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11.0 LAND USE

This section describes land use in the vicinity of the Middle Fork American River Project (MFP or Project). The Federal Energy Regulatory Commission's (FERC or Commission) content requirements for this section are specified in Title 18 of the Code of Federal Regulations (CFR) Chapter 1 § 5.6(d)(3)(viii).

Note that the FERC regulations require the applicant to provide information regarding both recreation and land use. This section focuses on describing the land uses and pertinent land management plans and policies that govern land uses within and outside the MFP FERC Project boundary. Recreation is discussed separately in the Recreation Section (see Section 10.0).

11.1 INFORMATION SOURCES

The information presented in this section was developed using the following five information sources:

- Eldorado National Forest Land and Resource Management Plan (ENF-LRMP) (USDA-FS 1988).
- Tahoe National Forest Land and Resource Management Plan (TNF-LRMP) (USDA-FS 1990).
- Sierra Nevada Forest Plan Amendment (SNFPA), Final Supplemental Environmental Impact Statement (EIS), and Record of Decision (ROD) (USDA-FS 2004). These documents augment the previously published 2001 SNFPA, FEIS, and ROD.
- Placer County General Plan (Placer County 1994).
- Auburn State Recreation Area (ASRA) Interim Resource Management Plan (USBR 1992). This plan amends the 1978 General Plan for the Auburn Dam and Reservoir Project.

11.2 OVERVIEW OF LAND USE IN THE MIDDLE FORK AMERICAN RIVER WATERSHED

The MFP facilities are situated in the foothills and mountainous uplands of the western slope of the central Sierra Nevada, within the Tahoe and Eldorado National Forests. The MFP facilities are located on the Middle Fork American River, the Rubicon River, Duncan Creek, and the North and South Forks of Long Canyon Creek within an area referred to in this section as the Middle Fork American River Watershed (Watershed). The Watershed boundary is shown on Map 11-1.

The Watershed is characterized by steep canyons and rugged terrain with dense forests and woodlands. The rivers and streams associated with the MFP flow from elevations ranging from a high of approximately 5,200 feet (ft) above mean sea level (msl) at French Meadows Reservoir and Duncan Creek Diversion to approximately 1,100 ft msl at Ralston Afterbay. The surrounding ridges reach elevations as high as 7,000 ft msl.

The Watershed is heavily forested, rural in nature, and sparsely populated. There are no residential or commercial developments in the immediate vicinity of the MFP. The nearest population center is Foresthill (population 1,791), located approximately four miles west-northwest of Ralston Afterbay. Several paved roads provide the primary access to the MFP vicinity. These include: Mosquito Ridge Road, Ralston Ridge Road, Blacksmith Flat Road, and Soda Springs Riverton Road. Access to more remote locations in the Watershed is possible using ancillary roads and trails associated with either the Forest Service Transportation System or ASRA, located downstream of Ralston Afterbay.

The Project facilities and the land within the FERC Project boundary are located primarily within the Eldorado National Forest (ENF) and Tahoe National Forest (TNF). Private parcels are present throughout the Watershed and intersect the FERC Project boundary at various locations. Map 11-1 shows the MFP facilities and FERC Project boundary with respect to the various land jurisdictions in the Watershed. Land use within the FERC Project boundary is focused on hydropower generation and recreation. Land use outside the FERC Project boundary is managed mainly for recreation, timber harvest, grazing, natural resource protection, and to a lesser extent mining.

Note that the MFP includes a system of tunnels. However, the tunnels are not discussed in this section because they are located underground and do not involve land management activities.

11.3 LAND MANAGEMENT PLANS

Land use and management is governed by federal, state, and local plans and regulations, depending on ownership status. Lands that lie within the jurisdiction of the United States Department of Agriculture - Forest Service (USDA-FS) are subject to the policies, goals, objectives, and prescriptions contained in the National Forest Land and Resource Management Plans (LRMPs) and the SNFPA (USDA-FS 2001; USDA-FS 2004). West of French Meadows Reservoir, the Middle Fork American River forms the boundary between the TNF and the ENF. The boundary bisects the area between French Meadows and Hell Hole reservoirs. Upstream of Hell Hole Reservoir, the Rubicon River forms the boundary of the TNF and the ENF. Private land holdings in the vicinity of the MFP are generally subject to the provisions contained in the Placer County General Plan. Pertinent management plans are briefly described in the following.

11.3.1 Tahoe National Forest Land and Resource Management Plan

The TNF-LRMP provides direction for long-term land management in the TNF. The TNF-LRMP goals are to: 1) ensure wise use and protection of TNF resources; 2) fulfill legislative requirements; and 3) address local, regional, and national issues.

Land within the TNF is divided into 109 Management Areas (MAs). The Project facilities and FERC Project boundary lie in four of these, including the “French,” “Sunflower,” “End of the World,” and “Little Oak” Management Areas. Resource management in

these areas emphasizes the following:

- Water-oriented recreation.
- Dispersed recreation along the Middle Fork American River.
- Safety for the forest visitor.
- Public sector facilities appropriate to the Recreation Opportunity Spectrum (ROS) classification to accommodate average weekend demand levels.
- Maintenance or improvement of visual quality.
- Development of a management plan for the Western States National Recreation Trail during TNF-LRMP implementation.

The TNF-LRMP recognizes the potential for hydroelectric power on the TNF and contains standards and guidelines that allow for hydropower generation while protecting natural resources and meeting area-specific management objectives.

Note that management direction regarding certain resources, for example timber and wildlife, have been revised as part of the SNFPA (USDA-FS 2004) as described in Sub-section 11.3.3.

11.3.2 Eldorado National Forest Land and Resource Management Plan

The ENF-LRMP provides direction for long-term land management of the ENF. The ENF-LRMP prescribes compatible sets of forest practices for land and natural resources. Land managed by the ENF is classified into six major "Emphasis Zones" where similar combinations of resource opportunities and land use potential exist simultaneously (ENF-LRMP 1988). The six Emphasis Zones are furthered categorized into 30 MAs that stress predominant management themes, practices and prescriptions. The Project facilities and FERC Project boundary lie in four Emphasis Zones and five MAs as described below. As with the TNF-LRMP, management direction for certain MAs (e.g., High Site Timber, Spotted Owl) was revised as part of the SNFPA.

The ENF-LRMP also identifies numerous management practices that are applied to the MAs. Management Practice 98 provides directives specific to energy-related licenses and permits.

- Zone I - Designated: Lands set aside by legal or official designation. The Rubicon River from Hell Hole Dam to Ralston Afterbay lies within a Wild and Scenic River MA. The ENF-LRMP identifies that this is a preliminary administrative recommendation that this reach of the Rubicon River receive interim protection of its Wild, Scenic, or Recreational values until Congress makes a formal designation by law or disposes of the proposal. According to the Standards and Guidelines described under Management Practice 98, the Wild and Scenic River MA excludes transportation-utility corridors.

- Zone II - High Country: Lands that are largely undeveloped, and in some cases, unroaded. High Country lands occur in large tracts that are generally above 6,000 feet in elevation and are characterized by natural crest-like Sierran landscapes. Hell Hole Reservoir is located in this Emphasis Zone in a MA classified "Semiprimitive Motorized". Management of these areas stresses dispersed recreation, livestock forage, wildlife habitat, and snowpack retention. Management Practice 98 recommends that design, construction, and maintenance of projects are subdued in this landscape. The Standards and Guidelines call for minimal road construction, restricted use of access roads to Project facilities, and instream flows that satisfy aesthetic and recreation needs where streams border this MA.
- Zone IV - Wildlife: Lands managed to maintain viable populations of spotted owls and goshawks. The North and South Forks Long Canyon Creek diversions are located in this Wildlife Emphasis Zone within a MA classified as "Spotted Owl". Management direction for these areas was revised and is described in the 2004 SNFPA.
- Zone V - General Forest: Lands that are most favorable for growth and harvest of commercial conifer species. This Emphasis Zone is the most intensely managed and most prevalent in the Watershed. The General Forest Emphasis Zone is further categorized into nine MAs. Most of the ENF land in the Watershed is classified as MA "High Site Timber," which contains the most productive timberland base in the Forest. The management direction for this MA was revised and is superceded by the 2004 SNFPA; however, the SNFPA did not revise management direction for those MAs that address visual quality. The MA "Visual Foreground Retention" occurs near Ralston Afterbay, and along the Middle Fork American River and North and South Forks Long Canyon Creek. General Direction described in Management Practice 98 does not allow major power projects that are incompatible with Foreground Retention Visual Quality Objectives.

11.3.3 Sierra Nevada Forest Plan Amendments

The 2001 and 2004 SNFPAs augment the TNF-LRMP and ENF LRMPs. Appendix A of the 2004 SNFPA Final Supplemental EIS - ROD, identifies the management direction for all National Forests within the Sierra Nevada bioregion, including the TNF and ENF. The ROD sets forth the management goals and strategies for five problem areas including: 1) old forest ecosystems and associated species; 2) aquatic, riparian and meadow ecosystems and associated species; 3) fire and fuels management; 4) lower westside hardwood ecosystems; and 5) noxious weed management. The ROD describes in detail the management standards and guidelines relevant to these five resource topics.

11.3.4 Placer County General Plan

Activities on private land within Placer County are subject to the provisions contained in the Placer County General Plan (1994). The Placer County General Plan provides goals, policies, and implementation programs in the following areas: land use, housing, transportation and circulation, public facilities and services, recreational and cultural

resources, natural resources, agricultural and forestry resources, health and safety, and noise.

The Placer County General Plan identifies five land uses in the Watershed including Agriculture, Resource Protection, Rural Residential, Timberland, and Urban uses. Although all five of these designations occur in the Watershed, all of the MFP facilities are located on lands designated as "Timberland." This designation is applied to mountainous areas where the primary land uses relate to the growing and harvesting of timber and other forest products (together with limited, low-intensity public and commercial recreational uses). Necessary public utility facilities are an allowed use on lands designated as Timberland.

11.3.5 Auburn State Recreation Area Interim Resource Management Plan

The ASRA is situated downstream of the Ralston Afterbay and includes approximately 42,000 acres along 40 miles of the North Fork and Middle Fork American rivers (B. Deitchman, pers. comm.). It extends generally from the Oxbow Powerhouse to Folsom Reservoir. Three broad planning goals are identified in the ASRA Interim Resource Management Plan (1992): 1) provide for health and safety of the public; 2) minimize and correct environmental damage caused by recreational use and development; and 3) allow and encourage active volunteerism for projects or programs where feasible.

11.4 LAND USE WITHIN THE FERC PROJECT BOUNDARY

The MFP FERC Project boundary encompasses approximately 4,482 acres of land. With the exception of a few private parcels, most of the land within the FERC Project boundary is under the jurisdiction of either the ENF or the TNF. No state or county-owned lands are present within the FERC Project boundary. Land use within the FERC Project boundary includes hydropower generation and recreation.

The primary Project facilities are shown on Map 11-1 and are described in detail in the Project Description (Supporting Document B). The Project recreation facilities are described in the Recreation Section (see Section 10.0).

11.4.1 Shoreline Buffer Zones

The FERC Project boundaries represent buffer zones around the reservoirs and smaller impoundments. These buffer zones serve two purposes - to ensure public access to the Project lands and waters and to help protect the recreation and aesthetic values of the Project reservoirs and their shorelines. All of the land within the FERC Project boundary is either owned by PCWA or is public land managed by the USDA-FS. PCWA does not restrict access to any of the Project reservoirs or shorelines, except where perimeter fences surround certain Project facilities (e.g., powerhouses and switchyards) for security purposes. Public access to the reservoir shorelines is not restricted by the USDA-FS. Access to some portions of the reservoirs and to the smaller impoundments is limited due to the steep terrain.

11.4.2 Shoreline Management Plan

There are no permitted piers, boat docks, landings, bulkheads, or other shoreline facilities associated with any of the MFP reservoirs or diversion pools. Therefore, PCWA does not maintain a shoreline management plan.

11.5 OTHER LAND USES WITHIN THE WATERSHED

Land use adjacent to the FERC Project boundary and within the Watershed primarily consists of recreation, timber management, livestock grazing/range land, mining, and natural resource protection. In general, these uses began in the early 1800s and continue today. Current land uses in the Watershed are briefly described below. Historic lands uses are discussed for perspective, where appropriate.

11.5.1 Recreation

A wide variety of land and water-based recreational opportunities are available in the Watershed. Popular recreation activities include camping, hiking, equestrian use, sightseeing, swimming, picnicking, hunting, flat water boating, whitewater boating, fishing, mining (e.g., dredging and gold panning), cross-country skiing, snowmobiling, and off-highway vehicle (OHV) use. These activities are supported by a variety of developed recreation facilities located in the Watershed including public campgrounds, day-use and picnic areas, boat ramps, scenic vistas, hiking and equestrian trails, OHV staging areas and trails, river access for whitewater boating, and snowmobile and cross-county snow trails. The recreation opportunities and Project and non-Project facilities in the vicinity of the MFP are described in the Recreation Section (see Section 10.0).

11.5.2 Timber Management

- Prior to the construction of Foresthill Road and Mosquito Ridge Road in 1949, timber harvesting was minimal in the upper portions of the Watershed, and access was limited to mining trails. Extensive timber harvesting occurred from 1949 through the mid-1980s (USDA-FS 2003a).
- Logging trends based on LRMPs of the national forests in the Sierra Nevada indicate a decline in the amount of remnant stands of old growth forests. Clear-cut, seed-tree, and shelterwood cutting techniques all have the same effect: production of even-aged forest stands.
- Timber sale offerings (timber available for sale) on lands managed by the ENF and TNF have been decreasing since the late 1980s. Likewise, the average annual sales of sawtimber sold from the ENF and TNF have decreased by nearly 77% over the fifteen-year period between 1988 and 2002 (USDA-FS 1998 - 2002).

In the ENF, four main types of timber harvest prescriptions are practiced. These include thinning treatments designed in accordance with regulations for California spotted owls (CASPO), clear cutting, fuelbreak thinning, and forest thinning. From 1992 to 2002,

clearcutting has occurred within the Rubicon and Long Canyon sub-watersheds. CASPO thinning has also occurred within the upper Middle Fork American River and North Fork Long Canyon watersheds. Fuel break thinning and forest thinning treatments have been applied in the lower Middle Fork American River and Rubicon River watersheds, respectively.

11.5.3 Grazing

Seasonal sheep and cattle grazing in the vicinity of French Meadows and Hell Hole reservoirs began prior to the 1850s and continues today. Map 11-2 shows the grazing allotments present within the Watershed based on Geographic Information System (GIS) data published by the USDA-FS, Region 5 in April 2004. An allotment is a designated area of land available for livestock grazing. As indicated on Map 11-2, many of the Project facilities and bypass streams lie within the boundaries of or adjacent to a range allotment. With the exception of one small allotment on a private parcel located on the south side of the Middle Fork American River downstream of Canyon Creek, there are no BLM grazing allotments in the Watershed.

11.5.4 Mining

Mining activities in the region began in 1848 with the discovery of gold by John Marshall on the South Fork American River near Coloma, California. The bars on the principal tributaries of the American River, including the North Fork and Middle Fork, were also explored during that year. On the Middle Fork American River, prospectors explored as far upstream as the Oxbow Powerhouse area in 1848. Beginning in the 1850s, miners traveled farther upstream, possibly to the French Meadows area. Mining also occurred along many of the streams tributary to the Middle Fork American River. The Middle Fork is believed to be the most productive placer mining main tributary of the American River, with many of these sites now under Folsom Reservoir. At some locations, the river course was altered to expose gold-bearing gravels within the river bed by moving the channel through the adjacent bluff, reportedly dredging more sediment between 1913 and 1916 than was removed from the Panama Canal (James 1999). Hillsides and bars were denuded to supply lumber to build the flumes and other structures needed to support the mining activities. Entire towns for the miners were established on the bars.

Gold continues to be mined in some areas along the Middle Fork American River today. In addition to the locations of mines, dredging, and other activities, the Watershed is laced with dams, ditches, flumes, tunnels, and canals used to move water for hydraulic mining. Mining activities in the area are discussed further in the Geology and Soils Section (see Section 3.0) and in the Cultural Resources Section (see Section 13.0).

11.5.5 Natural Resource Protection

State and federal resource agencies manage land use within the Watershed to protect and enhance the natural resources. Protection and enhancement is achieved through implementation of the policies, goals, objectives, and prescriptions contained in the various management plans described above. In addition, natural resource protection is

achieved through the establishment of specially designated areas. Several specially designated areas are present in the Watershed. These specially designated areas are identified below and are described in more detail in the Recreation Section (see Section 10.0).

Granite Chief Wilderness Area - This Wilderness area is located in the uppermost portion of the Watershed, immediately east of the MFP. At its nearest point, the Wilderness boundary is approximately 0.25 mile east of Hell Hole Reservoir and approximately 4.5 miles east of French Meadows Reservoir.

Desolation Wilderness Area - This Wilderness area is located in the uppermost portion of the Watershed, southeast of the Granite Chief Wilderness. At its nearest point, the Desolation Wilderness boundary is approximately seven miles southeast of Hell Hole Reservoir.

Rubicon Wild Trout Stream - The Rubicon River, from Hell Hole Reservoir to the Middle Fork American River confluence, is designated by the State of California as a Wild Trout Stream.

Nationally or Regionally Important Trails - Numerous trails traverse the Watershed, including three that are considered regionally or nationally important. These include the Pacific Crest Trail, which bisects the Granite Chief Wilderness, the Western States/Tevis Cup Trail near the Middle Fork American River, and the Rubicon OHV Trail, which traverses the southeast corner of the Watershed.

National Wild and Scenic Rivers - None of the rivers or streams in the Watershed are included in the National Wild and Scenic Rivers (W&SR) system. However, two reaches are considered eligible or suitable for inclusion in the W&SR system, including the Rubicon River from Hell Hole Dam to the Ralston Afterbay (designated by ENF) and the Middle Fork American River from Ralston Afterbay to the North Fork American River confluence (designated by U.S. Bureau of Reclamation (USBR)). The Recreation Section (see Section 10.0) provides more detail on the Wild and Scenic River designations in the vicinity of the MFP.

Auburn State Recreation Area - The ASRA is situated downstream of the Ralston Afterbay and encompasses approximately 42,000 acres of land along 40 miles of the North Fork and Middle Fork American rivers. The ASRA is administered by the California Department of Parks and Recreation (DPR) under contract with the USBR, the land owner. The area offers a wide variety of recreation opportunities to an average of 979,279 visitors a year.

State Game Refuge - A California State Game Refuge is present in the Watershed. The refuge boundaries extend, roughly, from the west end of French Meadows Reservoir to the northwest portion of the Granite Chief Wilderness. The designation is intended primarily to protect habitat used by the Blue Canyon mule deer herd.

11.6 FIRE HISTORY

Large, catastrophic fires have occurred in the Watershed. The major fires that occurred in the Watershed between the years 1908 and 2006 are shown on Map 11-3, by decade. The information presented on Map 11-3 is based on GIS data published in April 2007 by the UDA-FS, Region 5.

Since European settlement, the fire return interval, pattern, and severity within Sierra Nevada forests have changed as a result of development and fire management practices within the region (J. Jue, pers. comm. 2006). Prior to the 1800s, the fire return intervals were probably between 5 and 20 years (USDA-FS 2003). The fires would have burned moderately large areas, been well-distributed within the landscape, and burned with low to moderate intensity, interspersed with smaller patches of higher severity. The majority of the fires were likely surface fires, causing little tree mortality. By the 1900s, fires were typically high severity, with only small portions of the landscape experiencing fires of low to moderate severity, with return intervals between 35 and 100 years. In addition, decades of fire suppression have caused accumulations of understory vegetation enabling surface fires to easily become crown fires and burn upper canopy vegetation. This has resulted in a growing number of catastrophic fires that burn out of control.

The 2001 Red Star Fire is an example of a recent catastrophic fire in the Watershed. The Red Star Fire consumed 17,500 acres of forest within the ENF and TNF and on private land. The fire burned approximately 2,416 acres in the ENF, 10,473 acres in the TNF, and 4,590 acres of private land (USDA-FS 2006). The USDA-FS determined that it will take 100 years to reestablish large trees (>24" diameter at breast height (dbh)) and at least 250 years to develop old trees with decadence features that would be beneficial to wildlife (USDA-FS Georgetown Ranger District 2002).

11.6.1 Fuels Management

Fire management in the Watershed is the responsibility of the USDA-FS and local fire districts. Fire and fuels management has become a high priority for the USDA-FS in an effort to reduce threats to communities and wildlife from large, severe wildfires and to reintroduce fire into the USDA-FS fire-adapted ecosystem (USDA-FS 2004a; USDA-FS 2004b). Specific broad-scale USDA-FS goals for fire and fuels management that are practiced within the Watershed include:

- Treating fuels in a manner that reduces wildland fire intensity and rate of spread, thus contributing to more effective fire suppression and a smaller number of acres burned; and
- Restoring fire-adapted ecosystems by implementing various treatments to forests to reduce unnaturally dense conditions in certain areas.

The USDA-FS uses two main strategies for landscape-level fuels management: 1) containing fires with linear fuelbreaks and Defensible Fuel Profile Zones (DFPZs); and 2) using a spatial arrangement of dispersed treatments (called strategically placed area

treatment or SPLATS) to interrupt the spread of fire. The linear fuelbreaks are intended to provide defensible areas and facilitate suppression action by indirect tactics including backfiring. By reducing the size of a fire, the practice reduces the potential of large severe burns. The SPLATS, which includes treatments such as prescribed burns, thinning and clearcutting, and planting, modify fire effects and behaviors by reducing fire loads and the spread and severity of fire where it encounters the treatment units.

11.7 REFERENCES

Placer County. 1994. Placer County General Plan. Placer County, California.

United States Department of Agriculture Forest Service (USDA-FS). 1988. Eldorado National Forest Land and Resource Management Plan.

USDA-FS. 1990. Tahoe National Forest Land and Resource Management Plan.

USDA-FS. 1998. 2002. Regions 4 and 5 Cut and Sold Reports.

USDA-FS. 2001. 2001 Sierra Nevada Forest Plan Amendments: Sierra Nevada Forest Plan Amendment 2001, Final EIS, and Record of Decision.

USDA-FS. 2002. Star Fire Restoration Record of Decision. Georgetown Ranger District, Eldorado National Forest. El Dorado County, California. Available: www.fs.fed.us/r5/eldorado/projects/star/.

USDA-FS. 2004. 2004 Sierra Nevada Forest Plan Amendments: Sierra Nevada Forest Plan Amendment 2004, Final Supplemental EIS, and Record of Decision.

USDA-FS. 2006. Red Star Restoration DEIS. *Available:* http://www.fs.fed.us/r5/tahoe/documents/red_star_feis/chapter3a.htm (accessed May 2006).

United Stated Department of Interior Bureau of Reclamation (USBR). 1992. Auburn State Recreation Area Interim Resource Management Plan.

Personal Communication

California Department of Parks and Recreation (DPR). 2006 (April). Meeting, telephone and e-mail correspondence with Bill Deitchman. Auburn State Recreation Area (ASRA) - whitewater boating manager.

USDA-FS. 2006. Telephone and e-mail correspondence with John Jue, Eldorado National Forest.

MAPS