

## 5.0 STAFF CONCLUSIONS<sup>73</sup>

When the Commission considers license proposals, besides looking at power and other developmental purposes—irrigation, flood control, water supply—it must also give equal consideration to the purposes of energy conservation, the protection, mitigation and damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. So far in this draft EIS; we have described both the environmental effects and our estimated cost of building the proposed project and the staff alternative. In this section, we examine the environmental effects and project costs of the alternatives and explain how we decided on the environmental measures we include in the staff alternative.

During scoping, many people commented about the potential effects of the co-applicants' proposed Morrell Canyon upper reservoir on the Lion Spring, oak woodlands, and the use of existing trails, and about the potential effects of the proposed transmission alignment on fire suppression activities and the use of existing hang gliding launch and landing sites. The staff alternative includes alternative facility locations for the upper reservoir and powerhouse identified by the co-applicants as well as a mid-slope transmission alignment developed by the USFS and Commission staff. These alternative facility locations address many of key issues raised during scoping.

Both the co-applicants' proposed action and the staff alternative would allow the co-applicants to construct and operate the project as a peak energy resource and as part of a long-term solution to southern California's transmission congestion bottlenecks. The Talega-Escondido/Valley-Serrano transmission line could provide 1,000 MW of import capability into the San Diego area with up to 500 MW of this imported power being supplied by the LEAPS Project during high-demand periods.

As we have discussed in section 4, in examining the potential cost of the LEAPS Project, we have significantly added to the co-applicants cost to account for construction contingencies and measures that would be are needed to build the proposed project at a challenging site. Using the Commission's current economic analysis method, both the co-applicants' proposal and the staff alternative would be more expensive than the no-action alternative that includes building combustion turbines.

Given the many changes we've made both to the facility locations in the staff alternative and to the co-applicants' original cost estimate, we do not recommend a preferred alternative in the draft EIS. As we have said, the staff alternative, which uses Decker Canyon as an upper reservoir, Ortega Oaks as the powerhouse site, and has mid-slope transmission alignment, addresses many of the concerns raised in this proceeding. However, before we recommend an alternative to the Commission, we seek public

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<sup>73</sup> In this section, “we” means the Commission staff.

comment on the staff alternative along with the proposed project and no-action alternative.

## 5.1 COMPARISON OF PROPOSED ACTION AND ALTERNATIVES

We summarize the key differences of the potential effects of the co-applicants' proposal and the staff alternative in table 53. Figure 20 is a three-dimensional view of the relative locations of the co-applicants' proposed and staff alternative above-ground and underground project facilities.

Table 53. Summary of key differences in the potential effects of the co-applicants' proposal and the staff alternative. (Source: Staff)

Resource/Issue	Upper Reservoir Comparison	
	Morrell Canyon	Decker Canyon
Area of effect	130-acre footprint; daily fluctuations of 40 feet and weekly fluctuations of 75 feet	120-acre footprint; daily and weekly fluctuations would be on the same order of magnitude as the upper reservoir at Morrell Canyon
Fill materials	2.6 million cubic yards of fill needed for dam	3.0 million cubic yards of fill needed for dam Less overburden at Decker Canyon would allow easier procurement of sold rock material for fill for dam and dike construction
Groundwater	Construction of tunnels for high pressure conduits could affect groundwater; design review of collection system for Lion Spring and effects on groundwater	Construction of tunnels for high pressure conduits could affect groundwater; no collection system would be required
Seismic hazards	Faults may control surface flows at the Morrell Canyon site	No faults have been identified at the Decker Canyon site and subsurface flow does not appear to be controlled by the presence of faults
Surface water	Upper reservoir would interrupt stream flow	Upper reservoir would not interrupt stream flow
Wetland and riparian habitat	Would affect 20.1 acres of wetlands, including Lion Spring; loss of these wetlands would affect plant diversity and wildlife species; effects on downstream areas would be minimized by the water conveyance system under the reservoir	Would affect 4.5 acres of wetlands; same types of effects as Morrell Canyon but at smaller scale

**Upper Reservoir Comparison**

<b>Resource/Issue</b>	<b>Morrell Canyon</b>	<b>Decker Canyon</b>
Oak woodland communities	Would affect about 20 acres of southern coast live oak forest (500 to 600 individual trees over 8 dbh); would need to plant 125 acres to mitigate	Would effect about 5 acres of southern coast live oak forest so effects would be similar to Morrell Canyon but on a smaller scale; would only need 25 acres to mitigate
Special status wildlife	Would convert 120 acres of chamise chaparral and 20 acres of southern coastal live oak to project facilities.	Would convert 135 acres of chamise chaparral and 5 acres of southern coastal live oak to project facilities.
Mountain lion	Would remove 140 acres of suitable mountain lion habitat from Core B; project operation and maintenance would not likely increase disturbance or risk of interaction over levels that currently result from traffic on South Main Divide Road and use of Morgan Trail	Would remove 135 acres of suitable mountain lion habitat from Core B; project operation and maintenance would represent a very small increase in disturbance, because no trails currently provide for recreation at Decker Canyon site
Munz's onion	No suitable habitat; however, South Main Divide Road in vicinity passes through a soil type that is known to support occurrences of this species	No suitable habitat; however, South Main Divide Road in vicinity passes through a soil type that is known to support occurrences of this species
Developed recreation facilities	Footprint would not include Morgan Trail trailhead with minimal effect on users of the trailhead during construction but trail would need to be re-routed either temporarily or permanently depending on final design	Morgan Trail would not have to be rerouted and because visitation is low, increased traffic on South Main Divide Road would have minimal effect on Morgan trailhead users
Dispersed recreation	<p>Would affect hang gliders using the 2 most suitable of the 9 launch sites and waterside setting offered at Lion Spring</p> <p>Would eliminate a natural looking canyon with oak woodland vegetation and replace it with a reservoir surrounded by a chain link fence; inconsistent with Retention VQO</p>	<p>Would avoid effects on two most popular hang glider launch sites</p> <p>The existing aesthetic resources within Decker Canyon are subordinate to Morrell Canyon and construction effects associated with building a reservoir in this location would be less than those at the Morrell site; development of the alternative site would not build over a mature oak-woodland riparian area (Lion Spring)</p>
Traffic	Would achieve a balance of excavation to fill within the entire project site	Would achieve a balance of excavation to fill at the Decker Canyon site
Cultural resources	Would destroy or damage four prehistoric archaeological sites	No known sites at Decker Canyon location

**Powerhouse Site Comparison**

<b>Resource/Issue</b>	<b>Santa Rosa</b>	<b>Ortega Oaks</b>	<b>Evergreen</b>
Area of effect	30-acre site, 20-acre laydown, 340 depth of excavation  327,500 cubic yards (includes 207,000 from the powerhouse cavern; 35,000 from the transformer gallery; 32,000 from the surge shaft; 500 from the vent shaft; and 53,000 from the powerhouse access shaft)	58 acres, inclusive of laydown; 320 depth of excavation; groundwater 30 to 70 feet  There will be similar values to Santa Rosa but about 33 percent more excavation for the tailrace tunnel, which would be about 86,450 cubic yards since the Santa Rosa tailrace tunnel is 65,000 cubic yards; also, the depth of excavation is slightly less than that of Santa Rosa	75 acres, 30-acre laydown, 290 depth of excavation  There will be similar values to Santa Rosa but about 10 percent less excavation for the tailrace tunnel, which would be about 58,500 cubic yards since the Santa Rosa tailrace tunnel is 65,000 cubic yards; also the depth of excavation is less than that of Santa Rosa
Special status plants	Construction of the powerhouse could affect Coulter's matilija poppy	Construction of tunnel between upper reservoir and powerhouse could affect Coulter's matilija poppy	No rare plants identified in vicinity of Evergreen powerhouse location
Wetland and riparian habitat	Would affect about 0.4 acre of wetlands	Would affect about 0.4 acre of wetlands	Would affect less than one-tenth of an acre of wetlands
Special status wildlife	Would affect 30 acres of coastal sage scrub and 20 acres of non-native grassland  All construction activities within this area would conflict with the Partial Retention VQO designated by the USFS; these effects would be short term and last for the duration of the construction	Would affect 53 acres of non-native grassland and 5 acres of coastal sage scrub  Construction activity at Ortega Oaks site would be visible from the Ortega Highway and a small portion of Grand Avenue in Lakeland Village; two prominent viewpoints to commuters in the area	Would affect 55 acres of non-native grasslands and 20 acres of coastal sage scrub  Similar effects to the aesthetic resources as described above with respect to the proposed Santa Rosa site
Future recreation use	Location of substation and above ground transmission lines from this location would affect hang gliding activities	Would affect use of hang gliding landing site during construction; would provide formal hang gliding landing site following construction	Would displace informal disperse recreational use at site

**Powerhouse Site Comparison**

<b>Resource/Issue</b>	<b>Santa Rosa</b>	<b>Ortega Oaks</b>	<b>Evergreen</b>
Land Use and Property values	Would permanently change use to utility and recreation use and preclude residential use specified in General Plan; would purchase and raze adjacent private property (Santa Rosa Mountain Villa apartments) and buffer would reduce effect on property values	No effect on adjacent residential property values at Ortega Oaks	Either raze or use current Lakeland Childcare Center at the Lakeland Village Plaza for construction office resulting in displacement of child-related businesses and purchase/raze one single family home
Aesthetics	The powerhouse would be underground but the substation would be visible from surrounding residential and commercial properties	The powerhouse would be underground but the substation would be visible from the heavily used Ortega Highway	The powerhouse would be underground but the substation would be visible from surrounding residential and commercial properties
Cultural Resources	Would affect two historic sites and one prehistoric archaeological site; could affect two historic buildings (vibration) and penstock	Would directly affect one prehistoric site	No known sites at Evergreen location

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Mid-Slope Alignment</b>
Area of effect	29.5 miles in length with 7.6 miles of temporary access roads	30.7 miles in length with 11.1 miles of temporary access roads
Fire suppression activities	Could interfere with USFS fire suppression activities	Would avoid interference with USFS fire suppression activities.
Special status plants	Could affect Humboldt lily (Subarea 3); passes through potential habitat for Hammitt's clay-cress (Subarea 5)	Avoids potential habitat for Hammitt's clay-cress (Subarea 5)
Wetland and riparian habitat	Substations would affect about 1.1 acres of wetlands; effects from transmission towers would be minor as towers would be placed to avoid wetland and riparian habitat	Effects from transmission towers would be minor as towers would be placed to avoid wetland and riparian habitat

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Mid-Slope Alignment</b>
Special status wildlife	Substations would affect 25 acres and transmission line towers would affect 39 acres of potential habitat for special status species. About 7.6 miles of access roads would affect an estimated 11.1 acres, plus indirect effects of construction (edge effects) and potential for disturbance (e.g., poaching, harassment) during operation, if public access is not controlled	Substations would affect 50 acres and transmission line towers would affect 39 acres of potential habitat for special status species. About 10.3 miles of access roads would affect an estimated 15 acres, plus indirect effects of construction (edge effects) and potential for disturbance (e.g., poaching, harassment) during operation, if public access is not controlled
Mountain lion	Would remove 10.5 acres of suitable mountain lion habitat from Core B (northern portion); construction of access roads would remove an additional 11.1 acres, and although mountain lions may use roads for travel, the risk of disturbance (e.g., poaching, harassment) would be substantial during project operation, if public access is not controlled	Northern portion is outside Core B; crosses proposed linkage 1 near Alberhill, but clearing would be limited and would not interrupt travel corridor; southern portion is aligned along the edge of Core B, and therefore would have less effect on mountain lion habitat; and access roads would closely follow transmission line and would likewise have less effect than proposed alignment
Bird/T-lines	Northern portion (Temescal Wash/Lee Lake) of line presents a high risk to waterfowl; central portion siting at low elevation would minimize risk to raptors; and southern portion poses moderate risk of collision where it crosses major drainages	Northern segment crosses a narrower band of wetlands/riparian habitat and agricultural lands at Temescal Wash; however, drainages along this route may support more riparian and wetland habitat than proposed alignment; southern portion would cross the same drainages and have the same effects
Munz's onion	Would affect 4 acres of potential habitat along the northern portion of the transmission line, 25 acres at the northern substation, and 2.75 acres near Elsinore Peak	Would affect 2 acres of potential habitat along the northern portion of the transmission line and 25 acres at the northern substation
Slender-horned spine flower	Occurrences at Temescal Wash at Indian Creek and Alberhill (Subarea 1); pre-construction surveys could be conducted to prevent adverse effects during construction; road management plan could be implemented to minimize risks during operation	This alignment would cross clay soils rather than sandy soils with which this species is strong associated, so this alignment would not affect this species

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Mid-Slope Alignment</b>
Quino checkerspot butterfly	Would affect and may adversely affect because potential habitat would be removed near Lee Lake; 25 acres for substation, 2.75 acres for five towers (1.75 acres in critical habitat)	Would affect and may adversely affect because potential habitat would be removed near Lee Lake; 25 acres for substation and 1 acre for towers
Arroyo toad and California red-legged frog	Potential habitat for both species at Temescal Wash (north) and Los Alamos Canyon and Tenaja Creek (south); may not be able to avoid impacts to about 1.5 acres of potential arroyo toad habitat; but could avoid California red-legged frog habitat through siting; transmission line construction may adversely affect the arroyo toad but would not affect California red-legged frog	Potential habitat for both species at Los Alamos Canyon and Tenaja Creek crossings; may not be able to avoid impacts to about 1 acre of potential arroyo toad habitat, but could avoid California red-legged frog habitat through siting; transmission line construction may adversely affect the arroyo toad but would not affect California red-legged frog
Southwestern willow flycatcher and least Bell's vireo	Occurrences at Temescal Wash and Tenaja Creek; towers could be sited outside riparian habitat to avoid impacts; transmission line construction may affect but would not likely adversely affect these species	This alignment would avoid known occurrences at Temescal Wash; towers could be sited outside riparian habitat to avoid effects on suitable habitat at Tenaja Creek; transmission line construction may affect but would not likely adversely affect these species
Coastal California gnatcatcher	Towers could affect 1 acre of potential habitat along the northern section of the transmission line; removal of habitat may adversely affect this species	Construction of the northern substation could affect 3 acres of potential habitat; construction of transmission line towers could affect 0.5 acre of potential habitat near Temescal Wash; removal of habitat may adversely affect this species
Stephens' kangaroo rat	Towers could affect 3.25 acres and the northern substation could affect 25 acres within the Stephens' Kangaroo Rat Fee Assessment Area	Towers could affect 1.75 acres of potential Stephens' kangaroo rat habitat and the northern substation could affect 25 acres within the Stephens' Kangaroo Rat Fee Assessment Area
Developed recreation facilities	Would affect Wildomar OHV area and campground and these facilities would likely need to be closed during the first two years of construction (would be covered in the detailed site plan for construction)	Mid-slope alignment would avoid Wildomar OHV and campground locations; increased traffic due to construction would have minimal effects on users at these facilities

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Mid-Slope Alignment</b>
Dispersed recreation	Major effect on dispersed recreation would be in the vicinity of flight paths used by hang gliders; would present safety hazards; would result in considerable loss of hang gliding opportunities	The mid-slope alignment avoids some conflicts with hang gliding and FS land classifications where transmission line construction would be inconsistent with FS land management directives
Aesthetics	<p>Towers and corridors would be visible in the foreground, middleground and background; construction activities within the Cleveland National Forest would result in features which conflict with the Retention and Partial Retention VQO standards</p> <p>The linear features of the lines would contrast with the mountain and within the Cleveland National Forest be in conflict with the VQOs; the towers, conductors and resulting footprint of the corridor would be visible from highly traveled roadways</p>	<p>The alternative transmission line alignments would introduce line, colors, and textures into the landscape that do not currently exist and this would not be consistent with Retention VQO and would be slightly more visible from key viewpoints than the co-applicants' proposed alignment</p> <p>The linear features of the lines would contrast with the mountain and within the Cleveland National Forest be in conflict with the VQOs; the towers, conductors and resulting footprint of the corridor, would be visible from highly traveled roadways; also because the lines would be lower down on the mountain they would be closer to Lakeland Village and more visible from the community of Lake Elsinore</p>
Future recreation use	Transmission alignment would affect use by hang gliders of both launch and landing areas but avoids residential areas	Mid-slope alignment would reduce conflicts with hang gliding uses; construction could disrupt clay products quarry operations; could affect use of existing range allotments and grazing; also crosses about 12 miles of land designated for residential development under the General Plan and may make these location less desirable for development
Roads	About 11.1 acres of temporary access roads could be revegetated; it is estimated that about 7.6 miles of road would be needed to service 30 miles of transmission line	About 13.5 acres of roads could be revegetated; public use could adversely affect habitat along 9.3 miles of road

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Mid-Slope Alignment</b>
Property values	<p>Would adversely affect private property values up to 3 miles and 5 miles from where transmission alignment crosses or parallels private properties along northern portion and southern portion, respectively</p> <p>Northern segment could affect one prehistoric and two historic period archeological sites; southern portion would not effect any known sites, but southern substation would affect one prehistoric site and sites in unsurveyed areas</p>	<p>Would adversely affect private property values up to 4 miles and 9 miles from where transmission alignment crosses or parallels private properties along northern portion and southern portion, respectively</p> <p>Alignment has not been surveyed; could affect as yet unknown prehistoric sites</p>

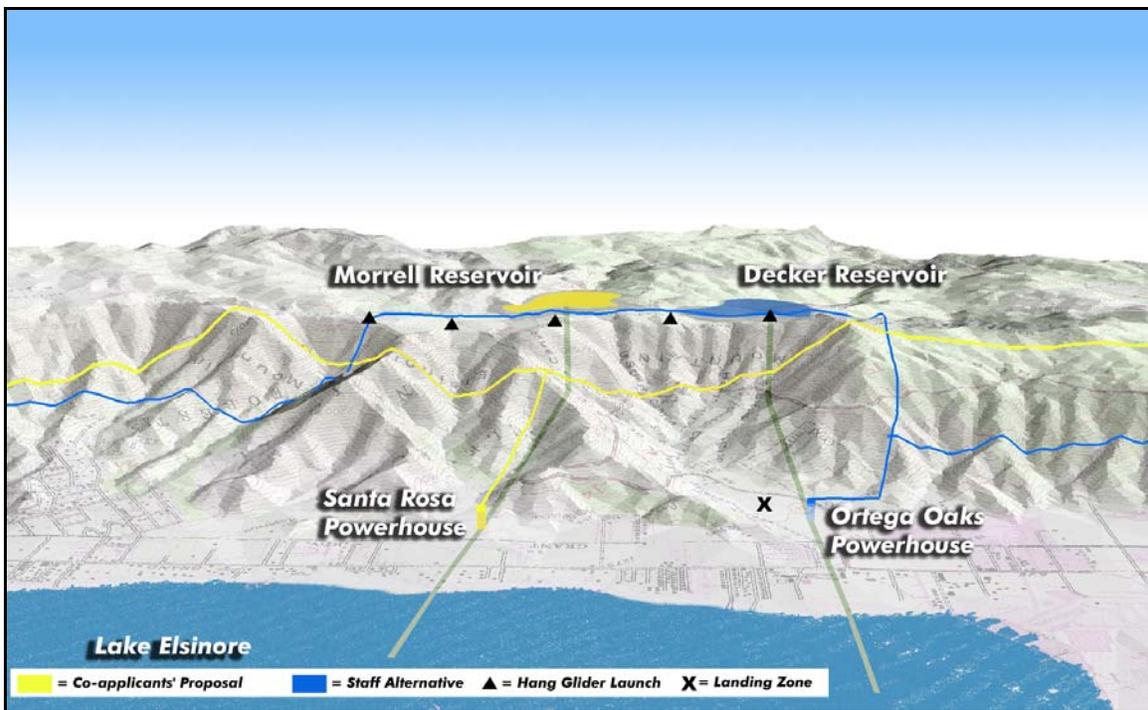


Figure 20. LEAPS Project—Three-dimensional view of the co-applicants' proposed and the staff alternative facility locations. Underground water conduits are shown from the upper reservoir to the powerhouse and from the powerhouse into Lake Elsinore.

### **5.1.1 Co-applicants' Proposed Action**

#### **Project Facilities**

- Construct an upper reservoir at Morrell Canyon based on the conceptual designs for alternate A.3.
- Construct a powerhouse at the Santa Rosa site based on the conceptual designs for the water conduit alternative H.3.
- Install a 500-kV line along the proposed transmission alignment.

#### **Geology and Soils**

- Retain a board of three or more qualified independent engineering consultants experienced in critical disciplines, such as geotechnical, mechanical, and civil engineering, to review the design specifications and construction of the project for safety and adequacy.
- Conduct additional geotechnical studies.
- Develop an erosion control plan prior to construction.
- Implement erosion control measures during construction.
- Develop and implement a plan for the design and construction of a system that would automatically detect conduit or penstock failure and, in the event of such a failure, immediately shut off flow in the conduit or penstock at the headworks.
- Develop and implement plans for clearing the upper reservoir area and re-vegetating disturbed areas with native plant species beneficial to wildlife prior to the start of any land-disturbing or land-clearing activities at the project.

#### **Water Resources**

- Develop and implement a upper reservoir and water conduit monitoring program to assess the effects of the upper reservoir liner and seepage collection systems, shafts, and tunnel on groundwater levels and water quality, including the installation of perimeter wells designed to establish groundwater levels and water quality prior to construction and to detect changes in groundwater levels and water quality after construction.
- Develop and implement a plan for installing drainage and flood control measures and any water detention structures to control storm run-off over the term of any license issued for the project.

- Pay an annual lake management fee to Elsinore Valley MWD to maintain Lake Elsinore at the minimum target elevation of 1,240 feet msl consistent with the goals of the Lake Elsinore Stabilization and Enhancement Project.<sup>74</sup>
- Develop and implement a revised lake operating plan for Lake Elsinore, addressing increased minimum lake levels, flood control implications, and water supply issues.
- Develop and implement a dam safety monitoring program.<sup>75</sup>
- Prepare an oil and hazardous substances pollution contingencies spill prevention control and countermeasures plan.
- Develop and implement a plan to monitor DO and temperature downstream of the tailrace in Lake Elsinore and in Temescal Wash during construction and operation.

### **Aquatic Resources**

- During construction drawdown, remove or reduce the existing fish population via netting or rotenone poisoning.
- Retain a qualified biologist or natural resource specialist to serve as an environmental construction monitor to ensure that incidental construction effects on biological resources are avoided or limited to the maximum feasible extent.
- Establish appropriate setbacks from streams, avoid sediment discharge, and implement BMPs identified by the USFS to avoid any effects on the existing steelhead recovery efforts in the San Mateo Watershed as part of the erosion control plan.
- Design and install physical barrier screens consistent with NMFS criteria in areas of underwater intakes to prevent impingement and entrainment.
- Establish limits of flow velocity rates of underwater intakes of less than 1.5 feet per second reduce impingement and entrainment of fish.

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<sup>74</sup> The co-applicants estimate this fee at \$1.8 million per year and indicate that it is subject to further negotiations with the Elsinore Valley MWD.

<sup>75</sup> This co-applicant-proposed measure is more of an administrative measure and would be coordinated with the Commission's Division of Dam Safety and Inspection and the California Department of Water Resources.

- Conduct monitoring for 1 year to determine the extent of fish entrainment and mortality at the Lake Elsinore intake/outlet structures, and implement and test behavioral avoidance devices if entrainment is significant.
- Reduce maximal operational drawdown during summer months following a winter with below-normal precipitation to control algal blooms that could result in fish kills.

### **Terrestrial Resources**

- Employ a qualified biologist and/or natural resource specialist to monitor construction activities and help prevent adverse effects on sensitive species or habitats.
- Conduct wetlands delineations and prepare habitat mitigation and management plans in consultation with the Corps, CDFG, and the USFS.
- Develop and implement a plan to prevent and control noxious weeds and exotic plants of concern in project-affected areas.
- Design and construct the transmission line to the standards outlined in 1996 by APLIC.
- Consult with the USFS and Interior to identify appropriate parcels for mitigation of habitat losses including 2:1 replacement ratio for about of 20 acres of oak woodlands and 31 acres of coastal sage scrub.
- Provide compensation of \$500 per acre for project effects within Stephens' Kangaroo Rat Fee Assessment Area.

### **Recreational Resources**

- Develop and implement a detailed site plan of construction sites and laydown areas relative to existing recreational facilities and specify contingencies for restricting public access to these areas and providing alternative facilities.
- Install fencing around the upper reservoir.
- Provide interpretive signage at the upper reservoir.
- Provide USFS with an ancillary structure that would complement the USFS firefighter's memorial along Ortega Highway.
- Grade, contour, and revegetate using native plants to return the site to pre-construction conditions or prepare the upper reservoir construction laydown area or another location for future development by the USFS or other entity as determined by the USFS.
- Relocate portions of the Morgan Trail (Forest Route 7-s-12) if the upper reservoir is located in Morrell Canyon.

- Develop and implement a recreation plan, including the construction of a botanical garden, and provision of powerhouse tours and other amenities at the Santa Rosa or Evergreen powerhouse location.
- Develop a hang glider landing site, provide for a community park, and public tours of the powerhouse if the powerhouse is located at the Ortega Oaks site and the proposed northern transmission alignment is used.
- Develop an annual fish stocking program for Lake Elsinore in consultation with FWS, CDFG, and LESJWA.

### **Land Use and Aesthetic Resources**

- Acquire and demolish the multi-family residences nearest the proposed powerhouse site to address potential effects on residents during construction.
- Acquire fee simple or leasehold interests in lands needed for project purposes by voluntary sale or conveyance to the extent possible.
- Prepare a plan to avoid or minimize disturbances to the quality of the existing visual resource of the project area.
- Consult with the Riverside County FCWCD and formulate and implement plans to avoid adversely affecting existing drainage facilities and to control any project-related drainage.
- Achieve a balance of excavation and fill materials at the project site by using excavated materials from the intake, powerhouse, penstock, tunnel, and upper reservoir excavations in the construction of upper reservoir dam and embankments.
- Participate in the installation of traffic signal at the Grand/Ortega intersection.
- If the Ortega Oaks power house location is selected, dedicate and improve any additional right-of-way along Ortega Highway that would be required to accommodate existing or anticipated future traffic volumes.
- Develop and implement traffic management and control plans to address construction traffic and access to and from active construction sites.
- Install temporary roads on National Forest System lands only with USFS approval and according to USFS policies and remove, recontour, and revegetate roads following construction, except where the USFS authorizes continued use of the roads for transmission line maintenance.
- Conduct all construction activities in accordance with the noise element of the County of Riverside Comprehensive General Plan, city of Elsinore construction noise standards and any applicable codes or standards.

## Cultural Resources

- Consult with the SHPO or USFS at least 180 days prior to commencement of any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in the license, including recreational development at the project.<sup>76</sup>
- If previously unidentified archaeological or historic properties are discovered during the course of constructing or developing the project works or other facilities at the project, stop all land-clearing and land-disturbing activities in the vicinity of such properties and consult with the SHPO.<sup>77</sup>
- Implement measures proposed in the draft HPMP developed in consultation with the SHPO and USFS and filed with Commission, including provisions for the following: (1) completing pre-construction archaeological surveys in the APE; (2) determining the need for intensive surveys; (3) monitoring historic properties during construction; (4) appointing a tribal liaison; (5) studying the potential effects of ground acceleration on historic buildings; (6) developing a program to monitor archaeological sites for 5 years; and (7) developing a public interpretative program.
- Conduct paleontological monitoring of earth-moving activities on a part-time basis in locations that are sensitive for paleontological resources.
- Prepare any recovered fossil remains to the point of identification and prepare them for curation by the Los Angeles County Museum or San Bernardino County Museum.

### 5.1.2 Staff Alternative

The staff alternative consists of an upper reservoir at the Decker Canyon site, a powerhouse at the Ortega Oaks site, and transmission lines that follow the mid-slope transmission alignment. The staff alternative includes most of the co-applicants' environmental measures, except for their proposed recreational measures associated with the Santa Rosa powerhouse and Morrell Canyon upper reservoir site, the proposed demolition of multi-family housing adjacent to the Santa Rosa powerhouse site, the measure to remove or reduce the existing fish population via netting or rotenone

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<sup>76</sup> If activity is on USFS lands, also consult with the USFS at least 180 days prior to commencement of any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in the license, including recreational development at the project.

<sup>77</sup> Also consult with the USFS, if archeological site or historic property is identified on FS lands.

poisoning during construction, and the installation of fish screens. We have expanded the scope, added consultation requirements or otherwise modified the co-applicant-proposed measures for erosion control, water quality monitoring for the conveyance system, habitat mitigation ratios, noxious weed control, avian protection guidelines, construction monitoring in aquatic and terrestrial environments, and recreational measures at the Ortega Oaks powerhouse location. The staff alternative would include the following modified and additional environmental measures.

### **Project Facilities**

- Construct an upper reservoir at Decker Canyon based on the conceptual designs for alternative B.2.
- Construct a powerhouse at the Ortega Oaks site.
- Install a 500-kV transmission line along the mid-slope transmission alignment.

### **Geology and Soils**

- Include specific provisions in the proposed erosion control plan that apply erosion control measures and BMPs to all construction locations including the upper reservoir, drainage and flood control locations, penstock tunnels, powerhouse, tailrace, inlet/outlet structure, transmission lines, and all associated construction laydown areas and temporary on-site borrow areas and for all subsequent ground disturbing activities over the term of the license.

### **Water Resources**

- Include specific remediation measures in the proposed upper reservoir and water conduit monitoring program to allow immediate action to be taken should water and non-native aquatic species be released from the upper reservoir into the San Juan Creek drainage.
- Include specific provisions in the proposed upper reservoir and water conduit monitoring program to monitor groundwater levels during construction and operation of the water conduits including the tunnels and penstocks that convey water between the upper reservoir and the powerhouse, specifying remedial actions if monitoring reveals changes in groundwater levels or seepage into the tunnels.

### **Aquatic Resources**

- Develop and implement a detailed plan specifying the activities, locations, methods, and schedules that the qualified environmental construction monitor would use to monitor construction activities in aquatic environments.
- In coordination and consultation with the LESJWA, develop and implement a plan to enhance nearshore habitat that will aid in the establishment of naturally

sustaining populations of desirable sport fish. The plan may include installation of physical structures for spawning and rearing, measures to protect or enhance nearshore vegetation, and placement of spawning gravels to increase natural recruitment.

### **Terrestrial Resources**

- Develop and implement a detailed plan specifying activities, locations, methods and schedules the qualified environmental construction monitor would use to monitor construction in terrestrial environments.
- Implement the proposed plan to prevent and control noxious weeds and exotic plants of concern in project-affected areas during construction and over the term of any license issued for the project.
- Develop and implement a Lake Elsinore monitoring and remediation plan to eliminate or reduce project-related effects, if any are identified, on nesting shorebirds, waterfowl, and other birds.
- Implement the proposed avian protection plan consistent with April 2005 avian protection plan guidelines and over the term of any license issued for the project.
- Conduct additional pre-construction special status plant surveys at transmission line tower sites and along transmission alignment access roads, consistent with MSHCP.
- Consult with the USFS, Interior, CDFG, and Riverside County to identify appropriate mitigation of habitat losses including 5:1 replacement ratio for about 5 acres of oak woodlands; 3:1 replacement ratio for about 6 acres of coastal sage scrub, and 1:1 replacement ratio for about 216 acres of chaparral and grasslands.
- Consult with the USFS annually to review the list of special status species, re-survey areas of known special species occurrence, and survey new areas as needed.
- Develop and implement an annual employee awareness training program regarding special status plants and animals.
- Consult with the FWS during the process of developing final design drawings on measures to protect fish and wildlife resources.

### **Recreational Resources**

- Develop and implement a safety during construction plan identifying potential hazard areas near public roads, trails, and recreation areas and facilities, and measures necessary to protect public safety and conduct daily inspections on

National Forest System lands for fire plan compliance, public safety, and environmental protection.

- In consultation with the USFS, develop and implement a plan for a recreational facility at the construction laydown area used during construction of the upper reservoir.
- Develop and implement a recreation plan that provides for transfer of cleared land to a local entity and development of recreation facilities at the powerhouse location and O&M funding sufficient to operate the facility.

### **Land Use and Aesthetics**

- Develop and implement a plan to determine the toxicity of sediments in Lake Elsinore and to provide for appropriate handling and disposal if toxins are identified in the lakebed sediment prior to the commencement of the construction of the intake/outlet structure in Lake Elsinore.
- Achieve a balance of excavation and fill materials at the Decker Canyon reservoir site through additional excavation and dispose of all excavated materials from all other project facilities off site.
- Include in the proposed road and traffic management plan applicable on National Forest System lands, provisions addressing road construction, realignment, maintenance, use, and closure and identifying the co-applicants' responsibility for road maintenance and repair costs.
- Include in the proposed road and traffic management plan applicable on non-National Forest System lands, provisions addressing road construction, realignment, maintenance, use, and closure, as well as land management policies and practices associated with project-related roads during both construction and operations.

### **Cultural Resources**

- Revise the draft HPMP in consultation with the SHPO, Tribes, BIA, and the USFS and file a final HPMP for Commission approval within 1 year of license issuance.

Finally, Commission staff notes that the staff alternative includes most but not all of the preliminary 4(e) conditions specified by the USFS and described in section 2.6.2, *USFS Section 4(e) Conditions*. Commission staff has modified the following measure:

- Ensure all transmission facilities conform to APLIC et al. (1996) guidelines, including power lines to reduce risks of bird strikes. Commission staff would specify the April 2005 avian protection plan guidelines.

## **5.2 DISCUSSION OF KEY ISSUES**

### **5.2.1 Project Facilities**

#### **Upper Reservoir**

The co-applicants propose to locate the upper reservoir in Morrell Canyon. Our analysis shows that construction of an upper reservoir at the Morrell Canyon site would disrupt flows in the San Juan Creek drainage, displace Lion Spring, and remove more than 20 acres of wetlands and southern coast live oak riparian forest. Oak woodlands are considered to support higher levels of biodiversity than any other terrestrial ecosystem in California and would be difficult to replace at the project site. Construction at this location would also remove 120 acres of chamise chaparral. Although abundant in the vicinity, conversion of chaparral to project use would reduce habitat available for the Santa Ana mountain lion population, which is at risk of extirpation because of rapid urban development. Recreational use at this location would be adversely affected because Morgan Trail, which accesses the San Mateo Wilderness Area, would need to be relocated either temporarily or permanently depending on the final design of this facility and because two of the most-used hang gliding launch sites (E and Edwards) would be closed or subjected to use restrictions during construction.

To avoid these potential adverse effects, the staff alternative would locate the upper reservoir in Decker Canyon. There would be no need to install a stream bypass conveyance system at this location because the footprint of the reservoir is situated at the very top of the watershed, with no established stream network entering the site. Only 4.5 acres of wetlands and 5 acres of southern coastal live oak would be affected and less off-site mitigation for habitat loss would be required, and no rare plant species would be affected. Locating the upper reservoir at the Decker Canyon location would avoid construction effects on the use of the E and Edwards hang gliding launch sites.

Table 53 compares the potential effects at the proposed Morrell Canyon and Decker Canyon locations. We estimate that the overall energy facility and transmission line, including an upper reservoir at Decker Canyon, would have a cost of construction (which include development costs but excludes the license and environmental measures) of \$1,301,813,000, about \$26,166,200 more than our estimate for the cost associated with such a facility at the proposed Morrell Canyon location. Additionally, we estimate that significant water control costs at Morrell Canyon given its upstream drainage, upstream and groundwater collection systems, and potentially higher liner costs could add more than \$18,000,000 to the cost, decreasing the cost advantage of the co-applicants' proposed alternative to about \$8,166,200. Because these estimates are based on preliminary designs and cost estimates and additional geotechnical investigations may identify other issues, we consider the cost of construction at either site to be within a comparable range.

## **Powerhouse**

The proposed Santa Rosa site and the staff alternative Ortega Oaks sites have different effects on vegetation, hang gliding activities, land use, aesthetics, and cultural resources. Table 53 compares the effects at the proposed Santa Rosa, staff alternative Ortega Oaks, and optional Evergreen powerhouse locations. Coastal sage scrub provides habitat for numerous USFS special status plant species. Construction of the powerhouse at the co-applicants' proposed Santa Rosa location would affect about 30 acres of coastal sage scrub whereas construction at the staff alternative Ortega Oaks location would affect only about 5 acres of coastal sage scrub.

As we say in the following section on transmission alignments, construction at the co-applicants' proposed Santa Rosa location would result in transmission lines crossing between the hang glider launch sites and informal landing site, creating unsafe conditions that would significantly affect the majority of hang gliders using these sites over the long-term. Locating the powerhouse and substation at the staff alternative Ortega Oaks site in combination with the staff alternative mid-slope transmission alignment would affect hang gliding activities during construction but would offer the opportunity to minimize effects on hang gliding activities over the long-term by not placing the transmission line between the launch sites and landing site.

The co-applicants propose to raze an apartment complex adjacent to the Santa Rosa location and to relocate residents to avoid conflicts with incompatible adjacent land uses. Under the staff alternative, demolition and relocation would not occur. Under the co-applicants' proposal construction activity and the above ground substation adjacent to the underground powerhouse would be visible to residents of adjacent residential and customers of adjacent commercial properties. Under the staff alternative, the construction activity and the above ground substation adjacent to the underground Ortega Oaks powerhouse would be visible to more people, including residents of adjacent properties as well as to people who travel on the heavily used Ortega Highway. Ground disturbance at both powerhouse locations could affect prehistoric archaeological sites; however construction at the Santa Rosa location also would affect two historic archaeological sites and two historic buildings.

The co-applicants' proposed location of the powerhouse at the Santa Rosa location is premised on the construction of the upper reservoir at the Morrell Canyon location. The co-applicants indicate that the Ortega Oaks powerhouse location would be the preferred powerhouse location if the Decker Canyon site were selected as the location for the upper reservoir. The co-applicants indicate that the Santa Rosa location would be least affected by existing faults. Our analysis of the available information indicates that construction and operation at all three powerhouse locations could potentially be affected by faults and seismic considerations; therefore, seismic considerations should not be a determining factor in selecting among the proposed and alternative powerhouse locations. The Ortega Oaks site would provide the most direct feasible connection to an upper

reservoir at the Decker Canyon site. The relative costs of construction of a powerhouse at the proposed or alternative locations would be comparable.

### **Transmission Alignment**

Table 53 compares the effects at the co-applicants' proposed transmission alignment and the mid-slope transmission alignment. The co-applicants propose an above-ground transmission alignment that would traverse mostly National Forest System lands on relatively inaccessible, rugged, and steep terrain of the Elsinore Mountains and surrounding foothills. Hang gliding advocates have raised concerns about the potential effects of the proposed transmission line would have on the current hang gliding opportunities in the city of Lake Elsinore and Riverside County. We conclude in section 3.3.8 that the hang gliding industry may contribute about \$1 million per year to the local economy. The co-applicants' proposed alignment is the least visible from key viewpoints in the wilderness area, along Ortega Highway, and from Lake Elsinore but the proposed alignment would interfere with USFS fire suppression activities and would eliminate the use of popular hang gliding launch and landing sites. The USFS and Commission staff developed a mid-slope alignment that would run parallel but east of the proposed alignment and that would run west of South Main Divide Road (between the road and the upper reservoir location) to avoid potential conflicts with fire suppression activities and hang gliding use. The mid-slope alignment avoids direct interference with the use of the E and Edwards launch sites and provides sufficient clearance between the launch sites and the informal landing site for the safe use of the area by different skill level users. However, the mid-slope alignment is more visible than the co-applicants' proposed alignment and would traverse more private properties, many of which are in holdings within the boundaries of the Cleveland National Forest. The proposed and mid-slope transmission line alignments are about the same length and would involve comparable costs if constructed above ground for their entire lengths.

As we said in section 2.5.3, we also considered placing portions of the transmission line underground to avoid effects on hang gliding activities. We considered underground lines in the vicinity of either the proposed Santa Rosa or the Ortega Oaks powerhouse location to a connection with either the proposed or mid-slope transmission alignments. We also considered an underground line extending directly west from the Santa Rosa powerhouse to the Morrell Canyon upper reservoir parallel to the water conduits. To avoid placing an above ground transmission line between the launch sites and an informal landing site either at Ortega Oaks or at another location between the foothills and Lake Elsinore, an underground line would need to extend a distance of about 1.5 miles south from the Ortega Oaks powerhouse. Assuming a cost of about \$18 million per mile, we estimate the added cost to bury the line for a sufficient distance to avoid conflicts with hang gliders to be about \$25 million or about \$3.6 million annually. At the Santa Rosa powerhouse, the underground line would need to extend about a mile north and a half mile south, as well as one and a half miles west (upslope) for a total of 3 miles at a cost of about \$54 million, or almost \$10 million annually. We

do not include underground variations in the staff alternative because of the considerable per mile cost and the higher maintenance costs associated with underground transmission lines. We estimate that the cost to construct the co-applicants' proposed transmission alignment would be \$327,271,800. The staff alternative mid-slope alignment would add about 1.2 miles to the overall length of the co-applicants' proposed transmission line at a cost of \$2,741,200 for a total cost of \$330,013,000. Preserving the existing hang gliding opportunities at the project site would justify the added costs for the slightly longer above-ground transmission alignment.

### **5.2.2 Construction Oversight**

The co-applicants would be required to submit plans and specifications and a supporting design report prior to construction. The plans and specifications would describe how the project will be constructed and the supporting design report would ensure the proposed project structures are designed in accordance with the Commission's Engineering Guidelines and sound engineering practice. All project construction would be overseen by quality control personnel, independent of the contractor, as well as engineers from the Commission's Division of Dam Safety and Inspections – San Francisco Regional Office.

The co-applicants' proposal to retain a board of three qualified independent engineering consultants experienced in critical hydropower construction disciplines would ensure that design specifications are appropriate to the site and that construction would proceed in a reasonable and safe manner under either alternative. This is particularly critical given the additional geotechnical studies proposed by the co-applicants and the need to develop final design drawings for the project features included in the staff alternative. We estimate that it would cost about \$1,500,000 for the additional geotechnical and engineering design and review board services prior to and during construction of the project under either alternative, or \$211,600 annually.

### **5.2.3 Geology and Soils**

The potential for slope erosion and sediment transport into streams exists at the proposed project construction sites under both alternatives. The co-applicants' proposed erosion control plan would include measures and BMPs designed to avoid or minimize erosion at all construction locations during project construction. BMPs would include the co-applicants' proposal for appropriate setbacks from streams and avoidance of sediment discharges into streams to avoid effects on the existing steelhead recovery efforts in the San Mateo Watershed.

USFS preliminary 4(e) condition no. 15 specifies a plan that includes measures to control erosion, stream sedimentation, dust, and soil mass movement during construction and operation of the project. Development and implementation of an erosion control plan that applies erosion control measures and BMPs to all construction locations (including the upper reservoir, drainage and flood control locations, penstock tunnels, powerhouse, tailrace, inlet/outlet structure, transmission lines, and all associated construction laydown

areas and temporary on-site borrow areas during project construction) would minimize the effects of erosion on water resources and other environmental resources in the project area.

A Quality Control and Inspection Program, including the co-applicants' proposed erosion and sediment control plan for construction activities, would be submitted prior to construction under the staff alternative. The staff alternative also would specify that the erosion control plan be implemented for any subsequent maintenance and ground-disturbing activities over the term of any license issued for the project.

The potential exists for high-pressure water conduits or penstock to fail. The co-applicants' proposed system to detect a water conduit or penstock failure and immediately shut off flow in the conduit or penstock at the headworks would limit the potential effects of erosion at and down slope of the failure point.

Removing vegetative cover during construction could result in the loss of native plants beneficial to wildlife and could result in surface erosion at the construction sites. To address this concern, the co-applicants propose two plans in conjunction with the erosion control plan. These plans address reservoir clearing and revegetation of disturbed soils. The reservoir clearing plan would identify the location and acres of lands to be cleared, describe the vegetation to be cleared, describe resource management goals related to fish and wildlife enhancement, and describe and map disposal methods and locations. The revegetation plan would address plant species and densities to be used, fertilization and irrigation requirements, an effectiveness monitoring program, provision for filing monitoring reports, and procedures to be followed if monitoring reveals that revegetation is not successful. These plans would be valuable in minimizing adverse effects on existing soil and botanical resources and helping to re-establish appropriate plant communities. These plans would be consistent with USFS preliminary 4(e) condition no. 15, as described in section 3.3.1.2.

In section 3.3.4.2, we conclude that adding success criteria for replanting would improve the potential for restoring vegetation to its existing condition. Therefore, under the staff alternative the plan would specify that the co-applicants add a specific measure to the revegetation plan to identify criteria for success (e.g., percent coverage of desired species at specified time intervals) to provide the basis for determining which vegetation parameters to monitor as revegetation proceeds.

Under the staff alternative, the co-applicants would add a specific measure to the clearing plan to address stockpiling as clearing takes place and replacing topsoil after construction is completed. This step would provide additional support for re-establishment of native plant communities in native soils.

We estimate that the cost of developing the co-applicants' proposed erosion control plan would be about \$32,500 annually and the cost to implement the proposed erosion control measures and BMPs during the construction of the project as defined in the staff alternative would be \$308,600 annually. We estimate that the additional cost to

implement the plan during the term of any license issued would be \$9,900. We estimate that the cost of developing and maintaining the co-applicants' proposed conduit shut-down system would be \$12,800 annually; the cost of their vegetative clearing plan would be \$4,900 annually; and the cost of the revegetation plan would be \$4,200.

#### **5.2.4 Water Resources**

##### **Revised Lake Operating Plan**

The co-applicants would pay an annual fee to the Elsinore Valley MWD to provide make-up water necessary to maintain lake elevations at 1,240 feet msl or above and would typically operate the project between lake elevations 1,240 and 1,247 feet msl under both alternatives.

The co-applicants' proposal to develop a revised lake operating plan for Lake Elsinore would ensure that the measures related to make-up water, flood control, and project operations, in combination, would not produce unexpected consequences. Under the staff alternative the plan would, at a minimum, specify the amount and timing of minimum inflow for the make-up water and the point of discharge. In section 3.3.2.2, we conclude that the added volume of water from pumped storage operations (5,500 acre-feet) during flood seasons could raise the lake elevation several feet beyond the 1,249-foot msl elevation. Higher elevations could increase shoreline flooding and exacerbate the magnitude of spills into Temescal Wash and the Back Basin.

The co-applicants propose to limit drawdowns in summer months following winters of below-normal precipitation to control algal blooms that have resulted in fish kills. However, we conclude in section 3.3.3.2 that by maintaining the minimum target elevation at 1,240 feet msl, as proposed by the co-applicants, operation of the project would not contribute to future algae blooms. As a result, it would not be necessary to include the proposed measure to limit drawdowns in summer months following winters of below-normal precipitation in the revised lake operating plan under either alternative.

The co-applicants indicate that the annual lake management fee would be \$1.872 million subject to further negotiation. We estimate that the cost of developing and implementing a lake operating plan over the term of any license issued under either alternative would be \$28,200 annually. Developing and implementing a drainage and flood control plan as proposed by the co-applicants' proposal would cost an additional \$14,100 annually. As we said in section 3.3.2.2, these measures would assure that the reservoir levels would be within the operating range of the proposed project.

##### **Preventing Interbasin Water Transfers**

The storage of low quality Lake Elsinore water in the upper reservoir within the San Juan Creek Watershed has the potential to negatively affect water quality in the San Juan Creek. The co-applicants would monitor water quality and liner performance as part

of their proposed upper reservoir and water conduit monitoring program (see discussion under Groundwater Monitoring). The co-applicants' plan to monitor the effectiveness of the drainage system/reservoir liner for the protection of existing flow conditions at the upper reservoir would provide for an early detection of leakage from the upper reservoir liner and drain system. This plan would meet most of the objectives of Interior's recommendation for monitoring and maintaining the upper reservoir to eliminate or reduce release of water and non-native aquatic species from the upper reservoir into the San Juan Creek drainage. However, the co-applicants' plan is silent with regard to steps to take if monitoring shows that the liner and drain are not effective. In section 3.3.2.2, we conclude that advanced planning for remedial steps would allow for a rapid response in the unlikely event of leakage. Under the staff alternative, at this plan also would include specific remediation measures that could be taken. Our estimate for the cost of this plan is provided at the end of the discussion on groundwater monitoring.

### **Groundwater Monitoring**

The co-applicants identified groundwater monitoring as an important consideration in their technical reports and description of anticipated affects. They propose an upper reservoir and water conduit (tunnels, shafts, and penstocks) monitoring program that would assess the affects of project construction on ground water levels and water quality. The co-applicants' program calls for gathering information on groundwater levels and water quality prior to the start of construction, monitoring groundwater levels during project construction, and taking remedial steps to grout and seal any observed seeps during construction. Because the majority of the water conduits would be lined, we would not expect excessive seepage during project operation. However, seepage could occur. Under the staff alternative, the monitoring program would specify continued monitoring of ground water levels over the term of any license issued for the project and would specify what remedial steps would be taken should changes in groundwater levels be detected.

Developing and implementing the co-applicants' groundwater monitoring program would have a capital cost of \$500,000 that would be incurred during the construction period and during the first 2 years of project operation. This would result in an annual cost of \$70,500. Monitoring groundwater levels and water quality over the term of any license issued as called for under the staff alternative would add a cost of \$3,500. The additional cost would be justified to ensure that the reservoir and tunnel linings are effective in preventing seepage that could adversely affect groundwater levels and water quality in surface streams.

### **Water Quality Monitoring**

Project operations could affect temperature, DO, and nutrient cycling occurring in Lake Elsinore under both alternatives. In section 3.3.2.2, we conclude that operating the project would slightly improve DO levels in Lake Elsinore as a result of the mixing of

denser, cooler water from the upper reservoir with the warmer water in Lake Elsinore. The co-applicants propose to monitor DO and water temperature in the tailrace area and Temescal Wash during and after construction of the project. However, the actual effect of project operations may be difficult to separate from the improvements in DO from implementation of the aeration program under the Lake Elsinore Stabilization and Enhancement Project. We estimate that the annual cost of water quality monitoring would be \$31,200.

### **Spill Prevention Plan**

The potential for the release of fuels, oils, lubricants, and other hazardous substances exists at the sites of project features during construction and during operation of the project under both alternatives. The co-applicants' proposal to prepare an oil and hazardous substance spill prevention control plan would prevent and minimize any effects associated with the handling of hazardous substances during project construction and operation. We estimate the cost to develop and implement this plan would be \$1,400.

## **5.2.5 Aquatic Resources**

### **Environmental Construction Monitor**

The potential for slope erosion, sediment transport into streams, and hazardous substance spills exists at all the proposed construction sites under both alternatives. To address these concerns, the co-applicants propose to develop and implement a detailed plan for monitoring construction activities in aquatic and terrestrial environments by a qualified environmental construction monitor. USFS preliminary 4(e) condition no. 33 specifies that this plan should specify the activities, locations, and frequency of the monitoring that would occur. We conclude in section 3.3.3.2 that more specifics are needed to ensure that all the activities, locations, and frequencies of inspections are commensurate with the potential effects of project construction. Under the staff alternative, the detailed plan would describe the specific monitoring activities, locations, and frequencies. We estimate that the co-applicants' annual costs for environmental monitoring during construction would be \$18,300 for aquatic resources and \$42,300 for terrestrial resources. We estimate that the annual cost for developing our more detailed plan would be about \$60,600, or about \$2,800 more than the co-applicants' proposal for construction monitoring. These cost estimates would be the same under either alternative.

### **Entrainment Prevention Measures**

Operation of the project has the potential to entrain fish at the intake/outlet structure in Lake Elsinore. The co-applicants' propose a program to install screens in the areas of the intake structures, to monitor entrainment over a 1-year period, and to test and implement devices that would decrease entrainment if significant entrainment is

documented, and reduce the potential project-related mortality of fish in Lake Elsinore. The co-applicants propose to adhere to the NOAA Fisheries' design criteria for salmonids in designing and installing the intake fish screen. Lake Elsinore contains resident fish such as carp, threadfin shad, bass and crappie, and the LESJWA intends to stock largemouth bass, black crappie, Sacramento perch, and bluegill. Screen design criteria for these resident species have not been studied, however, assuming that NMFS approach velocity criteria of 0.8 feet per second were used (fish longer than 2.36 inches), the screens would need to be quite large in relation to the tailrace tunnels, and are likely not feasible for the Lake Elsinore Project. Without screens, the co-applicants state the approach velocity for the intakes will range from 1.5 to 1.8 cfs and entrainment would occur.

We estimate that the co-applicants' annual cost to design and install fish screens would be between \$4 and \$15 million for each tailrace tunnel, based on cost information provided by WDFW (2005). Assuming costs near the low end of the range and adding \$10,000 per year for O&M results in an annual cost of \$1,138,800. We estimate the cost of additional consultation with the agencies would add about \$1,400 annually.

Besides screening, other measures to provide entrainment could be considered. However, the costs of implementation of other behavioral devices cannot be estimated at this time, as it is not known which species might need to be targeted, such devices are highly dependent upon site-specific characteristics, and are as yet highly experimental and costly.

As discussed in section 3.3.3, *Fisheries Resources*, without more information on the exact location, distance from shore, depth and orientation of the intake/outlet structure to the surface and shore we can only generalize the potential impacts to the Lake Elsinore fishery from entrainment. If the intake structure were to be placed on the shoreline where juvenile fish would encounter the intake while foraging, spawning or cruising, the likelihood for entrainment is higher than if the structure were placed farther away from shore where juvenile fish are less likely to be found. Also, we note that many of the sport fish in the lake will continue to originate from stocking efforts, and most will be large enough to avoid entrainment, so that project effects on adult stocks is likely to be small. In addition, unlike river systems, the intake/outlet structure area is small in relation to the overall size of the lake, and fish would need to actively swim into the area in order to be vulnerable to entrainment. Therefore the likelihood of significant impacts from entrainment is low.

Given the relatively high costs and technical challenges of installing intake screens and/or experimental behavioral devices, these are not included in the staff alternative. In lieu of physical fish barriers or screens, the staff alternative includes measures to improve nearshore habitat including the establishment of aquatic and emergent vegetation, placement of log cribs and/or brush structures, placing spawning gravels where appropriate and providing spawning benches for bass as described in the LESJWA Fisheries Management Plan. Coordinating activities with the LEWJWA and CDFG

would help to ensure that activities are consistent with local and regional efforts to improve the sport fishery in Lake Elsinore. We estimate that the co-applicants' would incur a one-time cost of \$200,000 along with an annual O&M cost of \$10,000 to participate in the installation of habitat enhancements in Lake Elsinore as part of the Fish Management Plan resulting in an additional annual cost of \$38,200. Monitoring sports fish for entrainment and mortality as proposed by co-applicants would add an annual cost of \$9,300.

## **5.2.6 Terrestrial Resources**

### **Special Status Plants and Animals**

The co-applicants propose to employ a construction monitor to assist in identifying measures to protect native plants and wildlife, starting with pre-design conferencing and continuing through completion of the project. Interior's recommendation would provide specifically for consultation with FWS during project design to identify measures that may be needed to protect fish and wildlife. Implementation of USFS preliminary 4(e) condition nos. 30 and 31 would continue these benefits to terrestrial resources through the term of the license by providing for annual employee awareness training, annual review of species' status, and regular surveys to evaluate project effects on special status species through any new license period.

The staff alternative includes pre-construction surveys for special status plants in areas that have not been covered yet or that have not been thoroughly covered during previous surveys. The measures identified above would provide adequate protection for special status plants and animals, including federally listed species, from project design through any new license period. These actions would be consistent with Interior's request for consultation with FWS in designing measures to protect fish and wildlife.

Interior's recommendation, as written, that the co-applicants immediately halt project construction or operation if situations arise where fish or wildlife are being harmed or endangered, does not define what would constitute such an emergency or specify methods for determining whether harm or endangerment are occurring. This concern would be appropriately addressed, under either alternative, in the construction monitoring plan described above.

We estimate that the annual cost of the staff alternative measures for monitoring special status plants and animals would be about \$14,100 for pre-construction surveys; \$6,200 for annual reviews of species status; \$3,900 for re-surveying periodically (every 10 years); \$11,400 annually for employee awareness training, or about \$35,600 annually for all four measures.

### **Noxious Weeds and Exotic Plants**

The co-applicants propose to design and implement an integrated pest management plan to prevent the introduction of weeds during construction and to control

any populations of weeds that are identified near construction sites during project implementation. USFS preliminary 4(e) condition no. 34 is very similar, specifying that the co-applicants should consult with the USFS to develop and implement a plan to monitor and control noxious weeds and non-native invasive species, but the USFS specifies this plan should be continued through any license period. USFS also indicates that the weed management plan should be consistent with guidance provided in the Cleveland National Forest Land Management Plan, including consulting with USFS to design and conduct an invasive non-native plant and noxious weed risk assessment, using weed lists that are current at the time of survey (USFS, 2005b). Implementation of USFS preliminary 4(e) condition no. 30, which provides for annual employee awareness training, would apply to noxious weeds and invasive non-native plants, as well as to special status plants, as described above.

Although the co-applicants may not propose to construct any new project features during the license period, routine project maintenance could cause ground disturbance at project facilities, and project-related traffic would pose a risk of introducing and spreading weeds. Public use of any access roads would have an especially high potential for adverse effects because it would likely be difficult to control. Implementation of a noxious weed management plan throughout the term of any new license for both USFS and non-USFS lands within the project boundary would reduce these risks and help to protect native plant communities and wildlife habitat values. This approach would minimize planning costs and would provide coverage for weeds and invasive exotic plants throughout the project area, as a whole.

We estimate the annual cost of developing and implementing the co-applicants' noxious weed control plan would be \$14,100. We estimate the additional annual cost of developing and implementing the plan under the staff alternative would be \$22,800.

### **Habitat Mitigation**

The co-applicants propose to provide mitigation for the loss of high-value habitats at a ratio of 2:1 for oak woodlands and 1:1 for coastal sage scrub. The co-applicants do not propose mitigation for habitats, such as chamise chaparral and non-native grassland, because they are abundant in the project area. The co-applicants propose to mitigate wetland and riparian habitat effects. They would conduct formal wetland delineations when the final location of each project feature has been determined, and then prepare a habitat mitigation management plan for approval by the Corps, CDFG, and the USFS. We estimate the annual cost for the co-applicants' plan would be \$15,200.

Interior recommends that the co-applicants evaluate consistency of the project with the existing MSHCP and Stephens' Kangaroo Rat HCP, and with the North County MSHCP, which is under development. Interior recommends the co-applicants conduct an in-depth equivalency analysis to determine adequate mitigation ratios for effects that may occur within the MSHCP area. Interior indicates that in these areas the minimum ratio for mitigation would be 1:1.

The USFS indicates that an appropriate mitigation ratio would be 5:1 for oak woodlands and 3:1 for coastal sage scrub based on the rarity of these habitats in the landscape, their value in supporting native wildlife populations, and the difficulty in replacing them (personal communication, K. Fletcher, District Ranger, Trabuco Ranger District, Corona, CA, with E. McLanahan, Senior Terrestrial Biologist, Meridian Environmental, Seattle, WA, on October 17, 2005). Mitigation ratios for more common habitats, including chaparral and non-native grasslands, would be 1:1.

Although chamise chaparral and non-native grasslands vegetation cover types are currently abundant in the project area and in southern California, they provide habitat for native plants and wildlife, including many special status species. They are undergoing rapid development as a result of human population growth. Replacing them at a 1:1 mitigation ratio would reduce the project's contribution to cumulative habitat loss. The staff alternative includes mitigation at a minimum ratio of 5:1 for oak woodlands because they are a key element in supporting biodiversity in the project area and because they are extremely difficult to replace. The staff alternative also includes mitigation at a minimum ratio of 3:1 for coastal sage scrub, as it also is a critical component of biodiversity, although somewhat easier to replace than oak woodlands.

At this point, we cannot quantify the exact acreage of particular habitat types that would be affected by access roads needed for construction and maintenance of the transmission line. We assume 7.6 miles of road and 10.3 miles of road would be constructed for the Morrell Canyon site and Decker Canyon site respectively, and at a minimum width of 12 feet, about 11.1 acres with the Morrell Canyon site and 15 acres with the Decker Canyon site of habitat would be affected. We also assume that all temporary roads would be permanently closed and revegetated.

The mitigation ratio would be consistent with Interior's, in terms of compensation ratios, but would establish higher minimum mitigation ratios for higher-value habitats, consistent with USFS' comments. This recommendation may not be consistent with Interior's recommendation regarding the need for an equivalency analysis. We conclude that the establishment of higher minimum mitigation ratios would reduce the need for intensive, process-oriented analysis and allow more mitigation dollars to be spent on habitat protection. We cannot determine whether the recommendation would meet Interior's objectives regarding consistency of the LEAPS Project with the North County MSHCP because that plan is not yet complete.

Under the staff alternative the co-applicants would conduct formal wetland delineations when the location of each project feature has been determined. The co-applicants would also consult with the Corps regarding formal delineation of effects on Lake Elsinore. When the delineations are complete, the co-applicants would consult with the agencies to develop and implement a habitat mitigation management plan. The habitat mitigation management plan would focus to the extent possible on replacing wetland acreage, functions, and values in-kind and on site. Where this is not possible,

habitats associated with Lake Elsinore would provide a range of opportunities for wetland enhancement.

In developing cost estimates for habitat mitigation under any alternative, we have assumed the co-applicants would acquire (in fee title or via conservation easements) private lands that are degraded or under threat of development, and transfer those lands into reserves that could be managed over the long-term by a non-governmental organization or public land trust. This approach would ensure the protection and management of large blocks of land and habitat linkages, would offer greater benefits to wildlife, and could be managed more economically than small, scattered parcels in individual ownership.

We estimate that the capital cost of these measures at Decker Canyon for habitat mitigation under the staff alternative would total \$4,120,000 with an annual cost of \$408,400, including \$5,200 for O&M, as compared to the co-applicants' Morrell Canyon proposal with an estimated capital cost of \$3,010,000 and annual cost of \$302,200, resulting in an overall annual cost increase of \$106,200. However, if Morrell Canyon were selected with our higher mitigation ratios we estimate a capital cost of \$6,025,000 and annual cost of \$596,000, which would have resulted in an annual increase of \$293,800 over the co-applicants' proposed habitat mitigation management plan.

### **Avian Protection Plan**

The co-applicants propose to design the transmission line features to be consistent with guidelines developed by APLIC et al. (1996). USFS preliminary 4(e) condition no. 35 specifies this approach, also. In section 3.3.4.2, *Environmental Consequences in Terrestrial Resources*, we conclude that there is moderate risk of avian collision along several segments of both the co-applicants and staff alternative transmission alignments. The co-applicants should make use of Avian Power Line Interaction Committee's publications, including *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*. We note that APLIC and FWS (2005) recently completed new guidelines for the development of avian protection plans. These guidelines would assist the co-applicants with initial design and alignment of the transmission line and in design of a long-term plan for monitoring. A pre-construction evaluation of the transmission line design and alignment would be needed to identify high-risk crossings, where markers or bird diverters could be used to reduce the risk of bird collisions with the transmission line. A long-term plan for monitoring and managing risks, based on recent recommendations developed by APLIC and FWS (2005), could be used to track the effectiveness of measures that are implemented to protect birds. Results of monitoring could be used to identify problem spans or poles and allow for retrofitting where needed. The cost of the staff alternative measure to develop the avian protection plan would be \$20,000, or \$2,800 annually, the same cost as estimated by the co-applicants. The additional annual cost of implementing the plan over the term of the license under the staff alternative would be about \$20,000.

## **Lake Elsinore Monitoring and Remediation Plan**

The co-applicants do not propose any measures to address potential project-related effects to nesting shorebirds, waterfowl, or other birds at Lake Elsinore. Under the proposed operations, Lake Elsinore would fluctuate about 1 foot daily and about 1.7 feet weekly. Interior recommends that the co-applicants consult with FWS and CDFG to develop a plan to eliminate or reduce effects on nesting shorebirds that might be affected by water surface fluctuations. The plan would include monitoring to allow early detection of effects, immediate steps to remedy effects, timing and performance criteria, and annual reporting to FWS and CDFG. In section 3.3.4.2, *Environmental Consequences, Terrestrial Resources*, we conclude that habitat along the Lake Elsinore shoreline is generally not suitable for nesting shorebirds, waterfowl, or other birds. With implementation of the Lake Elsinore Stabilization and Enhancement Project, year-to-year water-level fluctuations would be reduced and Lake Elsinore would no longer dry up in drought years. Under these circumstances, additional riparian vegetation, such as cattails, tule, and willows may be able to establish along the shoreline. Improvements in riparian habitat could increase its suitability for nesting shorebirds. For these reasons, the staff alternative would specify that the co-applicants prepare a plan to address nesting shorebirds, waterfowl, and other birds that may nest along the shoreline at locations where project-related water surface fluctuations could affect nesting success. We estimate that the initial capital cost to develop the staff alternative plan would be \$20,000 and the cost of implementing the plan would be \$20,000 annually, resulting in an overall annual cost of \$22,800.

### **5.2.7 Threatened and Endangered Species**

Interior's 10(a) recommendation no. 1 calls for the co-applicants to consult with FWS regarding protection, mitigation, and enhancement measures for fish and wildlife, as designs for the LEAPS Project are developed. Based on the analysis presented in section 3.3.5, *Threatened and Endangered Species*, construction and operation of the LEAPS Project may adversely affect three federally listed species—the Quino checkerspot butterfly, coastal California gnatcatcher, and Stephens' kangaroo rat. Construction of some project features would occur within designated critical habitat for these species. Construction would also affect suitable habitat outside designated areas. The co-applicants assume that the Stephens' kangaroo rat is present and proposed to pay the \$500-per-acre fee required within the Stephens' Kangaroo Rat Fee Assessment Area to address any project effects. In section 3.3.5.2, we conclude that construction of the mid-slope transmission alignment and substation would disturb about 26.75 acres of suitable habitat.

Operation of the project may also adversely affect these species. Although temporary access roads would be obliterated, it is difficult to prevent OHV use, once a road has been cleared. OHV use directly affects soils and vegetation, promotes the introduction and spread of noxious weeds and invasive non-native plants, increases the risk of wildfire, and causes noise disturbance. Helicopter access for regular maintenance

of the transmission line would also cause noise disturbance, but effects would be short-term and local.

The staff alternative includes provisions for the co-applicants to consult with FWS to identify locations that are of particular concern with regard to listed species; site and design project features (e.g., access roads, substations, transmission towers) to prevent adverse effects on habitat, where possible; and to develop a plan for annual consultation and implementation of protective measures (e.g., maintenance timing restrictions) to continue through any new license period.

We estimate the cost of the staff measure to consult with FWS would be \$3,400 annually. We estimate the annual cost of the Stephens' kangaroo rat fee for the co-applicants' proposal (28.25 acres) would be \$2,100. The cost for the fee for the mid-slope transmission alignment would be slightly less.

### **5.2.8 Recreational Resources**

#### **Hang Gliding**

The co-applicants propose to construct an above-ground transmission line that would run northwest to southeast through Cleveland National Forest. This route would be located between the most popular locations at which hang gliders launch and the current informal landing area in the vicinity of the Ortega Oaks powerhouse site. In section 3.3.7.2, we conclude that constructing the transmission line along the co-applicants' proposed alignment would cause a significant loss of hang gliding opportunities.

The mid-slope transmission alignment would parallel the co-applicants' proposed alignment about 0.2 to 0.4 mile east (down slope) of the proposed alignment and would loop west and run along South Main Divide Road. Hang gliding is a very popular activity at Lake Elsinore. The site possesses unique atmospheric conditions that create this opportunity and the site has become one of the best locations for this activity in the world. The mid-slope transmission alignment would avoid placing transmission lines between the most popular launch sites and the informal landing site just west of the proposed Ortega Oaks powerhouse site and would allow for the continuation of world-class hang gliding and parasailing opportunities in the Lake Elsinore region.

We estimate that the cost of co-applicants' proposed transmission alignment would be \$327,271,800. The staff alternative mid-slope alignment would add about 1.2 miles to the overall length of the co-applicants' proposed transmission alignment at a cost of \$2,741,200 for a total cost of \$330,013,000.

#### **Developed Recreational Facilities at the Upper Reservoir**

It is not the intent of the co-applicants to provide new water-based recreational activities at the upper reservoir. The focus during construction would be to ensure the safe use of existing roads, trails, and nearby recreational areas during construction.

Following construction, the co-applicants would install a fence around the perimeter of the upper reservoir to prevent public access. The co-applicants' would install an ancillary structure, at a USFS-site off Ortega Highway, provide interpretive signage, and provide a cleared parcel at the upper reservoir or at another site to the USFS for future recreational development. USFS preliminary 4(e) condition no. 28 specifies that the co-applicants develop and implement a recreational development facility plan for a day-use recreational facility at the construction laydown area used to construct the upper reservoir. The co-applicants filed an alternative 4(e) condition that would broaden the USFS preliminary 4(e) conditions no. 28 to allow the co-applicants to provide an another site near the upper reservoir.

We conclude in section 3.3.6.2 that developing a recreational facility on the site used for the construction laydown area or another site near the upper reservoir would accommodate visitors who are coming to the area, visiting the upper reservoir, or viewing Lake Elsinore. Providing a formal recreational area would reduce pollution by providing visitors with facilities for disposing of trash and human waste, protecting vegetation and soil by controlling the locations where vehicles may travel and park, and reducing the potential for fires by providing cleared areas for parking. Because day-use facilities do not currently exist in this area, this facility, along with an ancillary structure such as a visitor center, and signage, would meet the needs of visitors who are coming to the upper reservoir area by providing a few basic conveniences while protecting natural resources from the effects of wide-spread dispersed recreational use.

Fencing the upper reservoir would result in an annual cost of \$12,600. We estimate that the annual cost of the co-applicants' proposed ancillary structure (visitor center) and signage would be \$7,000 and \$1,200, respectively. We estimate the cost of developing and implementing the staff alternative plan for a recreational facility at the upper reservoir would have a capital cost of \$44,200 and annual costs of \$4,000, resulting in an overall annual cost of \$20,100 beyond what the co-applicants propose.

### **Developed Recreational Facilities at the Powerhouse**

The co-applicants propose to provide cleared lands and funding for the construction of recreational facilities at the powerhouse location. The co-applicants would consult with the USFS and local agencies to determine the type of community recreational facility to provide at the selected powerhouse. At the proposed Santa Rosa powerhouse site, the co-applicants would also provide a botanical garden and powerhouse tours to promote awareness of water conservation and use of drought-resistance plant species. At the Ortega Oaks powerhouse site, the co-applicants propose a formal 5-acre hang gliding landing area, instead of a botanical garden, and a community park either at the Ortega Oaks powerhouse site or another location. However, hang gliding advocates indicate that a site of about 12 acres would be needed to provide a safe landing area. A larger landing site would allow less experienced hang gliders to participate in the sport at this location. In section 3.3.6.2, we conclude that the co-applicants' proposed measures would provide recreational opportunities that currently do

not exist in these locations. To preserve a safe hang gliding experience, the staff alternative would include provision that the co-applicants create a formal 12-acre hang glider landing area to the west of the proposed powerhouse site and locate the powerhouse and substation as far east as possible on the site.

The co-applicants would not provide funding for the O&M of the facilities unless they remain in public ownership and are located on National Forest System lands. The co-applicants are willing to retain ownership and be responsible for O&M subject to a determination whether such ownership and operation would be authorized under the Elsinore Valley MWD's existing special district authority for developments not in public ownership and not located on National Forest System lands. We conclude in section 3.3.7.2 that relying on funding that may or not be available to local agencies would not provide certainty that the facilities would be properly maintained through the period of the license. The staff alternative includes a recreation plan for the facility development that includes financial commitments to provide for O&M funding in the event that intended sources of O&M funding are either insufficient or unavailable.

We estimate the cost of providing public tours at the powerhouse would be \$18,700. We estimate that the capital cost of the co-applicants' proposed recreational facilities at the Ortega Oaks or Santa Rosa powerhouse site would be \$5,610,800 (including land acquisition costs) and the annual cost would be \$678,500. We estimate that the additional cost of the staff alternative measure to provide O&M funds for this recreational facility would be about \$125,400 annually.

### **Recreational Angling at Lake Elsinore**

The LESJWA's Program Environmental Impact Report includes a detailed Fish Management Plan with objectives to improve the sport fishery in Lake Elsinore. The co-applicants' proposal to provide funds in support of the annual fish stocking program recommended in LESJWA's Fish Management Plan would enhance recreational fisheries in Lake Elsinore. We conclude in section 3.3.3.2 that the stocking of predators to carp and threadfin shad, consistent with the Fish Management Plan, would reduce populations of those species and allow more game fish to survive, enhancing recreational angling opportunities. We estimate the annual cost for the co-applicants' proposed stocking program would be \$21,400.

## **5.2.9 Land Use and Aesthetics**

### **Road and Traffic Management**

The construction and operation of the proposed project facilities and about 30 miles of transmission lines across federal and private properties and access to project facilities would require the construction of an estimated 7.6 miles of temporary access roads and 1.0 mile of permanent access roads, the exact location of which are not identified at the current level of planning. We anticipate that about 10.3 miles of temporary roads to access the staff alternative's mid-slope transmission alignment would

be constructed in part on National Forest System lands, and would also intersect with numerous existing roads on non-National Forest System lands.

USFS preliminary 4(e) condition no. 27 specifies the development and implementation of a road and traffic management plan for all USFS roads and unclassified roads needed for project access that would be constructed on National Forest System lands. The plan, to be developed in consultation with the USFS, would identify and map the roads, describe their purpose and use, explain maintenance levels and responsibilities show the locations and status of any gates or barricades, demonstrate authorization for their use, and assess their condition. The plan would specify maintenance and management standards that would provide for traffic safety and minimize erosion and damage to natural resources.

We conclude in section 3.3.7.2 that a plan would be needed to ensure the proper use and maintenance of both temporary and permanent roads necessary to access the project facilities. The staff alternative includes a provision to specify the exact segments of roads that would serve the project and the permanent roads that would need to be included in the project boundary.

Public access (and OHVs, in particular) would create the potential for trampling and soil compaction, dumping, vandalism, noise disturbance, harassment, poaching, collision, wildfire, and introduction of weeds. For this reason, under the staff alternative, the land and road management plan would include methods for closing and obliterating temporary roads following construction; minimizing adverse effects of project-related use; identifying areas of specific concern; providing for regular patrol and enforcement to ensure that closed roads area not being used by the public; and provide for long-term monitoring, reporting, and changes to the plan, as needed. The staff alternative includes a road management plan for non-National Forest System lands that would address the same issues.

The co-applicants propose to achieve a balance of excavated materials and fill at the entire project site and propose to haul up to 776,000 cubic yards of fill along Ortega Highway and South Main Divide Road to the upper reservoir site. In section 3.3.7.2, we conclude that hauling this volume of fill material on Ortega Oaks Highway and South Main Divide Road to the upper reservoir site would significantly affect the flow of traffic on this busy crossroad between Lake Elsinore the California coast. Instead of overtaxing this road, the staff alternative calls for the co-applicants to excavate additional depth at the Decker Canyon upper reservoir site to provide the fill deficit for the dam construction. We estimate that about 10 additional feet would need to be excavated to provide sufficient fill for the dam. Achieving the balance of excavation and fill entirely at the upper reservoir site would greatly reduce the construction truck traffic on Ortega Highway.

The co-applicants also propose several specific measures to improve traffic flow on Grand Avenue and Ortega Highway during construction and to prepare and implement traffic management and control plans. The staff alternative would specify that the co-applicants develop and implement a road and traffic management plan for non-USFS roads that: (1) details plans to manage construction at road crossings and along access roads; (2) provides a schedule for the volume and timing of construction traffic; (3) describes methods for closing and obliterating temporary roads following construction; (4) minimizing adverse impacts of project-related use; (4) identifying areas of specific concern; and (5) provides for long-term monitoring, reporting, and changes to the plan, as needed.

We estimate that the annual cost associated with the staff alternative additional excavation at Decker Canyon to achieve the excavation and fill balance at the upper reservoir site would be \$721,500. The initial cost of developing co-applicants' traffic plans would be \$100,000 with an annual cost of \$24,100. The staff alternative traffic plans would add \$20,000 initial costs and \$2,800 to the annual costs.

### **Sediment Sampling in Lake Elsinore**

Excavations in Lake Elsinore to construct the intake/outlet structure would disturb lakebed sediments that could contain toxins. Water quality testing in Lake Elsinore did not include testing lakebed sediment for toxicity. In section 3.3.7.2, we conclude that excavated material from the lakebed should be disposed of off site. The toxicity of these sediments is unknown. Toxic materials require special handling and disposal. The staff alternative would specify that the co-applicants develop a plan to sample lakebed sediments for toxicity prior to construction and, if toxins are identified, for proper handling and disposal. We estimate that the annual cost for the staff alternative sediment sampling plan would be \$7,100 and would be necessary to protect the public from exposure to potentially toxic materials.

### **Visual Resources Plan**

Construction of the proposed project would introduce new visual elements to the landscape both during and following construction. The co-applicants propose to develop and implement a visual resources management plan. We conclude that such a plan prepared in consultation with the USFS, under either alternative, would help to ensure that the design and materials proposed for project facilities on USFS-lands and any subsequent changes to the project facilities are compatible with the USFS' Land Management Plan and related standards for new construction in National Forests. We estimate that the annual cost for the co-applicants' proposed visual resources management plan would be \$2,800.

## **Project Boundary**

The co-applicants do not include Lake Elsinore within the proposed project boundary as defined in the exhibit G boundary maps for the project. Lake Elsinore is an integral part of the pumped storage project, serving as the lower reservoir. Under either alternative, inclusion of Lake Elsinore within the project boundary would provide for a complete unit of development. At the conceptual level of design, the co-applicants have not identified the location of temporary access roads for construction or permanent access roads for project operations. Access roads to project facilities, whether public, private, or USFS-owned, would need to be included in the project boundary, under either alternative, when the final exhibit G drawings are filed with the Commission. We assume this cost is included in the co-applicants' \$12,000,000 allocated to relicensing.

### **5.2.10 Cultural Resources**

Construction at the project sites has the potential to destroy or disturb historic properties. The co-applicants would consult with the USFS or SHPO prior to any ground-disturbing activities and would implement a stop-work procedure if unanticipated discoveries occur during construction. Given that known sites occur near project construction sites, we assume that over a 4.5-year construction period, one or more unanticipated discoveries would occur. The draft HPMP filed with the Commission in April 2005, includes measures to: (1) complete pre-construction archaeological surveys in the APE; (2) determine the need for intensive surveys; (3) monitor historic properties during construction; (4) appoint a tribal liaison; (5) study the potential effects of ground acceleration on historic buildings; (6) develop a program to monitor archaeological sites for 5 years; and (7) develop a public interpretative program. The co-applicants also would conduct limited paleontological studies at sensitive locations during construction and prepare any fossil remains for curation by a local museum. In section 3.3.9.2, we conclude that co-applicants' proposal, as reflected in the draft HPMP, and including modifications under the staff alternative, would mitigate or avoid adverse effects on historic properties. These measures would address the site-specific needs to take into account historic properties during the construction and operation of the project under either alternative.

The staff alternative would specify that the co-applicants develop and implement a final HPMP that incorporates provisions to avoid or mitigate effects to known and as yet unknown historic properties. The plan would be developed in consultation with the SHPO, Tribes, the BIA, and the USFS, and other entities as appropriate. USFS preliminary condition no. 29 specifies that the HPMP accurately define the APE, including the effects of implementing the Section 4(e) condition. As discussed in section 3.3.9.2, the co-applicants' proposed HPMP would address the procedures and substantive requirements of Section 106 of the National Historic Preservation Act. The Commission would execute a Programmatic Agreement providing for the filing of the final revised HPMP with 1 year after license. Shortly after Commission, shortly thereafter, the final HPMP would then be implemented.

We estimate that the costs for the co-applicants' proposed consultation would be \$1,400, the annual cost for addressing unanticipated discoveries during construction would be \$16,900, the annual costs for implementing the co-applicants draft HPMP would be \$59,300, and the paleontological studies would cost \$14,100. We estimate the additional annual cost of filing the final HPMP under the staff alternative would be \$2,800.

## 5.4 FISH AND WILDLIFE AGENCY RECOMMENDATIONS

### 5.4.1 Recommendations Pursuant to Section 10(j) of the FPA

Under Section 10(j) of the FPA, each hydroelectric license issued by the Commission would include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of fish and wildlife resources affected by the project.

Section 10(j) of the FPA states that whenever the Commission finds that any fish and wildlife agency recommendations is inconsistent with the purposes and requirement of the FPA or other applicable law, the Commission and the agency shall attempt to resolve any such inconsistency, giving due weight to the recommendation, expertise, and statutory responsibilities of such agency.

By letter dated April 22, 2005, Interior provided three fish and wildlife recommendations. Table 54 lists Interior's recommendations and presents Commission staff's conclusion as to whether each recommendation is within the scope of Section 10(j), an estimate of the annual cost of each recommendation, and the decision about whether or not to recommend adopting each recommendation as part of the staff alternative. When a recommendation is not adopted, we provide a rationale. Recommendations that Commission staff consider outside the scope of Section 10(j) have been considered under Section 10(a) of the FPA and are addressed in the specific resource sections of this document. The staff alternative includes all current recommendations that Commission staff found to be within the scope of Section 10(j).

Table 54. Fish and wildlife agency Section 10(j) recommendations. (Source: Staff)

No.	Recommendation	Agency	Within the Scope of 10(j)?	Annualized Cost	Commission Staff Recommending?
1.	Lake Elsinore monitoring and remediation plan to reduce or eliminate impacts to nesting shorebirds	Interior	Yes	\$22,800	Yes

No.	Recommendation	Agency	Within the Scope of 10(j)?	Annualized Cost	Commission Staff Recommending?
2.	San Juan Creek drainage monitoring and remediation plan to eliminate or reduce release of water and non-native species from the upper reservoir into San Juan Creek	Interior	Yes	\$74,000	Yes
3.	Consistency with existing and proposed HCPs	Interior	No, not a specific measure to protect fish and wildlife	\$0	No

Note: HCP – Habitat Conservation Plan

#### 5.4.2 Recommendations Pursuant to Section 10(a)(1) of the FPA

Our recommendation not to adopt Interior 10(j) no. 3 is based on our finding that we could not evaluate the environmental effects that would result from recommending consistency of the LEAPS Project with HCPs that have not yet been developed. Although we do not adopt Interior 10(j) no. 3, we anticipate that our recommendations for specific measures for terrestrial resource protection and mitigation will meet Interior’s objectives regarding consistency of the LEAPS Project with existing HCPs. In some cases (e.g., minimum habitat compensation ratios), our recommendations may be more stringent than those that would be required under the MSHCP, because the Commission’s view of acceptable resource trade-offs may differ from the views of the MSHCP signatories.

#### 5.5 CONSISTENCY WITH COMPREHENSIVE AND OTHER RESOURCE PLANS

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, and conserving waterways affected by the project. Under Section 10(a)(2), federal and state agencies filed comprehensive plans that address various resources in California. Fourteen of these plans address resources relevant to the LEAPS Project:

- California Advisory Committee on Salmon and Steelhead Trout. 1988. Restoring the balance. 1988 annual report. Sausalito, California. 84 pp.
- California Department of Fish and Game. 1996. Steelhead restoration and management plan for California. February 1996. 234 pp.
- California Department of Parks and Recreation. 1998. Public Opinions and Attitudes on Outdoor Recreation in California – 1997. March 1998. 72 pp. and appendices.
- California Department of Parks and Recreation. 1988. California Outdoor Recreation Plan. Sacramento, California. June 1988. 223 pp.
- California Department of Parks and Recreation. 1994. California Outdoor Recreation Plan -1993. Sacramento, California. April 1994. 154 pp. and appendices.
- California Department of Water Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, California. December 1983. 268 pp. and attachments.
- California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, California. October 1994. Two volumes and executive summary.
- California State Water Resources Control Board. 1975. Water quality control plan report. Sacramento, California. Nine volumes.
- California—The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, California. March 1983. 39 pp. and appendices.
- Forest Service. 1986. Cleveland National Forest land and resources management plan. Department of Agriculture, Corona, California. February 1986.
- State Water Resources Control Board. 1999. Water quality control plans and policies. Adopted as part of the State Comprehensive Plan. April 1999. Three enclosures.
- Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. May 1986. 19 pp.
- Fish and Wildlife Service. Undated. Fisheries USA: The recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, DC. 11 pp.
- National Park Service. 1982. The nationwide rivers inventory. Department of the Interior, Washington, DC. January 1982. 432 pp.

## **5.6 RELATIONSHIP OF LICENSE PROCESS TO LAWS AND POLICIES**

### **5.6.1 Section 401 of the Clean Water Act—Water Quality Certification**

By letter dated March 16, 2005, the co-applicants applied for water quality certification. The SWRCB has one year, on or before March 15, 2006, to issue or waive issuance of a water quality certificate.

### **5.6.2 Section 18 of the Federal Power Act—Authority to Require Fishways**

Section 18 of the FPA, 16 USC Section 811, states that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as the secretaries of Commerce and the Interior may prescribe. By letter dated April 22, 2005, Interior reserved its authority to amend prescriptions. The Secretary of Commerce did not file any fishway prescriptions for this project.

### **5.6.3 Section 4(e) of the Federal Power Act**

Because the proposed LEAPS Project would occupy lands of the Cleveland National Forest and lands administered by BLM and the DOD, the USFS, DOD, and BLM have authority to impose conditions under Section 4(e) of the FPA. The USFS provided preliminary license conditions for the LEAPS Project by letter dated April 27, 2005.

The USFS provided 25 standard USFS conditions and 10 project-specific conditions. Condition nos. 1 through 25 are standard conditions that would involve obtaining USFS approval on final project design and changes, yearly consultation with the USFS to ensure the protection and development of natural resources, restrictions and protective measures that should be in place, and project O&M procedures that would enable continued project operations to be consistent with applicable provisions of the Cleveland National Forest Land Management Plan.

Condition nos. 26, 27, 28, 29, 34 and 35 pertain to development of plans for use of USFS-managed lands (including hazardous vegetative fuel treatment, road and traffic management, recreation facilities, heritage resources, noxious weeds, and wildlife management). Condition no. 30 pertains to project-specific consultation with the USFS regarding annual employee awareness training pertaining to natural resource issues of importance to the Cleveland National Forest. Condition no. 31 pertains to updates regarding USFS special status plants and wildlife, monitoring needs of existing and future special status species. Condition no. 32 pertains to an action plan for ground-disturbing activities that are not addressed in this EIS. Condition no. 33 pertains to the development of detailed monitoring plans.

### **5.6.4 Endangered Species Act**

Section 7 of the 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. By letter dated April 22, 2005, Interior indicated that the federally threatened coastal California gnatcatcher and the federally endangered arroyo southwestern toad, Stephens' kangaroo rat, and Munz's onion are known to occur within the project vicinity. No individuals of these species were observed during surveys associated with the project. We also evaluated the effect of the project on other listed species that may occur in the project area (table 55). Table 55 summarizes our determinations regarding the effect of the

proposed action on these species, based on the analyses presented in section 3.3.5, *Threatened and Endangered Species*, and our recommendations as presented in section 5.2, *Comprehensive Development and Recommended Alternative*.

Table 55. Summary of species and critical habitat findings under the staff alternative.

<b>Species</b>	<b>Species Status</b>	<b>Species Finding</b>	<b>Critical Habitat Finding</b>
Southern California summer steelhead ( <i>Oncorhynchus mykiss</i> )	E	Not likely to adversely affect	Not likely to adversely affect
San Diego thornmint ( <i>Acanthomintha ilicifolia</i> )	T	No effect	No effect
San Diego button-celery ( <i>Eryngium aristulatum</i> var. <i>parishii</i> )	E	No effect	No effect
Mexican flannelbush ( <i>Fremontodendron mexicanum</i> )	E	No effect	No effect
Spreading navarretia ( <i>Navarretia fossalis</i> )	T	No effect	No effect
Nevin's barberry ( <i>Berberis nevinii</i> )	E	No effect	No effect
Munz's onion ( <i>Allium munzii</i> )	E	Not likely to adversely affect	No effect
Slender-horned spine flower ( <i>Dodecahema leptoceras</i> )	E	Not likely to adversely affect	No effect
San Diego ambrosia ( <i>Ambrosia pumila</i> )	E	Not likely to adversely affect	No effect
California Orcutt grass ( <i>Orcuttia californica</i> )	E	Not likely to adversely affect	No effect
Thread-leaved brodiaea ( <i>Brodiaea filifolia</i> )	T	Not likely to adversely affect	No effect
San Jacinto Valley crownscale ( <i>Atriplex coronata</i> var. <i>notatior</i> )	E	Not likely to adversely affect	No effect

<b>Species</b>	<b>Species Status</b>	<b>Species Finding</b>	<b>Critical Habitat Finding</b>
Quino checkerspot butterfly ( <i>Euphydryas edith quino</i> )	E	Likely to adversely affect	Likely to adversely affect
Arroyo toad ( <i>Bufo californicus</i> )	E	Not likely to adversely affect	No effect
California red-legged frog ( <i>Rana aurora draytonii</i> )	T	No effect	Not likely to adversely affect
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	E	Not likely to adversely affect	No effect
Least Bell's vireo ( <i>Vireo bellii pusillus</i> )	E	Not likely to adversely affect	No effect
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	T	Not likely to adversely affect	No effect
Coastal California gnatcatcher ( <i>Polioptila californica</i> )	T	Likely to adversely affect	Likely to adversely modify proposed critical habitat
Stephens' kangaroo rat ( <i>Dipodomys stephensi</i> )	E	Likely to adversely affect	Likely to adversely affect

The basis for our findings is summarized below.

### **Southern California Summer Steelhead**

We conclude that the construction of the LEAPS Project may affect, but would not likely adversely affect the southern California summer steelhead or steelhead habitat. Only the lower 6 or 7 miles of San Mateo Creek are accessible to southern steelhead trout and spawning occurs in the downstream reach during periods of significant precipitation. Steelhead trout have not been identified in the tributaries to San Mateo Creek that would be crossed by transmission lines. A combination of BMPs during construction and water quality monitoring during the life of the project would reduce, but not eliminate, the potential risk of adverse impacts from the downstream transport of sediments.

### **San Diego Thornmint, San Diego Button-Celery, Mexican Flannelbush, Spreading Navarretia, and Nevin's Barberry**

We conclude that the construction of the LEAPS Project would have no effect on these species, because no suitable habitat is located at sites where project features would be constructed.

### **Munz's Onion**

We conclude that the construction of the LEAPS Project may affect, but would not likely adversely affect the Munz's onion. No Munz's onion was observed at any of the sites that have been surveyed. Sites where transmission line towers and access roads would be constructed could be surveyed prior to determining where to locate the towers, and how to align the roads. There should be adequate flexibility in siting these project features, so that no adverse impacts would occur. A combination of BMPs during construction, and road management and weed management during the life of the project, would reduce, but not eliminate, the risk of adverse impacts.

### **Slender-horned Spine Flower**

We conclude that construction of the LEAPS Project may affect, but would not likely adversely affect, this species. No slender-horned spine flower was observed at any of the sites that have been surveyed. Suitable habitat may occur along transmission line routes and access roads. Site-specific pre-construction surveys would be needed to determine tower locations and road alignments so that adverse impacts could be avoided, if this species is present. A combination of BMPs during construction, and road management and weed management during the life of the project, would reduce, but not eliminate, the risk of adverse impacts.

### **San Diego Ambrosia, California Orcutt Grass, Thread-leaved Brodiaea, and San Jacinto Valley Crownscale**

We conclude that construction of the LEAPS Project may affect, but would not likely adversely affect, these species. These species were not observed at any of the sites that were surveyed. Suitable habitat may occur along the transmission line route and access roads. Site-specific pre-construction surveys would be needed to determine tower locations and road alignments so that adverse impacts could be avoided, if this species is present. A combination of BMPs during construction, and road management and weed management during the life of the project, would reduce, but not eliminate, the risk of adverse impacts.

### **Quino Checkerspot Butterfly**

We conclude that construction of the LEAPS Project would affect, and may adversely affect, the Quino checkerspot butterfly, because about 0.25 acres of critical habitat for this species would be removed to install transmission line towers at the northernmost end of the proposed transmission alignment and build the northern

substation near Lee Lake. About 25 acres of potential habitat could also be affected. No Quino checkerspot butterflies were observed during surveys conducted in potential habitat.

### **Arroyo Toad**

We conclude that construction of the LEAPS Project may affect, but would not likely adversely affect the arroyo toad, which is known to occur in Los Alamos Creek and Tenaja Creek. No occurrences of this species are documented at sites that would be affected by construction, but potential habitat may be removed for the construction of transmission towers where the proposed transmission alignment would cross these creeks. The project would not affect any designated critical habitat for this species.

### **California Red-legged Frog**

We conclude that construction of the LEAPS Project would not affect the California red-legged frog. Although Los Alamos Creek and Tenaja Creek could provide suitable habitat, there are no known occurrences in either watershed. Only one population of California red-legged frogs is known to exist in Riverside County, and none are known in Orange or San Diego counties. FWS considers the potential for recovery in southern California to be low because there are few existing populations, habitat is generally of medium quality, and threats to its existence are high, due to human activities and competing land uses (FWS, 2002).

We conclude that construction of the project would affect designated critical habitat in the San Mateo Creek Watershed. By locating transmission towers outside riparian habitats and employing BMPs to protect streams and adjacent vegetation and maintain existing hydrologic support for streams, we conclude that the project would not adversely affect designated critical habitat for the California red-legged frog.

### **Southwestern Willow Flycatcher and Least Bell's Vireo**

We conclude the project may affect, but would not likely adversely affect, these species. These species were not detected during surveys, but suitable habitat is present along the transmission line route and access roads. A combination of BMPs during construction, and road management and weed management during the life of the project, would help to maintain suitable habitat within the project vicinity.

### **Bald Eagle**

We conclude the project may affect, but would not likely adversely affect, the bald eagle. Under current conditions, bald eagles are rarely seen in the project area. Construction would not remove habitat, alter the prey base, or increase disturbance. The presence of a transmission line would represent a very low level of risk, because it would be designed to minimize the risk of electrocution and collision. As bald eagle populations in the state and in the county increase, however, bald eagle use may be more

frequent, and monitoring would be needed to ensure that avian/power line interactions could be identified and addressed without delay.

### **Stephens' Kangaroo Rat**

We conclude the project would affect and may adversely affect the Stephens' kangaroo rat. The co-applicants did not conduct surveys for this species, but it is known to occur in Riverside County. Several project features may be constructed within suitable habitat, both inside and outside the Stephens' Kangaroo Rat Fee Assessment Area, and if temporary access roads are used to provide transmission line access, project operation could cause disturbance to individuals and habitat.

### **Coastal California Gnatcatcher**

We conclude that construction of the LEAPS Project may affect the coastal California gnatcatcher and may affect proposed critical habitat because about 3.0 acres of habitat would be removed. An addition 0.5 acre of potential habitat would also be removed. No coastal California gnatcatchers were observed during the co-applicants' surveys, but the USFS has documented occupied habitat along the northern segment of the proposed transmission line.

We will request FWS concurrence with our findings of no effect for San Diego thornmint, San Diego button-celery, Mexican flannelbush, spreading navarretia, Nevin's barberry, and California red-legged frog. We will also request FWS concurrence with our findings of "not likely to adversely effect" for southern California summer steelhead, Munz's onion, slender-horned spine flower, San Diego ambrosia, California Orcutt grass, thread-leaved brodiaea, San Jacinto Valley crownscale, southwestern willow flycatcher, least Bell's vireo, and bald eagle. We will initiate consultation with FWS regarding our conclusions that the LEAPS Project is likely to adversely affect the Quino checkerspot butterfly, coastal California gnatcatcher, and Stephens' kangaroo rat, through its effects on critical or proposed critical habitat.

## **5.6.5 National Historic Preservation Act**

Relicensing is considered an undertaking within Section 106 of the National Historic Preservation Act, as amended (P.L.89-665; 16 USC 470). Section 106 requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, TCPs, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register. As the lead federal agency for issuing a license, the Commission is responsible for ensuring that the licensee will take all necessary steps to "evaluate alternatives or modifications" that "would avoid, minimize, or mitigate any adverse effects on historic properties" for the term of any license involving the project. The lead agency also must consult with the SHPO(s), as well as with other land management agencies where the undertaking may have an effect, and with Indian tribes who may have cultural affiliations with affected properties involving

the undertaking. The overall review process involving Section 106 is administered by the Advisory Council on Historic Preservation, an independent federal agency.

To meet the requirements of Section 106, the Commission will execute the Programmatic Agreement to take into account the effects on historic properties from the operation of the LEAPS Project. The terms of the Programmatic Agreement would ensure that the co-applicants would address and treat all historic properties identified within the project area through HPMP. The HPMP entails ongoing consultation involving historic properties for the license term.

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