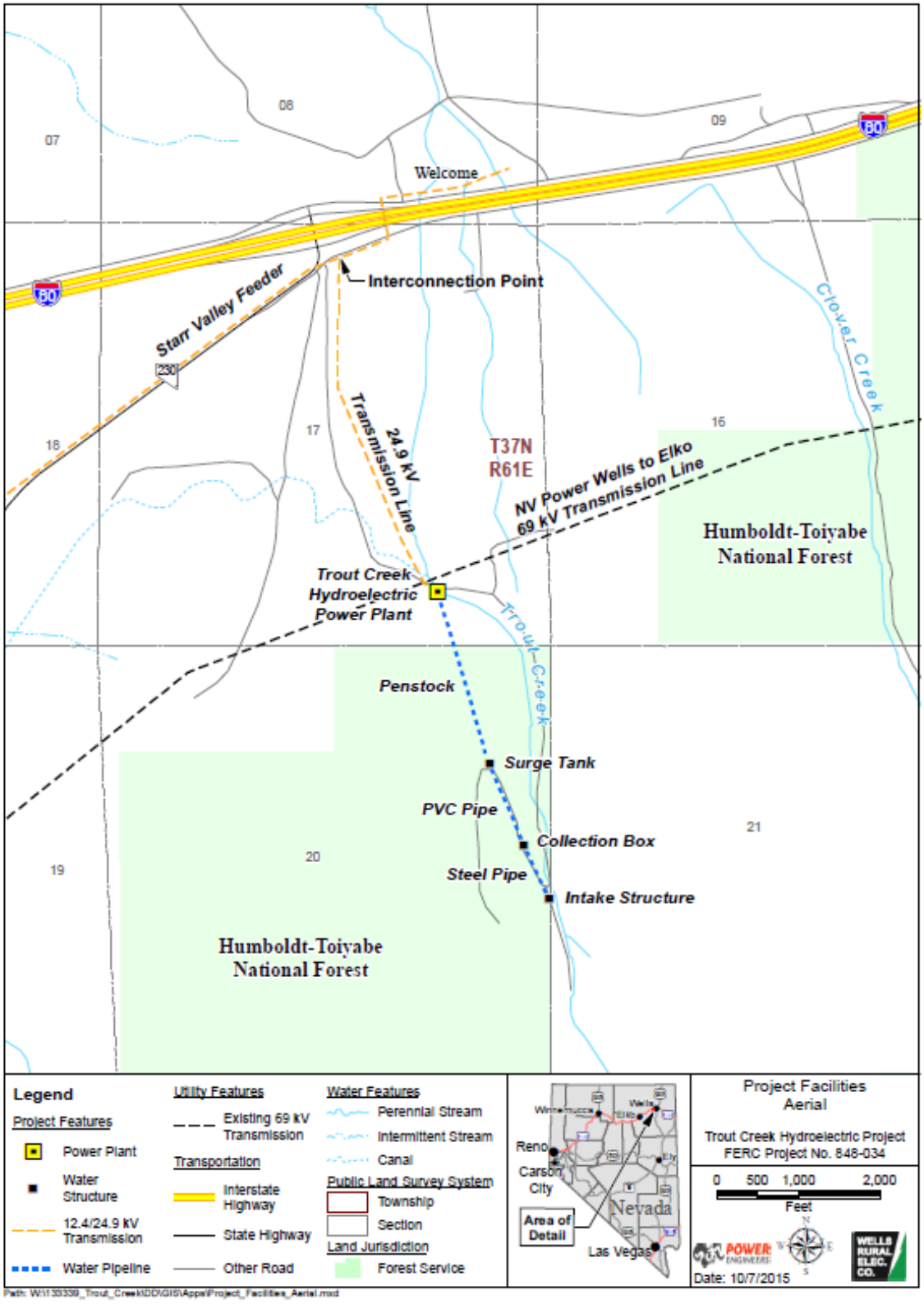

Figure 2. Project Facilities for the Trout Creek Hydroelectric Project (Source: Wells Rural Electric Company, 2016, license application).

2.1.2 Project Safety

As part of the relicensing process, Commission staff would evaluate the continued adequacy of the project facilities under a subsequent license. Special articles would be included in any license issued, as appropriate. Operational inspection during the subsequent license term would focus on the continued safety of the structures, identification of unauthorized modifications, efficiency and safety of operations, compliance with terms of the license, and proper maintenance.

2.1.3 Existing Project Operation

The project is operated in a run-of-river mode, such that outflow equals inflow at all times. The existing project utilizes the flow of a tributary spring of Trout Creek. The project diverts a maximum of 5.3 cubic feet per second (cfs) from Trout Creek and maintains a minimum flow in the bypassed reach of 4 cfs from October through November and 1.3 cfs from December through September. Flows diverted from the spring are conveyed in a 14-inch-diameter, 715-foot-long steel pipe to a collection box for penstock debris removal, before proceeding through a 15-inch-diameter, 1,900-foot-long PVC pipeline to a surge tank. Flows pass via a 16-inch-diameter, 2,125-foot-long steel penstock to a brick powerhouse. Flows after generation are returned via tailrace to Trout Creek. The normal mode of operation is for the plant to be unattended. Wells Electric monitors project operations remotely from its offices and control center in the town of Wells, Nevada.

2.2 APPLICANT'S PROPOSAL

2.2.1 Proposed Project Facilities

Wells Electric does not propose to construct any new facilities or modify any existing project facilities.

2.2.2 Proposed Project Operation

Wells Electric proposes to continue operating the Trout Creek Project under the same procedures and practices as required by its current license (see Section 2.1.3 above). No changes in project operation are proposed.

2.2.3 Proposed Environmental Measures

Wells Electric proposes the following protection, mitigation, and enhancement measures for the Trout Creek Project:

- Continue to release minimum bypassed reach flows of 4 cfs, or inflow, whichever is less, from October through November and 1.3 cfs, or inflow, whichever is less, from December through September, and divert a maximum of 5.3 cfs from Trout Creek for project operation to protect fishery resources in the bypassed reach.

- Continue to measure flow in the bypassed reach manually once per month to ensure compliance with the proposed minimum flow release schedule.

- Continue to clear deadfall trees from the access road and trim back vegetation growth on the 100-foot-long trail to the intake structure in March each year, outside of the avian nesting season, and restrict use of herbicides.

2.3 STAFF ALTERNATIVE

Under the staff alternative, the project would be operated and maintained as proposed by Wells Electric, with the additional measure described below:

- In the event that a historic property may be adversely affected by project operation or maintenance, Wells Electric would consult with the Nevada SHPO, Forest Service, and Te-Moak (if applicable), to address any potential adverse effects.

2.4 ALTERNATIVE CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

We considered one alternative to the applicant's proposal – project retirement. However, as discussed below, we eliminated this alternative from further analysis because it is not reasonable in the circumstances of this case.

Retiring the Project

Project retirement could be accomplished with or without removal of the project works. Either alternative would involve denial of the relicense application and surrender or termination of the existing license with appropriate conditions. No participant has suggested that the removal of project works would be appropriate in this case, and we have no basis for recommending it. The power generated by the Trout Creek Project is an important resource, and is relied upon to provide clean, renewable energy. This

source of power would be lost if the project were retired, and replacement power would need to be found. There also would be significant costs associated with retiring the project's powerhouse and appurtenant facilities. Thus, removal is not a reasonable alternative to relicensing the project with appropriate protection, mitigation and enhancement measures.

The second project retirement alternative would involve retaining the project works and disabling or removing equipment used to generate power. Project works would remain in place and could be used for historic or other purposes. This would require us to identify another government agency with authority to assume regulatory control and supervision of the remaining facilities. No agency has stepped forward, no participant has advocated this alternative, nor have we any basis for recommending it. Because the power supplied by the project is needed, a source of replacement power would have to be identified. In these circumstances, we do not consider removal of the electric generating equipment to be a reasonable alternative.

3.0 ENVIRONMENTAL ANALYSIS

In this section, we present: (1) a general description of the project vicinity; (2) an explanation of the scope of our cumulative effects analysis; and (3) our analysis of the proposed action and other recommended environmental measures. Sections are organized by resource area (aquatic, recreation, etc.). Under each resource area, historic and current conditions are first described. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures, and any potential cumulative effects of the proposed action and alternatives. Staff conclusions and recommended measures are discussed in section 5.1, *Comprehensive Development and Recommended Alternative* of the EA.[1]

3.1 GENERAL DESCRIPTION OF THE RIVER BASIN

The Trout Creek Hydroelectric Project is located within the Upper Humboldt River basin (Ruby Mountains Sub-Basin, Starr Valley hydrographic area) at the transition between foothills associated with the extreme north end of the East Humboldt Range and an alluvial apron fanning out onto Starr Valley to the North. Rugged foothills to the South are characterized by high, steep slopes, rocky exposures, canyons, narrow riparian corridors, shallow soils and sparse vegetation. Steep topography abates within the project area with the powerhouse constructed on gently sloping ground immediately adjacent to

[1] Unless otherwise indicated, our information is taken from the license application filed by Wells Electric on May 18, 2016 and the responses to deficiencies and requests for additional information Wells Electric filed on November 15, 2016.

sharply rising foothills.

Climate within the area is characterized a semi-arid cold desert with hot dry summers and cold winters. Most precipitation is received as winter snow and spring rains. Approximately 12.5 inches of precipitation falls annually. Mean annual air temperature ranges from 42 to 44 degrees Fahrenheit (°F) with temperatures varying from 100 °F in summer to below 0 °F in winter.

3.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (40 C.F.R. § 1508.7), a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on our review of the license application, as well as agency and public comments, we have not identified any resources that could be cumulatively affected by the continued operation of the Trout Creek Project.

3.3 PROPOSED ACTION AND ACTION ALTERNATIVES

In this section, we discuss the effects of the project alternatives on environmental resources. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects. We then discuss and analyze the specific cumulative and site-specific environmental issues.

Only the resources that would be affected, or about which comments have been received, are addressed in detail in this EA. Based on this, we have determined that aquatic, terrestrial, threatened and endangered species, land use, recreation, aesthetics, and cultural resources may be affected by the proposed action and action alternatives. We have not identified any substantive issues related to geology and soils, or socioeconomics; therefore, these resources are not assessed in the EA. We present our recommendations in Section 5.1, *Comprehensive Development and Recommended Alternative* section.

3.3.1 Aquatic Resources

Affected Environment

Water Quantity and Quality

Trout Creek is a spring-fed third order stream that originates in the foothills of the East Humboldt Mountains and flows for five miles to the confluence with the Humboldt River. It flows through a small incised ravine emerging onto a gently sloped alluvial apron, meandering for several miles through pastures, hay fields, and sagebrush before joining the Humboldt River only during high flow years. During lower flow years, Trout Creek has no surface hydrologic connection to the Humboldt River because of low spring flow, water diversions for land use downstream of the project, and infiltration into the groundwater.

Flow in Trout Creek is measured manually by Wells Electric at the project's intake. The annual flow in Trout Creek peaks during late spring from ground water discharge and snow-melt runoff. The annual low flow period typically occurs late in the year. Monthly flow measurements during 2013 ranged from a low of 1.8 cfs during November through December to a high of 7.9 cfs during June and July.

The Nevada DWR classifies Trout Creek as Class A coldwater aquatic life propagation, which requires at least 5 milligrams per liter of dissolved oxygen, a pH of 6.5 to 9.0, and turbidity levels of no more than 10 nephelometric turbidity units. The Nevada Department of Wildlife (Nevada DW) regional fishery biologist confirmed that waters of Trout Creek within the project vicinity meet the Class A standards.

Fish Resources and Aquatic Habitat

Trout Creek provides aquatic habitat for brook trout from immediately below the project intake structure, downstream through the 5,100-foot-long bypassed reach, and below the powerhouse for about four miles to the confluence with the Humboldt River. Brook trout are not present in the springs above the intake structure because a 5-foot-high ledge just below the intake structure acts as a migration barrier. Except during high flow years, the lower reaches of Trout Creek below the project area do not provide aquatic habitat because all of the stream flow is either diverted entirely for agricultural use or infiltrates into the ground. Trout Creek within the project area does not provide a recreational fishery because of its remote location, rugged terrain, and being surrounded by private lands. The only public access to Trout Creek would be through Forest Service lands up and over steep mountainous terrain.

Environmental Effects

To protect aquatic resources, Wells Electric proposes to continue to the following measures: (1) operate the project in a run-of-river mode; (2) divert a maximum of 5.3 cfs from Trout Creek for project operation; (3) continue to release minimum bypassed reach flows of 4 cfs, or inflow, whichever is less, from October through November and 1.3 cfs, or inflow, whichever is less, from December through September; and (4) continue to manually measure flow in the bypassed reach once per month to ensure compliance with the proposed minimum flow release schedule.

The Forest Service stated in its comments on the PAD that the existing information shows the impact of the project is minimal and the proposed measures by Wells Electric are sufficient for protection of the environmental resources.

Our Analysis

Operating the project in the proposed run-of-river mode would ensure that all diverted water is returned to Trout Creek downstream of the powerhouse for the protection of aquatic resources. The current maximum diversion of 5.3 cfs and seasonal minimum flow releases have maintained the health of the aquatic habitat and fish resources in the bypassed reach. Results of an instream flow study conducted by Nevada DW in 1988 (Wells Rural Electric Company, 2016a) suggested that the current minimum flows provide adult brook trout with sufficient water depth for movement to spawning areas, and provide adequate spawning and rearing habitat to maintain the fish resource. Continuing the maximum diversion and minimum flow releases would maintain stream channel integrity and ensure that water quality and the aquatic habitat and brook trout resources continue to be protected in the 5,100-foot-long bypassed reach.

The current method of manually measuring minimum flows once per month in the bypassed reach to monitor compliance with the minimum flow schedule has ensured protection of the aquatic resources. The spring source of water to Trout Creek provides a nearly steady flow at the intake structure that slowly varies seasonally. This nearly steady flow produces little to no fluctuation in the water surface elevation at the intake structure over the course of a month, making a once per month flow measurement sufficient to monitor maintenance of the minimum flow schedule in the bypassed reach. In addition, Wells Electric has no instances of noncompliance with the required minimum flow releases during the 30-year term of its existing license on the Commission record. Continuing the manual measurement of flows once per month in the bypassed reach would ensure compliance with the proposed minimum flow release schedule for protection of the aquatic resources.

3.3.2 Terrestrial Resources

Affected Environment

Vegetation

Natural vegetation in the project area mainly consists of a mixed shrub/grass cover dominated by sagebrush or rabbitbrush. Native perennial and annual grasses along with exotic cheatgrass are also present. Downstream of the project, the habitat becomes more disturbed by agriculture and human-altered habitats.

Well-developed riparian vegetation is found along Trout Creek, consisting primarily of willow along with some aspen and black cottonwood. Downstream the creek braids with other small streams creating a web of narrow riparian habitat ribbons extending toward the Humboldt River. Upstream of the project intake structure, the riparian zone becomes increasingly narrow as the channel transitions from alluvial stream to foothills to mountains.

Wildlife

Wildlife species occupying the project area are typical of species found in Northeastern Nevada's cold desert Great Basin valleys and foothills. Populations of greater sage-grouse, chukar, Hungarian partridge, blue grouse, mourning dove, and black-tailed and white-tailed jackrabbit exist throughout the project vicinity. The project area provides potential early brood, late summer, and winter habitat for greater sage-grouse. No greater sage-grouse leks (breeding display sites) were identified near the project area (BLM, 2009). The project also provides summer habitat for mule deer and pronghorn. Elk summer range is found well north of the project area (BLM, 2009).

Raptors using the project area include golden eagle, red-tailed hawk, Cooper's hawk, Swanson's hawk, and prairie falcon. Migratory birds use the vegetation in the project area for nesting. Birds of Conservation Concern that could potentially be found in the sagebrush and riparian habitats of the project area include Brewer's sparrow, black rosy finch, Lewis's woodpecker, sage thrasher, and greater sage-grouse (FWS, 2017).

Environmental Effects

Wells Electric proposes to continue their current vegetation management practices, which includes clearing deadfall trees from the access road and trimming back vegetation growth on the 100-foot-long trail to the intake structure in March each year, outside of the avian nesting season. Wells Electric does not use herbicides to control vegetation (Wells Electric, 2016b) and is proposing to continue to refrain from using herbicides.

Our Analysis

The project would have minimal effects on terrestrial resources. All maintenance activities would result in minimal modification to wildlife habitats, and Wells Electric's restrictions on herbicide use for vegetation management, as well as conducting maintenance outside of the avian nesting season, further reduces disturbance to wildlife and habitats. Increased minimum flow releases from the project since the late 1980s has maintained the health of the riparian zone in the bypassed reach. Continuing these flow releases would ensure that the riparian communities are maintained.

Transmission lines can pose an electrocution and collision hazard to local bird populations (APLIC, 2006, 2012), with most electrocutions associated with lines carrying 69 kV or less because the spacing of hardware is often not sufficient to prevent birds from spanning between conductors or between a conductor and a ground (APLIC, 2006). However, the project's existing 4,412-foot-long, 24.9-kV transmission line was designed to minimize the risk of avian electrocution by raising the center conductors to provide sufficient clearance between energized parts (Wells Rural Electric Company, 1990). As a result, the 62-inch spacing between conductors exceeds the APLIC standard of 60 inches (APLIC, 2006), and the transmission line presents a low electrocution hazard. In addition, the route of the transmission line, which is through disturbed areas without defined avian corridors, suggests that it is not a collision hazard.

3.3.3 Threatened and Endangered Species

Affected Environment

According to the FWS, Lahontan cutthroat trout may occur in the project location or may be affected by the proposed project. There are no designated or proposed critical habitats located in the project area (FWS, 2017).

Environmental Effects

Trout Creek is a tributary to the Humboldt River. While the threatened Lahontan cutthroat trout resides in tributaries throughout the Humboldt River basin, it does not inhabit Trout Creek. In the past, Trout Creek was tentatively identified by FWS as a potential restoration stream in development of the federal Lahontan cutthroat trout recovery program. According to the Nevada DW regional fisheries biologist (Wells Rural Electric Company, 2016a), consideration of Trout Creek as a restoration stream was discontinued because of the presence of non-native brook trout and any introduced Lahontan cutthroat trout would be isolated and unable to migrate to and from the Humboldt River, except in high flow years. Therefore, the project would have no effect on this threatened fish species.

3.3.4 Land Use and Recreation Resources

Affected Environment

The project is located entirely within Elko County, Nevada, near the City of Wells. The project is partially situated on private land, and the rest is located on public land administered by the Humboldt-Toiyabe National Forest. A Special Use Permit was granted to Wells Electric by the Forest Service for the use of approximately 0.5 acres, and one-half mile, of Forest Service land occupied by the project. Project facilities on Forest Service land include the intake structure, PVC pipe, steel pipe, surge tank, and approximately 1,500 feet of the 2,125 foot penstock. The remaining 625 feet of the penstock, the powerhouse, and transmission line are located on private land.

Public recreational use of the project site is limited. Recreational uses in the area surrounding the project site include game animal and waterfowl hunting, fishing, camping, hiking, wildlife viewing, and sightseeing. No trails or developed recreational sites exist on the Forest Service land in the immediate area of the project site. There are several dirt roads near the project site, including National Forest Road 501 (NF-501). NF-501 is the only publicly accessible road with direct access to the project site, and is initially bounded on both sides by private land, for approximately 1.2 miles, until it enters Forest Service land. Forest Service land surrounding project facilities could be accessible by other recreational users without the use of NF-501. However, a Forest Service biologist noted[2] that road-less access to those lands would be extremely hazardous due to difficult and steep mountainous terrain. The biologist also stated that Trout Creek, within the project area, does not provide a recreational fishery because of its remote location, rugged terrain, and being surrounded by private lands.

Environmental Effects

Wells Electric is not proposing any changes to existing project operations. Wells Electric is not proposing, nor have any other entities recommended, specific measures for protection or enhancement of recreational use.

Our Analysis

Limited developed public access routes, and the surrounding natural environment, greatly minimize access to Forest Service land around the project site for recreational use. Infrequent vehicle travel on NF-501, for project operations and maintenance activities, could minimally affect public access to the Forest Service land in the immediate area of the project facilities. However, the Forest Service is ultimately responsible for providing

[2] Personal communication, Dawn Alvarez, Biologist, Forest Service, April 7, 2017.

and maintaining public access, through management of NF-501, to the Forest Service lands around the project site. Because Wells Electric is not proposing any changes to existing project operations and maintenance, public access to the area is very limited, recreational fishing opportunities do not exist in Trout Creek adjacent to the project site, and no developed recreational sites exist on the Forest Service land in the immediate area of the project site, the project would have minimal effect on recreational use in the project area.

3.3.5 Aesthetic Resources

Affected Environment

The project is located at the transition between the foothills of the north end of the East Humboldt Range, and an alluvial apron fanning out onto Starr Valley to the north. Rugged foothills to the south are characterized by high, steep slopes, rocky exposures, canyons, narrow riparian corridors, shallow soils, and sparse vegetation. The natural landscape is impacted by minor man-made modifications including fences, natural surface roads, livestock watering facilities, telephone and electric power lines, ranching operations, and irrigated hay fields. Sagebrush grassland constitutes the dominant vegetation cover in the project vicinity. The riparian areas along Trout Creek contain willow with some aspen and black cottonwood. Interstate Highway 80 (I-80) traverses east-west approximately one mile north of the Trout Creek powerhouse.

Environmental Effects

Wells Electric is not proposing any changes to existing project operations and maintenance. Project facilities, other than the existing transmission line, would not be immediately evident to the public. The existing powerhouse, tailrace, penstock, surge tank, intake structure, PVC pipe, and steel pipe are located out of direct eyesight of the I-80 corridor and other more widely used public areas. Wells Electric is not proposing, nor have any other entities recommended, specific measures for protection or enhancement of aesthetics.

Our Analysis

The project would continue to have minimal effect on aesthetics. Only the existing transmission line is immediately visible to the public because it is situated within eyesight of I-80, State Route 230, and NF-501. The transmission line's wooden support poles mitigate visual contrast with the surrounding landscape by allowing the structures to blend in with the natural landscape. The existing one-story, approximately 18-foot by 20-foot brick powerhouse, and existing 8-foot-diameter by 20-foot-tall surge tank are the only other immediately visible structures, and are only evident to recreationists who use NF-501 to access the Forest Service lands. Aesthetic effects of the powerhouse are

mitigated by its drab, earth-tone brick construction. Aesthetic effects of the surge tank are mitigated by its partial in-ground installation, and earth-tone paint.

3.3.6 Cultural Resources

Affected Environment

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA, requires the Commission to take into account the effects of licensing a hydropower project on properties listed or eligible for listing in the National Register and allow the Advisory Council on Historic Preservation (Advisory Council) a reasonable opportunity to comment if any adverse effects on historic properties are identified within the project's area of potential effects (APE).

Historic properties are defined as any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. In this document, we also use the term "cultural resources" to include properties that have not been evaluated for eligibility for listing in the National Register. In most cases, cultural resources less than 50 years old are not considered eligible for the National Register. Cultural resources need enough contextual integrity to be considered historic properties. For example, dilapidated structures or heavily disturbed archaeological sites may not have enough contextual integrity to be considered eligible. Traditional Cultural Properties (TCPs) are a type of historic property eligible for listing in the National Register because of their association with cultural practices or beliefs of a living community that: (1) are rooted in that community's history or (2) are important in maintaining the continuing cultural identity of the community (Parker and King, 1998). Section 106 also requires that the Commission seek concurrence with the corresponding State Historic Preservation Office on any finding involving effects or no effects on historic properties. For this project, the Nevada SHPO would need to concur with any such finding.

If existing or potential adverse effects have been identified on historic properties, license applicants need to develop a historic properties management plan (HPMP) to seek to avoid, reduce, or mitigate the effects. Potential effects that may be associated with a hydroelectric project include any project-related effects associated with construction, or the day-to-day operations and maintenance of the project after issuance of an original license.

Culture Historic Overview

Aboriginal Era and Ethnography

The project area lies within the Upper Humboldt River basin and falls within the Great Basin cultural physiographic region. The region in and around the project area consist of a transition between the foothills associated with the East Humbolt Range and an alluvial fan of Trout Creek. Trout Creek flows northward from the East Humboldt Range into the Upper Humboldt River.

Ancient peoples coming out from Eurasia, across the Alaska land bridge would have made their way into the Great Basin at the close of the Pleistocene sometime around 11,000 BC. The first people to have inhabited the Great Basin were affiliated with Paleo Indian/Pre-Archaic hunter-gathers who moved seasonally around the area in pursuit of game and seasonal plant foods. Climatic conditions at the time were wetter but became increasingly warm during the ensuing Archaic Period beginning around 7,000 years ago. Archaic Period peoples adapted to more local environments in the Humboldt River Valley living in short term base camps and subsisting off of a host of processed seeds, some large game animals, and other smaller mammals adapted to a desert environment such as rabbits and small rodents. The increased processing of seeds required the use of ground stone by these groups along with an assortment of chipped stone tools used for hunting and skinning of game. By about 500 AD on up until Euro-American contact, populations continued to stabilize and grow in the Upper Humboldt River basin, utilizing an increasingly wide set of adaptive strategies for the more arid desert environment. By the time of Euro-American contact in the mid nineteenth century, aboriginal people living in the Upper Humboldt River basin were affiliated with Numic speakers of the Western Shoshone branch.

The Wells Colony, who is the closest Native American group to the project, is one of four colonies within the larger Te-Moak Tribe of the Western Shoshone Indians of Nevada. The Te-Moak were organized as a federally recognized Indian tribe in 1934 under the Indian Reorganization Act. The Wells Colony Reservation, located on the western side of the town of Wells, was established by an act of Congress in 1977, and includes 80 acres of land held in federal trust. People associated with the Wells Colony call themselves “Kuiyadika” after a desert plant they used for food. Prior to Euro-American contact, peoples associated with the Wells Colony were semi-nomadic hunter-gatherers continuing a culture and tradition that was well-suited for the desert environment of the Great Basin for thousands of years. Their way of life ended when Euro-Americans entered the territory by 1860, and with the establishment of the railroad at Wells in 1870.

Euro-American Era

Short of a few occasions of explorers and trappers passing through the region, Euro-Americans did not enter the project area in significant numbers until the establishment of Nevada Territory in 1861. As early as 1859, however, the town of Wells, first known as Humboldt Wells, began as an encampment along the California Emigrant Trail near a spring not far from the project. Humboldt Wells consisted of a small marshy oasis, centered on a spring that was one of the sources of the Upper Humboldt River. From 1845 to 1870, hundreds of pioneers in covered wagons, on their way to California, would stop at Humboldt Wells to rest and refit. In 1869, a water station along the Central Pacific Railroad was established just east of Humboldt Wells, and a settlement quickly formed, and was renamed, Wells. In 1908, the Western Pacific Railroad was constructed and ran through the town. From the advent of the railroads, ranching became a primary economy around Wells. Wells continued to grow during the beginning of the twentieth century, and had a bank, high school, and several churches. In 1926, the completion of the Union and Pacific's Oregon Short Line, that, in turn, connected Twin Falls to Wells, made Wells the only community in Nevada to be served by three major railroads.

At the same time, some businesses in Wells were connected to electricity, generated by a local 32 volt DC plant that was situated in a town garage. A business consortium, calling themselves the Wells Power Company, built a larger 120 volt AC hydroelectric facility located along Trout Creek in 1927, which greatly increased electric power to Wells residents and businesses. The consortium of businessmen was led by Henry Cazier, who graduated as an electrical engineer from the University of Nevada in 1906. It was through Cazier's vision that a hydropower facility was placed in the Wells locality. Cazier, who had grown up on a ranch in Elko County, also understood the need for electricity for the businesses, ranches, and residences in and near the developing town of Wells. The hydroelectric facility that Cazier had envisioned and built was later called the Trout Creek Hydroelectric project and was originally licensed by the Federal Power Commission (predecessor to FERC) in 1928.

In 1960, the Wells Power Company was sold and reformed into its modern configuration called the Wells Rural Electric Company. From 1927, the project operated continuously until 1975, when various interests decided to designate the powerhouse as a historic structure and move it to Wells as part of a historic museum. At this time, electric power generated at the Trout Creek project was relatively small, and taking the project off-line at the time would not pose an insurmountable hardship to Wells Electric. After several unsuccessful attempts to place the powerhouse on the National Register, Wells Electric decided in 1977 to put the project back on line to generate electricity again. The project was relicensed by the Federal Power Commission in 1953, and again by FERC in 1989. When the 1989 license was amended in 1993 to replace the storage reservoir with

a surge tank, the powerhouse was determined by the Nevada SHPO to be eligible for listing in the National Register (Polk, 1991; Nevada SHPO, 2017).

Area of Potential Effects

Pursuant to section 106 of the NHPA, the Commission must take into account whether any historic property could be affected by issuance of a subsequent license within a project's APE. The APE is defined as the geographic area or areas that an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. For this relicensing, the project's APE consists of all lands within the proposed project boundary and any lands outside the project boundary where cultural resources may be affected by project-related activities. The project's APE includes both private and federal lands administered by the Forest Service. The project's APE on Forest Service lands includes lands around the intake structure, PVC pipe, surge tank and approximately 1,500 feet of the 2,125-foot penstock. The remaining 625 feet of penstock and powerhouse are located on private lands.

In 1991, the project's APE was inventoried for cultural resources by Wells Electric's professional contactor, Sagebrush Archaeological Consultants, as part of Wells Electric's amendment to its license (Polk, 1991). Although an intensive pedestrian inventory was not completed within the APE, the likelihood of existing archaeological resources, or any other properties of religious or cultural importance to Indian tribes within the project's APE is low. The main focus of the 1991 inventory involved a review of the four main components that made up the Trout Creek Project (Polk 1991). The four main components of the project include: (1) the intake pipe at the springs which consists of a 14-inch diameter welded steel pipe 715 feet in length, and a collection box; (2) the original storage reservoir; (3) a 16-inch diameter welded steel penstock 2,125 feet in length, and (4) the powerhouse, which includes a brick structure (19 by 22 feet) on a poured concrete foundation with modified gabled roof.

The interior of the powerhouse includes mostly all of the equipment that was originally installed in 1927. Overall, the intake pipe and associated collection box, storage reservoir, and penstock have been significantly modified, altered, or replaced in the 1970s, 1980s, and again in the 1990s to the extent that these components no longer retain National Register significance. However, the powerhouse remains essentially intact, both on exterior and interior where it retains much of the materials and components when it was originally constructed in 1927. The powerhouse would be considered eligible for the National Register under criterion c because the powerhouse embodies the distinctive characteristic of a type, period, or method of construction. Although the powerhouse is of a vernacular, utilitarian design, it represents one of the only remaining early twentieth century powerhouses in the State of Nevada (Polk, 1991). Although other contributing elements of the Trout Creek Project are not considered eligible for the National Register, the project site itself is also considered eligible under

criteria b because the Trout Creek Project was conceived and built by an individual, Henry Cazier, who was significant in the Nation's past, especially for the early development of hydroelectricity in the State of Nevada.

Environmental Effects

Wells Electric proposes to operate and maintain the project as it has been over the last 90 years. The only National Register-eligible component of the project is the 1927 powerhouse, which Wells Electric proposes to maintain with no modifications or alterations over the term of a subsequent license. Although the project's inception and location is also considered significant under criteria c of the National Register, as it is associated with a well-known person in history (Henry Cazier), no other project-related adverse effects would impact the location or setting of the facility. In letters dated 2016 and 2017, the Nevada SHPO concurred with Well Electric's conclusions that no historic properties would be affected by the project (Nevada SHPO 2017).

Our Analysis

We concur with the Nevada SHPO that no historic properties would be affected by the project. However, having Wells Electric consult with the Nevada SHPO, Forest Service, and Te-Moak in the event that a historic property (namely the 1927 powerhouse) may be adversely affected by project operation or maintenance over the term of any subsequent license would help to resolve any such adverse effects and protect those historic properties.

3.4 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate as it has in the past and environmental conditions at the project site would remain the same.

4.0 DEVELOPMENTAL ANALYSIS

In this section, we look at the project's use of Trout Creek for hydropower purposes to see what effect various environmental measures would have on the project's costs and power generation. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp*.,[3] the Commission compares the current project cost to an estimate of the cost of obtaining the same amount

[3] *See Mead Corp., Publ'g Paper Div.*, 72 FERC ¶ 61,027 (1995). In most cases, electricity from hydropower would displace some form of fossil-fueled generation, in which fuel cost is the largest component of the cost of electricity production.

of energy and capacity using a likely alternative source of power for the region (cost of alternative power). In keeping with Commission policy as described in *Mead Corp*, our economic analysis is based on current electric power cost conditions and does not consider future escalation of fuel prices in valuing the hydropower project's power benefits.

For each of the licensing alternatives, our analysis includes an estimate of: (1) any cost of individual measures considered in the EA for the protection, mitigation, and enhancement of environmental resources affected by the project; (2) the cost of alternative power; (3) the total project cost (i.e., for construction, operation, maintenance, and environmental measures); and (4) the difference between the cost of alternative power and total project cost. If the difference between the cost of alternative power and total project cost is positive, the project produces power for less than the cost of alternative power. If the difference between the cost of alternative power and total project cost is negative, the project produces power for more than the cost of alternative power. This estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. However, project economics is only one of many public interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

4.1 POWER AND ECONOMIC BENEFITS OF THE PROJECT

Under staff's approach to evaluating the economics of hydropower projects, we use an analysis that uses current costs to compare the costs of a project and the likely alternative. By using this approach, our analysis gives a general estimate of the current power benefits and costs of a project.

For the Trout Creek Project, Wells Electric proposes to operate the project as it currently does. Also, our recommended measures in the EA would not add to the project's cost. Therefore, the general estimate of the project's benefits and costs is the same for each action alternative considered in this EA. The estimated cost to operate and maintain the proposed 125-kilowatt project is $83,000 or $255/MWh. Wells Electric estimates the project will generate 325 MWh in an average year. When we multiply Wells Electric's estimate of average generation by our estimate of the current value of power of $97/MWh, we get a total value of the project's power of $31,000. To determine whether the project is currently economically beneficial, staff subtracts the project's cost from the value of the project's power. Therefore, in the first year of operation, the project would cost about $52,000 or $158/MWh more than the likely alternative cost of power.

Though Commission staff's analysis shows that the project would have an initial annual cost that exceeds the current power value, staff does not explicitly account for the effects inflation may have on the future cost of electricity. The fact that hydropower generation is relatively insensitive to inflation compared to fossil-fueled generators is an

important economic consideration for power producers. Based on the Commission's policy under the *Mead Corp.* decision, it is the applicant who must decide whether to accept any license and the financial risk that entails.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any licenses issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing waterway or waterways for all beneficial public uses. This section contains the basis for, and a summary of, our recommendations for relicensing the Trout Creek Project.

Based on our independent review of agency comments filed on these projects and our review the environmental and economic effects of the proposed project and economic effects of the project and its alternatives, we selected the staff alternative as the preferred alternative. We recommend the staff alternative because: (1) issuance of a subsequent hydropower license by the Commission would allow Wells Electric to continue to operate the project as a dependable source of electrical energy; (2) the 125 kW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution; (3) the public benefits of the staff alternative would exceed those of the no-action alternative; and (4) the recommended environmental measures would protect and enhance aquatic, terrestrial, and cultural resources.

In the following sections, we make recommendations as to which environmental measures proposed by Wells Electric or recommended by agencies or other entities should be included in any subsequent license that may be issued for the project. In addition to Wells Electric's proposed environmental measures, we recommend an additional environmental measure be included in any subsequent license that may be issued for the project.

5.1.1 Measures Proposed by Wells Electric

As stated, Wells Electric is not proposing any new facilities, replacement of facilities or changes in operation and maintenance of the Project. Based on our environmental analysis of Wells Electric's proposal in section 3, we conclude that the following environmental measures proposed by Wells Electric would continue to protect

environmental resources while not adding to the cost to operate and maintain the project. Therefore, we recommend including these measures in any license issued for the project:

- Continue to release minimum bypassed reach flows of 4 cfs, or inflow, whichever is less, from October through November and 1.3 cfs, or inflow, whichever is less, from December through September, and divert a maximum of 5.3 cfs from Trout Creek for project operation to protect fishery resources in the bypassed reach.

- Continue to measure flow in the bypassed reach manually once per month to ensure compliance with the proposed minimum flow release schedule.

- Continue to clear deadfall trees from the access road and trim back vegetation growth on the 100-foot-long trail to the intake structure in March each year, outside of the avian nesting season, and restrict use of herbicides.

5.1.2 Additional Measures Recommended by Staff

In addition to Wells Electric's proposed measures noted above, we recommend the following additional measure:

In the event that a historic property may be adversely affected by project operation or maintenance, Wells Electric would consult with the Nevada SHPO, Forest Service, and Te-Moak (if applicable), to address any potential adverse effects.

Below, we discuss the rationale for our additional staff-recommended measure.

Consultation on Historic Properties

Wells Electric proposes to operate and maintain the project as it has been over the last 90 years. The only National Register-eligible component of the project is the 1927 powerhouse, which Wells Electric proposes to maintain with no modifications or alterations over the term of a subsequent license. In letters dated 2016 and 2017, the Nevada SHPO concurred with Well Electric's conclusions that no historic properties would be affected by the project (Nevada SHPO, 2017). We concur with the Nevada SHPO; however, having Wells Electric consult with the Nevada SHPO, Forest Service, and Te-Moak (if applicable) in the event that a historic property (namely the 1927 powerhouse) may be adversely affected by project operation or maintenance would ensure that any such adverse effects are resolved and historic properties are protected throughout the term of any license issued for the project. Therefore, we recommend this measure and estimate its cost to be negligible.

5.2 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA, 16 U.S.C § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, or conserving waterways affected by the project. We reviewed six comprehensive plans that are applicable to the Trout Creek Project located in Nevada.[4] No inconsistencies were found.

6.0 FINDING OF NO SIGNIFICANT IMPACT

If the Trout Creek Project is relicensed with the additional staff-recommended measure, the project would operate while providing protective measures to aquatic resources and any unidentified cultural or historic resources in the project area.

Based on our independent analysis, issuance of a subsequent license for the Trout Creek Project, as proposed with the additional staff-recommended measure, would not constitute a major federal action significantly affecting the quality of the human environment.

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8.0 LIST OF PREPARERS

Kelly Wolcott – Project Coordinator, Terrestrial Resources and Threatened and Endangered Species (Environmental Biologist; M.S., Natural Resources)

James Hastreiter – Water Resources, Aquatic Resources, and Threatened and Endangered Species (Fisheries Biologist; M.S., Natural Resources)

Evan Williams – Recreation, Aesthetics, and Land Use (Outdoor Recreation Planner; B.S., Recreation Management)

Frank Winchell – Cultural Resources (Archeologist; Ph.D., Anthropology)