4.8 AGRICULTURE

4.8.1 INTRODUCTION TO AGRICULTURAL RESOURCES

This section describes agricultural activities within or in the vicinity of Pacific Gas and Electric Company's FERC Licensed Lands and related Watershed Lands throughout the project. The comparative economic value of the agriculture on these lands is described, as are pertinent regulations, policies, and government programs. Water that passes through Pacific Gas and Electric Company's facilities and is used for agricultural production is discussed. The project's relationship to agricultural users downstream of the hydro-facilities is also described. Relevant information is given for each project bundle.

4.8.2 SYSTEM-WIDE REGULATORY CONTEXT

Agriculture is subject to numerous federal, state and local regulations and policies that deal with land and water resources management, crop and livestock production practices including the safe handling of chemicals and other material used in agriculture, and food safety. Federal regulations focus on inter-state and national resource and safety issues, such as product labeling, proper handling and transportation of food and production materials, soil conservation, and water quality. Agriculture also interacts with federal regulations through wildlife conservation laws, including the Endangered Species Act.

The State of California plays an important role in regulating agriculture within the state, especially in the areas of employment of agricultural workers, pesticide regulation, food safety, and soil and water conservation. These regulations in many issues compliment or exceed corresponding federal regulations, most notably, perhaps, in the regulation of pesticide use.

County governments are active in regulating agriculture, especially in land use.

4.8.2.1 Federal Regulations and Policies

FERC Licenses

FERC encourages hydropower licensees to accommodate multiple beneficial uses on hydropower lands and waters, where possible, given local site characteristics and other environmental values of the area. Such uses may include agriculture.

Permits with the land holding agency are generally required for agricultural activities on public lands inside FERC boundaries. Such permits are granted in consultation with Pacific Gas and Electric Company, and with FERC if necessary, to ensure that agricultural activities are compatible with the hydroelectric use of the lands and waterways.

Farm Programs

Under the 1996 Farm Bill, Production Flexibility Contracts (PFCs) are available for qualifying properties through the United States Department of Agriculture Farm Service Agency. A farm is eligible for enrollment if it had a wheat, corn, sorghum, barley, oats, upland cotton, or rice acreage base established for 1996. Producers/landowners enrolled in 7-year PFCs during a one-time payment eligibility sign-up held in 1996. Farms not enrolled during the one-time sign-up are ineligible for program participation under the current Farm Bill unless they are currently under a Conservation Reserve Program (CRP) contract with an associated crop acreage base reduction. If the land currently under a PFC is transferred to another producer or operator, or if there is a change in interest in the operation, the contract may be transferred to the new producer or operator, who assumes all obligations under the original contract. Producers must comply with certain requirements, such as planting commodity or other qualified crops, and are subject to payment limitations. No Pacific Gas and Electric Company lands are known to be currently enrolled in these contracts. It is highly likely that some of the agriculture receiving water downstream from the project is enrolled; however, due to the extensive geographic area involved, the precise acres were not researched for this report.

Conservation Programs

The federal government offers several agricultural and natural resource conservation programs, such as the Conservation of Private Grazing Land Initiative (CPGL), the Environmental Quality Incentives Program (EQIP), the Farmland Protection Program (FPP), the Wetlands Reserve Program (WRP), and the Wildlife Habitat Incentives Program (WHIP). Each of these programs aid private landowners in the conservation of land and resources with technical guidance and in some cases, financial incentives. These programs could be useful to private purchasers of Project Lands where grazing and other agriculture will continue, especially where additional conservation measures are needed to protect prime farmland, or to assure good land stewardship practices.

The CPGL provides technical and educational assistance to those who own private grazing lands. The initiative offers opportunities for: better grazing land management; protecting soil from erosive wind and water; using more energy-efficient ways to produce food and fiber; conserving water; providing habitat for wildlife; sustaining forage and grazing plants; using plants to sequester greenhouse gases and increase soil organic matter; and using grazing lands as a source of biomass energy and raw materials for industrial products.

The Conservation Reserve Program seeks to: reduce soil erosion; protect the Nation’s ability to produce food and fiber; reduce sedimentation in streams and lakes; improve water quality; establish wildlife habitat; and enhance forest and wetland resources. Annual rental payments are available to qualifying landowners.

The EQIP provides financial assistance to qualifying landowners who address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. Fifty percent of the funding available for this program is targeted at natural resource concerns relating to livestock production.

The FPP provides funds through existing programs in conjunction with other agencies to help purchase the development rights to keep productive farmland in agricultural uses. To qualify, farmland must: be part of a pending purchase offer from a state, tribe, or local farmland protection program; be privately owned; have a conservation plan; be large enough to sustain agricultural production; be accessible to markets for crops the land produces; have adequate infrastructure and agricultural support services; and have surrounding parcels of land that can support long-term agricultural production. This program could be especially useful where urban development threatens to take Project Lands out of agriculture, as it offers permanent protection.

The WRP is a voluntary program to restore wetlands. Participating landowners can establish conservation easements of either permanent or 30-year duration, or can enter into restoration cost-share agreements where no easement is involved. Easements and restoration cost-share agreements establish wetland protection and restoration as a primary land use for the duration of the easement or agreement. A long-term easement of this type is useful in protecting farmland and directing development away from the agricultural land.

The WHIP provides financial incentives to develop habitat for fish and wildlife on private lands. Agreements generally last a minimum of ten years from the date the contract is signed. Such programs may be of interest to conservation minded buyers of Project Lands now used for agriculture.

Non-Governmental Easements

Many national organizations, such as the American Farmland Trust, The Trust for Public Land, and The Nature Conservancy, purchase a variety of different easements for agricultural land preservation. Typically these are permanent easements that remove development rights and assure agricultural use of the land in perpetuity. None of the Project Lands is currently encumbered by such easements; however such easements may be useful in the future to prevent loss of agriculture in the Project Lands.

4.8.2.2 State Regulations and Policies

The California Land Conservation Act of 1965 - commonly referred to as the Williamson Act - enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses. The landowner commits the parcel to an annually renewing ten-year period wherein no conversion out of agricultural use is permitted. In return, the land is taxed at a rate based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. Participation in the

Williamson Act program is dependent on county adoption and implementation of the program, and is voluntary for landowners.

The Farmland Security Zone is additional agricultural land conservation legislation that went into effect August 24, 1998. This program allows local governments and landowners to rescind a Williamson Act contract and simultaneously place the farmland under a Farmland Security Zone contract, which has an initial term of at least 20 years. A Farmland Security Zone contract offers landowners greater property tax reduction than the Williamson Act by valuing enrolled real property at 65 percent of its Williamson Act valuation, or 65 percent of its Proposition 13 valuation, whichever is lower.

No Project Lands are enrolled in Williamson Act contracts or Farmland Security Zone contracts. These contracts are, however, both tools for preservation of agricultural land in areas of the project where urban development may cause loss of farmland.

The California Department of Conservation established the Farmland Mapping and Monitoring Program (FMMP) in 1982 in response to a critical need for assessing the location and quantity of agricultural lands and conversion of these lands to other uses. It is the only statewide land use inventory conducted on a regular basis that identifies the conversion of agricultural land to urban and other uses. Every even numbered year FMMP issues a Farmland Conversion Report. FMMP data is used in elements of some county and city general plans, in environmental documents as a way of assessing project impacts on Prime Farmland and in regional studies on agricultural land conversion, and in assessing impacts of proposed projects reviewed through the CEQA process.

FMMP uses aerial photography, public comments and on-site field analyses to determine current land use. The data is merged with soil survey information that rates the quality of soils for agricultural production. A geographic information system is used to analyze the data to produce farmland maps and land-use statistics.

The maps classify agricultural land under one of the following categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. Other categories include Grazing Land, Urban and Built-up Land, Other Land and Water. These FFMP classifications are used in this chapter to help analyze the project's impacts to agriculture.

The FMMP classifications are based on a scoring or rating system called the California Land and Site Assessment (LESA) Model. The California LESA has two land evaluation (LE) factors for soil quality and four site assessment (SA) factors: size, water availability, surrounding agricultural land, and protected resource land. For the land/soil factors, California LESA relies on soil surveys completed by the United States Department of Agriculture Natural Resource Conservation Service. To be considered Prime Farmland, the parcel of land must score 80 points or better out of 100 in the LESA Model, or each of the LE and SA sub-factors must each be equal to or greater than 20

points each. Additionally, to be mapped as Prime Farmland by FMMP, the land must have been used for production of irrigated crops at some time during the four years prior to the mapping date.

The California Farmland Conservancy Program (CFCP), formerly known as the Agricultural Land Stewardship Program, is a voluntary program that seeks to encourage the long-term, private stewardship of agricultural lands through the use of agricultural conservation easements. Typically these are permanent easements that remove development rights and assure agricultural use of the land in perpetuity. There are no such easements currently on Project Lands.

Many organizations, such as county and regional land trusts, exist in California that can purchase a variety of different easements for agricultural land preservation, often working in conjunction with state and federal programs. There are no such easements currently on Project Lands.

4.8.2.3 Regional Regulations and Policies

Local jurisdictions recognize the importance of agricultural resources, and have instituted long-range goals, objectives, policies, and standards for preserving agricultural lands through their general plans. Utilizing local zoning ordinances and the Williamson Act (described on page 4.8-3), agricultural land is classified and preserved.

The most common means of identification and classification is the Land Capability Classification system of the United States Department of Agriculture Natural Resource Conservation Service, which rates the agricultural utility of soils on a scale of I (has greatest utility) to VIII (has least utility). Class I and Class II soils are considered prime agricultural soils by the Williamson Act. Typically, the counties seek to maintain these two classes of soil in agricultural production, and to protect them from conversion to other uses.

Many of the counties also refer to the California Department of Conservation's FMMP for identification and classification of agricultural land. Emphasis is on preservation of Prime Farmland, as identified by FMMP. A few counties have additional or independent means of identifying and classifying agricultural land, using criteria such as the size of an agricultural parcel or its agricultural productivity for crops or livestock measured in gross revenue and related ability to support full-time or part-time agricultural occupations.

4.8.3 SYSTEM-WIDE SETTINGS

4.8.3.1 Agricultural Land

Numerous physical attributes of land affect, or limit, its suitability for agricultural uses in the regional bundles. These are climate, soils, topography, and availability of water for irrigation. System-wide, the climate is characterized by cold, wet winters and warm, dry summers. Summers are much shorter in the high mountain areas due to the late snow melt. This climatic pattern establishes a seasonal use of the agricultural land. Movement of herds for livestock grazing follows

the availability of forage and water from low elevation to high elevation. Typically, lower elevations are grazed in the fall, winter and spring, and higher elevations are grazed in the summer. The growing of crops is similarly affected by the climate, with most crop production in the warm, dry months.

Soils and topography are inter-related physical attributes of the land. Typically, steeply sloped land has shallow soil, and resultant limited rooting and water holding capacity. This limits the productivity of crops and forage, and most of the land with slopes steeper than five percent are used for dryland grazing. Flat land typically has deeper soil, which, if unaffected by a high water table, permits deeper rooting and higher water holding capacity. System-wide there is wide variation in soil and topography on Pacific Gas and Electric Company-owned land, ranging from nearly flat valley floors to steep mountainous areas.

Availability of water also affects and limits agricultural options. Dryland range is limited only by rainfall and water stored in the soil profile. Most crops, however, including alfalfa hay and other crops grown on Pacific Gas and Electric Company-owned land, require irrigation water in the summer. The amount of water required varies by crop species, the local temperature regime, and the water storage capacity of the soil.

Approximately 20,389 acres of Project Lands are used for agriculture. Numerous agricultural activities have been identified; the principal of which is livestock grazing. Table 4.8-1 indicates the Project Land acres used for agriculture by regional bundle.

Table 4.8-1 Pacific Gas & Electric Company-Owned Land Used for Agriculture

Region	Acres Grazed	Acres Agricultural Use Other Than Grazing	Total Agriculture Acres
Shasta	15,295	4	15,299
DeSabla	3,835	0	3,835
Drum	151	14	165
Motherlode	940	0	940
Kings Crane-Helms	150	0	150
Total	20,371	18	20,389

4.8.3.2 Agricultural Water

Pacific Gas and Electric Company's FERC Licensed projects provide water to private individuals, irrigation districts, and county water agencies for agricultural activities both within or proximate to FERC Licensed projects and related Watershed Lands, as well as downstream of the hydroelectric facilities.

The principal agricultural use of these waters is for the irrigation of crops and pasture. Incidental uses may include domestic consumption, the irrigation of landscape around buildings, and water for livestock. Typically, water for livestock is captured from rain runoff in small ponds located on the grazing land. Typically these ponds do not drain into the streams and reservoirs feeding the hydroelectric facilities, except under flood conditions. In some situations, grazing animals are permitted to drink directly from lakes, reservoirs, creeks and intermittent streams.

The water is used agriculturally both before and after non-consumptive power generation. In both cases there may or may not be return flow to the river system (drainage) after the agricultural use.

A number of the agricultural users have written agreements with Pacific Gas and Electric Company for specific amounts of water, either as a total amount measured in acre-feet (af), or as a flow rate measured in cubic feet per second (cfs) or miner's inches (mi). In some cases the agreements specify a time period for the delivery, while in other cases the time period is not stated. Delivery or supply is often based on availability, as well. Pacific Gas and Electric Company supplies or delivers this water to third parties, or the third parties divert the water themselves from Pacific Gas and Electric Company-owned and/or maintained canals, flumes, ditches, or reservoirs.

Most of Pacific Gas and Electric Company's consumptive water rights used by agriculture (and encumbered by written agreements) occur in the Drum and Motherlode Regional Bundles, specifically, in Mendocino, Placer, and Tuolumne counties. The agreements are generally with local water agencies. This water is then delivered by the various water agencies to their local customers.

Each specific contract or agreement is detailed in this chapter in the specific regional bundle in which it occurs. Table 4.8-2 summarizes agreements for irrigation water delivery, including estimated irrigated acres, by regional bundle. The two columns “Af contracted,” and “Flow rates,” are independent amounts of contracted water.

The majority of agricultural water that passes through Pacific Gas and Electric Company's hydroelectric facilities is used non-consumptively for power generation and released for use by downstream water rights holders. Although Pacific Gas and Electric Company's use of the water is non-consumptive, Pacific Gas and Electric Company retains an amount of discretion over the timing and release of stored water, which can affect its availability for downstream agricultural users.

4.8.4 Regional and Local Settings and Regulatory Context

This section describes agricultural activities within or in the vicinity of Project Lands in the Shasta Regional Bundle.

Table 4.8-2 Estimated Acres and Irrigation Requirements for Agriculture Within Each Regional Bundle

Region	Af of Agricultural Use *	Flow Rates Contracted for Agricultural Use	Estimated Acres Irrigated **
Shasta	0	0	0
DeSabla	145,365	0	40,379
DeSabla	0	57.175 cfs	5,739
Drum	69,000	0	19,167
Motherlode	1,750	0	486
Motherlode	0	5 miner's inches (0.13 cfs)	13
Kings Crane- Helms	60,000	0	16,667
Kings Crane- Helms	0	65 cfs	6,524
Total	276,115	122.305 cfs	88,975

* Based on contract specifications and reported average annual use for agriculture by contracting water agencies. Amounts used in Drum and Motherlode are less than full contracted amounts as substantial amounts are used for non-agricultural uses.

** Based on an average usage of 3.6 af per acre in the state (per The California Water Plan Update Bulletin 160-98, California Department of Water Resources, page 4-2). For conversion of cfs to af, the maximum amount is estimated to be a constant flow for a six-month irrigation season, May through October.

4.8.4.1 Shasta Regional Bundle

None of the Project Lands in this regional bundle are under a Williamson Act contract. There are no prime farmlands in this regional bundle identified by the California Department of Conservation's Farmland Mapping and Monitoring Program; however, portions of the Shasta Regional Bundle have not yet been mapped. This is because the United States Department of Agriculture Natural Resource Conservation Service has drafted, but not yet published, a soil survey for these areas. This unpublished data indicates that approximately 4,500 acres of land within this regional bundle (4,200 acres in FERC 2687 Pit River and 300 acres in FERC 2661 Hat Creek) have soils which could be considered Prime Farmland if they were irrigated for crop production rather than being grazed as they are now and have been for many years.

Agricultural activities including grazing, irrigated pasture, vegetable and cereal crop production, viticulture, and fruit and nut production (orchards) have been identified within this region. However, grazing is the principal agricultural activity. Agricultural activities within the bundle are conducted under lease agreements, special use agreements, and informal agreements. Pacific Gas and Electric Company does not directly conduct any agricultural activities on its lands.

Regional Setting

Agricultural Land Use Agreements. A total of 20 agricultural leases have been identified comprising 15,299 acres, which support agricultural activities including grazing, farming, and aquaculture (Figure 4.8-1). Grazing is the principal activity (approximately 15,295 acres) in the Shasta Regional Bundle. Agreements typically have terms of three to five years, and may cover

relatively large areas. Lease agreements for the Shasta Regional Bundle are summarized below in Table 4.8-3.

Table 4.8-3 Agricultural Land in Shasta Regional Bundle

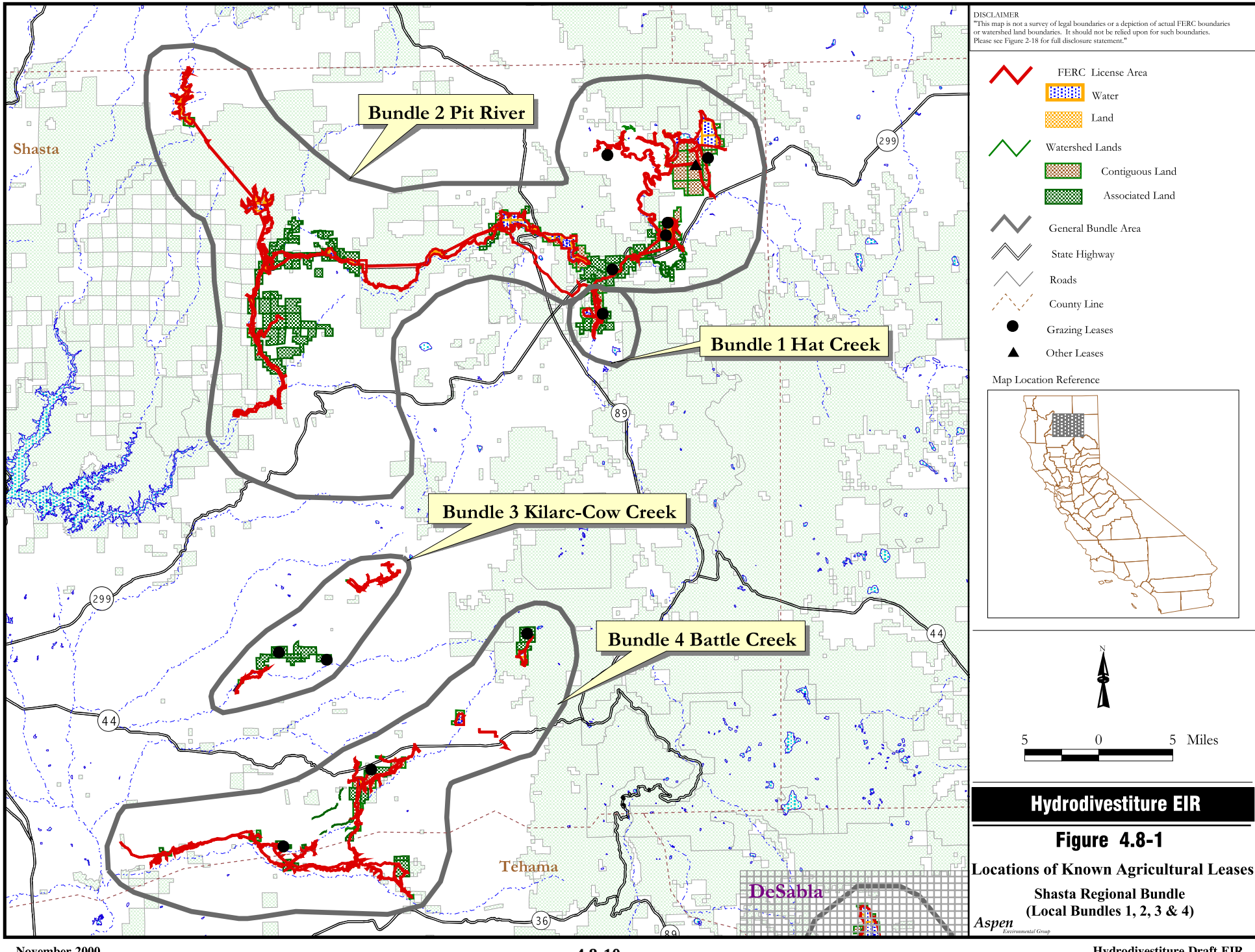
Bundle / Project		Acres Grazed	Acres Agriculture Other Than Grazing	Total Agriculture Acres
Bundle 1	Hat Creek (FERC 2661)	1,200	0	1,200
Bundle 2	Pit River (FERC 2687)	10,319	0	10,319
	Pit 3, 4, &5 (FERC 0233)	0	0	0
	McCloud-Pit (FERC 2016)	0	0	0
Bundle 3	Kilarc-Cow Creek (FERC 0606)	2,040	0	2,040
Bundle 4	Battle Creek (FERC 1121)	1,736	4	1,740
Total Shasta Region		**15,295**	**4**	**15,299**

The Shasta Regional Bundle's agricultural leases are within Shasta County. The Summary of County Agricultural Commissioners' Gross Value of Agricultural Production - California and the County Agricultural Commissioners' Data, Calendar Year 1998, reports livestock production generated $19,984,300 in gross revenue for Shasta County. Of this, cattle and calves contributed $13,350,600 and ranked first among all the agricultural commodities in gross revenue. The total gross revenue of all crops and livestock in Shasta County was $48,259,000 in 1998; the total land in agricultural production was 485,810 acres. There are no Prime Farmlands, or Williamson Act Contract farmlands associated with the Watershed Lands in this regional bundle.

Water Resources for Agriculture. Pacific Gas and Electric Company has no water delivery or supply agreements to deliver water for agriculture within the Shasta Regional Bundle. However, a portion of the non-consumptive water used to generate power is used for agricultural irrigation downstream of Pacific Gas and Electric Company's hydroelectric facilities. Approximately one percent, or 1,694 af, of the total storage capacity of the Shasta Regional Bundle flows into Cow Creek or Battle Creek which ultimately flows into the Sacramento River downstream of Shasta Lake. These flows are available directly out of the Sacramento River for agricultural use. Remaining flows (approximately 156,000 af) are stored in Shasta Lake. Total storage capacity for Shasta Lake is 4,552,000 af. Table 4.8-4 presents the tabulated storage capacity of reservoirs in the Shasta Regional Bundle whose flows terminate at Shasta Lake.

At maximum, Shasta Regional Bundle contributes 157,666 af, or 3.5 percent, to the total storage capacity of Shasta Lake.

Irrigation water from Shasta Lake is used in the Sacramento and San Joaquin Valleys of California. The California Department of Water Resources' California Water Plan Update Bulletin 160-98, Appendix 5A, states that of the average 14,664,000 af used in the Sacramento River Region and the



Hydrodivestiture EIR

Figure 4.8-1

Locations of Known Agricultural Leases

Shasta Regional Bundle
(Local Bundles 1, 2, 3 & 4)

Aspen Environmental Group

Table 4.8-4 Total Water Storage Capacity of Shasta Regional Bundle

Bundle & FERC License #	Reservoir	Storage Capacity, af
1 Hat Creek FERC 2661	Cassel Pond #1	48
1 Hat Creek FERC 2661	Baum Lake	629
2 Pit 1 FERC 2687	Pit 1 Forebay	2,451
2 Pit 3,4,5 FERC 0333	Lake Britton	41,877
2 Pit 3,4,5, FERC 0333	Pit 4 Reservoir	1,970
2 Pit 3,4,5 FERC 0333	Pit 5 Reservoir	314
2 Pit 3,4,5 FERC 0333	Open Conduit	1,044
2 McCloud-Pit FERC 2106	Lake McCloud	35,229
2 McCloud-Pit FERC 2106	Iron Canyon Reservoir	24,197
2 McCloud-Pit FERC 2106	Pit 6 Reservoir	15,605
2 McCloud-Pit FERC 2106	Pit 7 Reservoir	34,302
Total		157,666

10,996,000 af used in the San Joaquin River Region, 8,065,000 af (or 55 percent), and 7,027,000 af (or 64 percent), respectively, are used by agriculture. This same publication also presents information that on average, each acre irrigated in California receives 3.6 af per year.

These figures were applied to the maximum contribution of the Shasta Regional Bundle reservoirs. A maximum of 24,088 to 28,030 acres could be irrigated using water from the Shasta Regional Bundle reservoirs, out of a maximum total of approximately 695,444 to 809,244 acres that could be irrigated from Shasta Lake water.

Local Regulations and Policies. Shatsta County's General Plan notes that agriculture is a leading economic activity of the county and is concerned that it remain viable in the future. The General Plan has criteria for minimum agricultural parcel sizes based on agricultural productivity for crops or livestock measured in gross revenue and related ability to support full-time or part-time agricultural occupations.

Bundle 1: Hat Creek

Hat Creek 1 and 2 (FERC 2661)

FERC Licensed Lands. Agricultural land uses that occur on the Pit 1 FERC Licensed Lands include grazing. Grazing is the primary regional agricultural land use. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation on Bundle 1 FERC licensed lands. Agricultural leases are identified in Table 4.8-5, below.

Watershed Lands. Grazing is the agricultural land use on Watershed Lands of the Hat Creek 1 and 2 Projects.

Table 4.8-5 Bundle 1 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Edward Bosworth	Grazing	1,200	5/1/95	4/30/00	FERC & Watershed
Total Acres		1,200			

Source: Pacific Gas and Electric Company agricultural leases and PEA documents.

Bundle 2: Pit River

Pit River (FERC 2687)

FERC Licensed Lands. Agricultural land uses that occur on the Pit 1 FERC Licensed Lands include grazing. Grazing is the primary regional agricultural land use. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation on Bundle 2 FERC Licensed Lands. Agricultural leases are identified in Table 4.8-6.

Table 4.8-6 Bundle 2 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Don and Lani Martin	Grazing	300	1/30/1991	2/28/1996	FERC
Jon Eilts	Grazing	9	4/1/1998	3/31/2001	FERC
Geo.and John McArthur, et al.	Grazing	6,880	4/15/99	11/15/99	FERC
Fall River Ranch c/o Jim Rickert	Grazing	140	6/1/93	12/31/02	Watershed
Dusty and Shanna de Braga	Grazing	2,020	5/1/96	4/30/01	FERC & Watershed
Lemuel and James Earnest	Grazing	970	4/1/88	7/31/98	FERC
Total Acres		**10,319**			

Source: Pacific Gas and Electric Company agricultural leases and PEA documents.

Watershed Lands. Agricultural land use on Watershed Lands of the Pit 1 Project primarily includes grazing. Table 4.8-6 identifies the leases and agreements associated with Bundle 1.

Pit 3, 4, and 5 (FERC 0233)

FERC Licensed Land. There are no agricultural land uses that occur on the Pit 3, 4, and 5 FERC Licensed Land.

Watershed Lands. There are no agricultural land uses that occur on the Pit 3, 4, and 5 Watershed Land.

McCloud-Pit (FERC 2106)

FERC Licensed Land. There are no agricultural land uses on the McCloud-Pit FERC Licensed Land. There are no water rights for irrigation or water use within the project boundary. Pacific

Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project.

Watershed Lands. There are no agricultural land uses that occur on the McCloud-Pit Watershed Lands. Table 4.8-6 identifies the leases associated with Bundle 2. Expired leases listed are either being renewed or are holdovers.

Bundle 3: Kilarc-Cow Creek

Kilarc-Cow Creek (FERC 0606)

FERC Licensed Lands. Grazing is the primary agricultural land use on the Kilarc-Cow Creek FERC Licensed Land. Grazing occurs in the region as well. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation on Bundle 3 FERC Licensed Lands.

Watershed Lands. Agricultural land uses that occur on Watershed Lands associated with the Kilarc-Cow Creek Project include grazing and tree farming. Table 4.8-7 identifies leases associated with Bundle 3.

Table 4.8-7 Bundle 3 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Virginia Morelli: No. 2132-01-0121	Grazing	320	3/10/98	12/31/02	Watershed
Roy Atkins No. 2133-02-0065 & No. 2133-02-0068	Grazing	1,720	3/13/87	3/1/05	Watershed
Total Acres		2,040			

Source: Pacific Gas and Electric Company agricultural leases and PEA documents.

Bundle 4: Battle Creek (FERC 1121)

Battle Creek (FERC 1121)

FERC Licensed Lands. No agricultural land uses occur on the Battle Creek FERC Licensed Lands. Regional agricultural land uses include grazing. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. In addition, no contractual obligations to deliver or supply water have been identified for this project; however, Mount Lassen Trout Farms is authorized to divert water (approximately 25 cfs) from Millseat Creek on a non-consumptive basis. Agricultural leases are identified in Table 4.8-8.

Watershed Lands. Agricultural land uses that occur on Watershed Lands associated with the Battle Creek Project include grazing, Christmas tree farming, and aquaculture activities. Mount Lassen Trout Farms is authorized to divert water (approximately 25 cfs) from Millseat Creek on a non-consumptive basis. Table 4.8-8 identifies leases associated with Bundle 4.

Table 4.8-8 Bundle 4 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Dan Padilla	Grazing	156	4/13/1998	2/28/2001	FERC
Wade & Richard Grimsman	Grazing	900	7/24/1992	12/31/2002	Watershed
Leland Davis	Grazing	680	1/1/1997	12/31/2002	FERC & Watershed
Redding Mens Club	Christmas tree farm	4	4/18/90	3/1/05	FERC & Watershed
Total Acres		1,740			

Source: Pacific Gas and Electric Company agricultural leases and PEA documents.

4.8.4.2 DeSabla Regional Bundle

This section describes agricultural activities within or in the vicinity of Pacific Gas and Electric Company's FERC projects in the DeSabla Regional Bundle and associated Watershed Lands. Agricultural activities including grazing, irrigated pasture, vegetable and cereal crop production, viticulture, and fruit and nut production (orchards) have been identified within this region. However, grazing is the principal agricultural activity. Agricultural activities within the Bundle are conducted under lease agreements, special use agreements, and informal agreements. Pacific Gas and Electric Company does not directly conduct any agricultural activities on its lands.

Regional Setting

Agricultural Land Use Agreements. A total of four leases contain 3,835 acres and grazing is the only use identified (Figure 4.8-2). Agreements typically have terms of three to five years, and may cover relatively large areas. Table 4.8-9 summarizes lease agreements in the DeSabla Regional Bundle.

The DeSabla Watershed agricultural leases are within Butte, Lassen, and Plumas counties. The Summary of County Agricultural Commissioners' Gross Value of Agricultural Production - California and the County Agricultural Commissioners' Data, Calendar Year 1998, reports livestock production generated $4,979,000 in gross revenue for Butte County. Of this, cattle and calves contributed $4,979,000 and ranked seventh among all the agricultural commodities produced in the county in gross revenue. In total Butte County grossed crop and livestock sales of $213,315,000 according to this report; the total acres in agricultural production in Butte County in 1998 was 480,256. Lassen County reports total livestock production generated $10,188,400 in gross revenue. Of this, cattle and calves contributed $7,351,700 and ranked second among all the agricultural commodities produced in the county in gross revenue. In total Lassen County grossed crop and livestock sales of $42,588,000 according to this report. The total acres in agricultural production in Lassen County in 1998 were 339,088. Plumas County reports total livestock production generated $12,279,300 in gross revenue. Of this, cattle and calves contributed $9,549,500 and ranked first among all the agricultural commodities produced in the county in gross

Table 4.8-9 Agricultural Land in DeSabla Regional Bundle

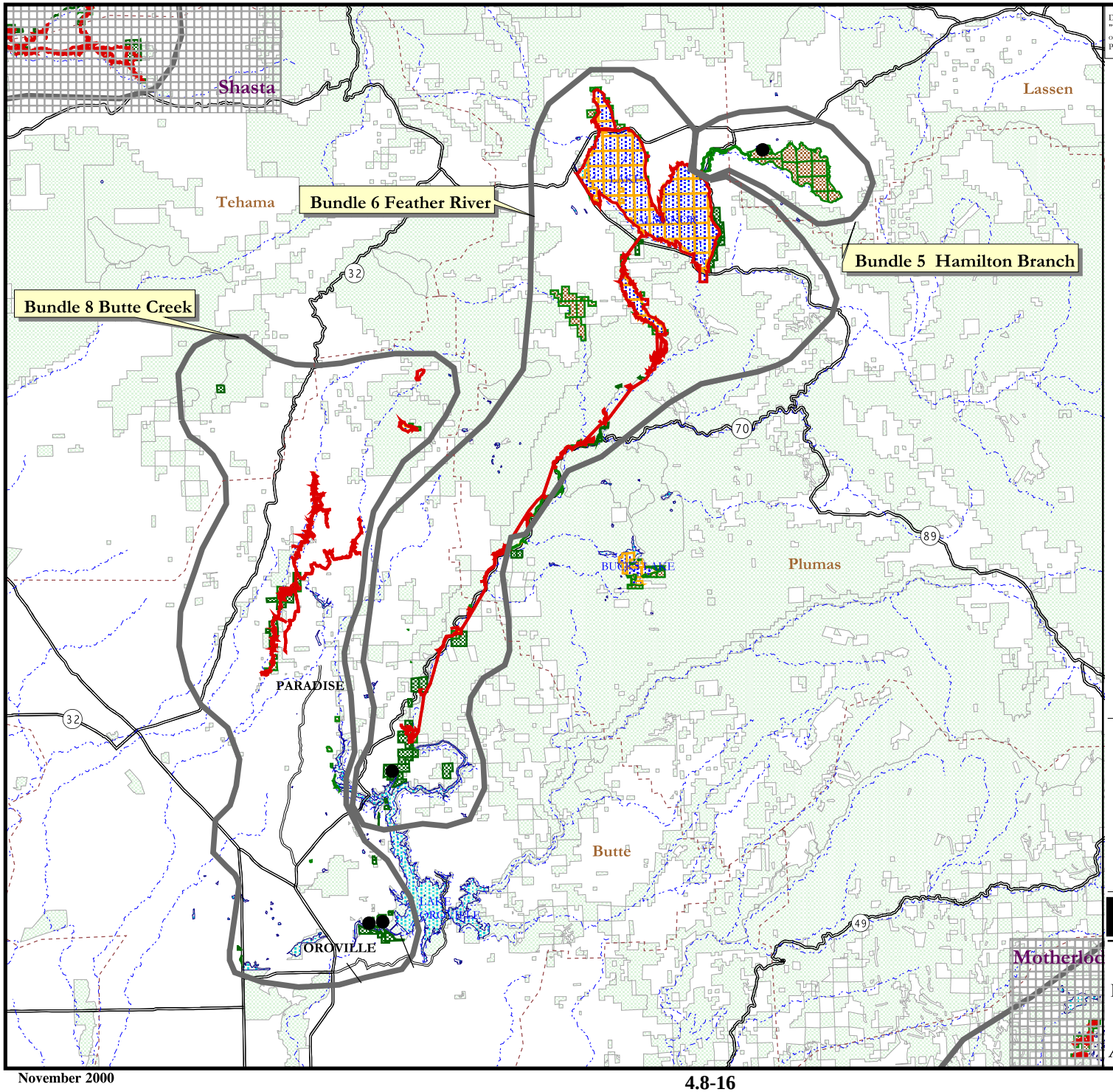
Bundle / Project		Acres Grazed	Acres Agriculture Other Than Grazing	Total Agriculture Acres
Bundle 5	Hamilton Branch	280	0	280
Bundle 6	Upper North Fork Feather River	800	0	800
	Rock Creek- Cresta FERC # 1962	0	0	0
	Poe FERC 2107	0	0	0
	Humbug Valley	2,375	0	2,375
Bundle 7	Bucks Creek FERC 0619	0	0	0
Bundle 8	DeSabla-Centerville FERC 0803	380	0	380
	Lime Saddle Powerhouse	0	0	0
	Coal Canyon Powerhouse	0	0	0
Total DeSabla Region		3,835	0	3,835

revenue. In total Plumas County grossed crop and livestock sales of $15,400,000 according to this report.

The total acres in agricultural production in Plumas County in 1998 were 163,350. There are no Prime Farmlands, or Williamson Act contract farmlands associated with the Watershed Lands in this regional bundle.

Water Resources for Agriculture. Pacific Gas and Electric Company has 19 water delivery or supply agreements to deliver water for agriculture within the DeSabla Regional Bundle; these are described in each FERC Bundle below. Pacific Gas and Electric Company also has a number of water delivery or supply agreements with unspecified, or poorly documented flow rates. An unknown number of diverters also take water from the Upper Centerville Canal under adjudicated water rights; Pacific Gas and Electric Company estimates the total amount taken by these unknown diverters is 1.175 cfs. A lease to Denny Land and Cattle Company in Humbug Valley permits the use of an "industry accepted rate of usage," for irrigated pasture. A memo by Pacific Gas and Electric Company employee Paul Kubicek dated September 19, 1996 indicates this Humbug Valley diversion may be about 2.5 af from Butt Creek, late spring through fall.

A portion of the non-consumptive water used to generate power is used for agricultural irrigation downstream of Pacific Gas and Electric Company's hydroelectric facilities. More than 99.9 percent of the total storage capacity of the DeSabla Regional Bundle flows into Lake Oroville, which holds 3,537,577 af of water at maximum capacity. Below are tabulated the maximum



DISCLAIMER
"This map is not a survey of legal boundaries or a depiction of actual FERC boundaries or watershed land boundaries. It should not be relied upon for such boundaries. Please see Figure 2-18 for full disclosure statement."

- FERC License Area
  - Water
  - Land
- Watershed Lands
  - Contiguous Land
  - Associated Land
- General Bundle Area
- State Highway
- Roads
- County Line
- Grazing Leases
- Other Leases

Map Location Reference

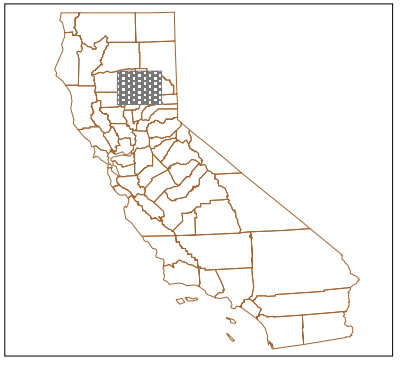


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Figure 4.8-2

Locations of Known Agricultural Leases

DeSabla Regional Bundle
(Local Bundles 5, 6 & 8)

Aspen Environmental Group

amount of storage in the reservoirs of the DeSabla Regional Bundle whose flows terminate at Lake Oroville.

At maximum, DeSabla Regional Bundle contributes 1,339,313 af, or 37.9 percent, to the total storage capacity of Lake Oroville.

Irrigation water from Lake Oroville is used in the Sacramento and San Joaquin Valleys of California. The California Department of Water Resources's California Water Plan Update Bulletin 160-98, Appendix 5A, states that of the average 14,664,000 af used in the Sacramento River Region and the 10,996,000 af used in the San Joaquin River Region, 8,065,000 af (or 55 percent), and 7,027,000 af (or 64 percent), respectively, are used by agriculture. This same publication also estimates that on average, each acre irrigated in California receives 3.6 af annually.

These figures were applied to the maximum contribution of the DeSabla Regional Bundle reservoirs. A maximum of 204,617 to 238,100 acres could be irrigated using water from the DeSabla Regional Bundle reservoirs, out of a maximum total of approximately 736,622 to 857,160 acres that could be irrigated from Lake Oroville water (see Table 4.8-10.)

Table 4.8-10 Total Water Storage Capacity of DeSabla Regional Bundle

Bundle & FERC License #	Reservoir	Storage Capacity, af
Hamilton Branch	Mountain Meadows Reservoir	23,942
6 North Fork Feather River FERC 2105	Lake Almanor	1,142,964
6 North Fork Feather River FERC 2105	Butt Valley Reservoir	49,897
6 North Fork Feather River FERC 2105	Belden Reservoir	2,241
6 Rock Creek-Cresta FERC 1962	Rock Creek Reservoir	1,500
6 Rock Creek-Cresta FERC 1962	Cresta Reservoir	4,140
6 Poe FERC 2107	Poe Dam	1,203
7 Bucks Creek FERC 0619	Three Lakes	606
7 Bucks Creek FERC 0619	Bucks Lake	105,327
7 Bucks Creek FERC 0619	Grizzly Forebay	1,109
8 DeSabla-Centerville FERC 0803	Round Valley Reservoir	1,195
8 DeSabla-Centerville FERC 0803	Philbrook	5,009
Total		**1,339,313**

Local and Regional Policies. Butte, Lassen and Plumas Counties all recognize the importance of agriculture to the county economies. Each has a General Plan that has identified agriculture as a natural and cultural resource to preserve. These county governments recognize the importance of agricultural resources, and have instituted long-range goals, objectives, policies, and standards for preserving agricultural lands through their General Plans.

Bundle 5: Hamilton Branch

Hamilton Branch (non-FERC)

FERC Licensed Land. The Hamilton Branch Powerhouse and adjoining area is exempt from a FERC license.

Watershed Lands. Agricultural land uses that occur within the Hamilton Branch Powerhouse area include grazing. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this facility. However, Pacific Gas and Electric Company has a contract to deliver and/or supply 145,000 af of water annually for agricultural irrigation. Actual delivery occurs through the California Department of Water Resources to the Western Canal Water District from the Hamilton Branch facility, and four other facilities (Upper North Fork Feather River, Rock Creek-Cresta, Poe, and Bucks Creek) each of which contribute water to fulfill this 145,000 af contract. This agreement cannot be altered except by mutual consent. The Western Canal Water District holds the water rights to this contract. A three-way agreement with Pacific Gas and Electric Company and the California Department of Water Resources, Pacific Gas and Electric Company is allowed to use the water non-consumptively to generate power. Pacific Gas and Electric Company has some discretion over the delivery timing of this water but must deliver it during March 1 and October 31 of each year.

Pacific Gas and Electric Company has entered into one lease on this land for grazing. Table 4.8-11 identifies the lease associated with Bundle 5.

Table 4.8-11 Bundle 5 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Elden Stroing	Grazing	280	3/6/1998	12/31/2001	Non-FERC
Total Acres		280			

Source: Pacific Gas and Electric Company agricultural leases and PEA documents.

Bundle 6: Upper North Fork Feather River

Upper North Fork Feather River (FERC 2105)

FERC Licensed Lands. Agricultural land uses that occur on the Upper North Fork Feather River Project FERC Licensed Lands include timber management and rangeland. The project is in the vicinity of the Plumas National Forest, and additional agricultural land uses include forestry. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. However, Pacific Gas and Electric Company has a contract to deliver and/or supply 145,000 af of water annually for agricultural irrigation. Actual delivery occurs through the California Department of Water Resources to the Western Canal Water District from the Hamilton Branch facility and four other facilities (Upper North Fork Feather River, Rock Creek-Cresta, Poe, and Bucks Creek) each of which contribute water to fulfill this 145,000 af

contract. This agreement cannot be altered except by mutual consent. The Western Canal Water District holds the water rights to this contract. In a three-way agreement with Pacific Gas and Electric Company and the California Department of Water Resources, Pacific Gas and Electric Company is allowed to use the water non-consumptively to generate power. Pacific Gas and Electric Company has some discretion over the delivery timing of this water, but must deliver it during March 1 and October 31 of each year.

Watershed Lands. Grazing is the only agricultural land use on Watershed Lands associated with the Upper North Fork Feather River Project.

Rock Creek-Cresta (FERC 1962)

FERC Licensed Lands. The primary agricultural use on Pacific Gas and Electric Company land that occurs on the Rock Creek-Cresta Project FERC Licensed Lands is timber production. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. However, Pacific Gas and Electric Company has a contract to deliver and/or supply 145,000 af of water annually for agricultural irrigation. Actual delivery occurs through the California Department of Water Resources to the Western Canal Water District from the Hamilton Branch facility, and four other facilities (Upper North Fork Feather River, Rock Creek-Cresta, Poe, and Bucks Creek) each of which contribute water to fulfill this 145,000 af contract. This agreement cannot be altered except by mutual consent. The Western Canal Water District holds the water rights to this contract. In a three-way agreement with Pacific Gas and Electric Company and the California Department of Water Resources, Pacific Gas and Electric Company is allowed to use the water non-consumptively to generate power. Pacific Gas and Electric Company has some discretion over the delivery timing of this water, but must deliver it during March 1 and October 31 of each year.

Watershed Lands. The primary agricultural land use that occurs on the Rock Creek-Cresta Project Watershed Lands is timber production. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project.

Poe (FERC 2107)

FERC Licensed Lands. There are no agricultural land uses on the Poe Project FERC Licensed Lands. However, Pacific Gas and Electric Company has a contract to deliver and/or supply 145,000 af of water annually for agricultural irrigation. Actual delivery occurs through the California Department of Water Resources to the Western Canal Water District from the Hamilton Branch facility, and four other facilities (Upper North Fork Feather River, Rock Creek-Cresta, Poe, and Bucks Creek) each of which contribute water to fulfill this 145,000 af contract. This agreement cannot be altered except by mutual consent. The Western Canal Water District holds the water rights to this contract. In a three-way agreement with Pacific Gas and Electric Company and the California Department of Water Resources, Pacific Gas and Electric Company is allowed to use

the water non-consumptively to generate power. Pacific Gas and Electric Company has some discretion over the delivery timing of this water, but must deliver it during March 1 and October 31 of each year.

Watershed Lands. Grazing is the agricultural land use on Watershed Lands associated with the Poe Project.

Non-Contiguous Land. A grazing lease in Humbug Valley is associated with the DeSabla Watershed, but is not contiguous to FERC Licensed Land. A portion of this leased property is irrigated pasture, and obtains water from Yellow Creek that runs through FERC No. 2107. The amount of water used is unspecified in the lease except that lessee may use "industry accepted rate of usage," for irrigated pasture. A memo by Pacific Gas and Electric Company employee Paul Kubicek dated September 19, 1996 indicates this Humbug Valley diversion may be about 2.5 af from Butt Creek, late spring through fall. Table 4.8-12 identifies leases associated with Bundle 6.

Table 4.8-12 Bundle 6 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
George Moak	Grazing	800	4/1/99	3/31/02	Watershed
Denny Land and Cattle Company	Grazing	2,375	1/18/00	12/31/00	Non-contiguous
Total Acres		3,175			

Source: Pacific Gas and Electric Company agricultural leases and PEA documents.

Bundle 7: Bucks Creek

Bucks Creek (FERC 0619)

FERC Licensed Lands. Agricultural land uses that occur within the Bucks Creek Licensed Lands boundary include timber production and ranching. FERC License Article 102 requires that Pacific Gas and Electric Company not use herbicides or pesticides on USFS lands without prior written approval by USFS and requires that Pacific Gas and Electric Company file a pesticide and herbicide use plan annually with the USFS. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. There are no current leases. However, Pacific Gas and Electric Company has a contract to deliver and/or supply 145,000 af of water annually for agricultural irrigation. Actual delivery occurs through the California Department of Water Resources to the Western Canal Water District from the Hamilton Branch facility, and four other facilities (Upper North Fork Feather River, Rock Creek-Cresta, Poe, and Bucks Creek) each of which contribute water to fulfill this 145,000 af contract. This agreement cannot be altered except by mutual consent. The Western Canal Water District holds the water rights to this contract. In a three-way agreement with Pacific Gas and Electric Company and the California Department of Water Resources, Pacific Gas and Electric Company is allowed to use the water non-consumptively to generate power. Pacific Gas and Electric Company has some

discretion over the delivery timing of this water, but must deliver it during March 1 and October 31 of each year.

Watershed Lands. Pacific Gas and Electric Company has not issued written permits or entered into third party agreements, such as leases, for uses on these lands.

Bundle 8: Butte Creek

DeSabla-Centerville (FERC 0803)

FERC Licensed Lands. Agricultural land uses within the DeSabla-Centerville Project boundary include grazing and timber production. There are several small cattle ranches near the project. Except for seasonal open range grazing in the north portion of the area, most ranching is in the southern portion.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. However, Pacific Gas and Electric Company has contracts to deliver and/or supply water to three separate entities for agricultural irrigation uses. Additionally Pacific Gas and Electric Company reports an unknown number of other diversions amounting to 1.175 cfs total, all based on adjudicated water rights.

The three water delivery agreements are as follows. Under the terms of the first agreement, Stirling Bluffs Corporation receives 100 af annually from Hendricks Tunnel, and under the same agreement Del Oro Water Company obtains 265 af annually 1,440 feet downstream of Toadtown powerhouse. This contract cannot be altered except by mutual agreement. Under the terms of the second agreement, Allan Harthorn (formerly Coleman and Kitchens) draws 4.5 m.i. from the Lower Centerville Canal. This contract cannot be altered except by mutual agreement. Under the terms of the third agreement, Elden Duensing draws 4.8 m.i. from the Hendricks Canal. This contract can be revoked at will by Pacific Gas and Electric Company.

Watershed Lands

Grazing is the agricultural land use on Watershed Lands associated with the Butte Creek FERC License. Table 4.8-13 indicates leases that are associated with Bundle 8.

Table 4.8-13 Bundle 8 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Katherine & John Campbell	Grazing	200	8/11/97	12/31/01	Watershed
Donald Duesing No. 2133-02-0065 & No. 2133-02-0068	Grazing	180	1/1/97	12/31/01	Watershed
Total Acres		380			

Lime Saddle Powerhouse

There are no agricultural land uses that occur within the Lime Saddle Powerhouse area. However, Pacific Gas and Electric Company has contracts to deliver and/or supply water to 14 separate entities, totaling approximately 52.8 cfs. One of these is California Water Service Company, which has a written agreement to draw 46.6 cfs from Coal Canyon Afterbay. California Water Service Company supplies the city of Oroville's municipal water. A reference in this agreement obliges Pacific Gas and Electric Company to transport stored water belonging to Thermalito Irrigation District through the Miocene Canal; to get to Thermalito Irrigation District, this water must also flow through the Powers Canal operated by California Water Service Company. Pacific Gas and Electric Company's agreement with Thermalito Irrigation District cannot be altered except by mutual agreement. Approximately seven percent of the total water delivered under this contract is used for agriculture, approximately 250 acres, mostly for the irrigation of olive orchards. This contract and the remaining 13 agreements to deliver water from Bundle 8 are summarized in Table 4.8-14.

Table 4.8-14 Water Delivery Agreements in Bundle 8

Water Agreement with :	Amount of water, in miner's inches	Name of diversion point
Calcatera, James	3	Middle Miocene Canal
California Water Service Company	46.6 cfs	Coal Canyon Afterbay
Chaffin, George	60	Coal Canyon Forebay
Davis, James	0.8	Lime Saddle Penstock
Flood, Roger and Andrea	8	Middle Miocene Canal
Foster, Robert	3	Lower Miocene Canal
Maas, Andrew	8	Middle Miocene Canal
Margarita Ranch LLC	17.6	Middle Miocene Canal
Martin, Leah	5	Middle Miocene Canal
Miles, Robert and Sarah	8	Middle Miocene Canal
NKV Realty LLC	48	Middle Miocene Canal
Poleschook, Mike	.8	Lime Saddle Penstock
Silver Ridge ranch	25.6	Middle Miocene Canal
Singletary, Bob	52	Middle Miocene Canal

All these agreements may be terminated by either party with ninety day's notice.

Coal Canyon (non-FERC)

The Coal Canyon Powerhouse is located near olive groves and ranch land. Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this facility. There are no leases. However, Pacific Gas and Electric Company has contracts to deliver and/or supply a

portion of its contracted water from this facility to the same entities listed in the Lime Saddle Powerhouse section above. The principal agricultural uses are cattle grazing and olive orchards.

4.8.4.3 Drum Regional Bundle

Regional Setting

This section describes agricultural activities within or in the vicinity of Pacific Gas and Electric Company's FERC projects in the Drum Regional Bundle and associated Watershed Lands. Agricultural activities including grazing, irrigated pasture, vegetable and cereal crop production, viticulture, and fruit and nut production (orchards) have been identified within this region. However, grazing is the principal agricultural activity. Agricultural activities within the Bundle are conducted under lease agreements, special use agreements, and informal agreements. Pacific Gas and Electric Company does not directly conduct any agricultural activities on their lands.

Agricultural Land Use Agreements

A total of eight leases encumbering 430 acres, support the agricultural activities of grazing and farming. Grazing is the principal use, at 416 acres (Figure 4.8-3). Agreements typically have terms of three to five years. These lease agreements are summarized in Table 4.8-15 for the Drum Regional Bundle.

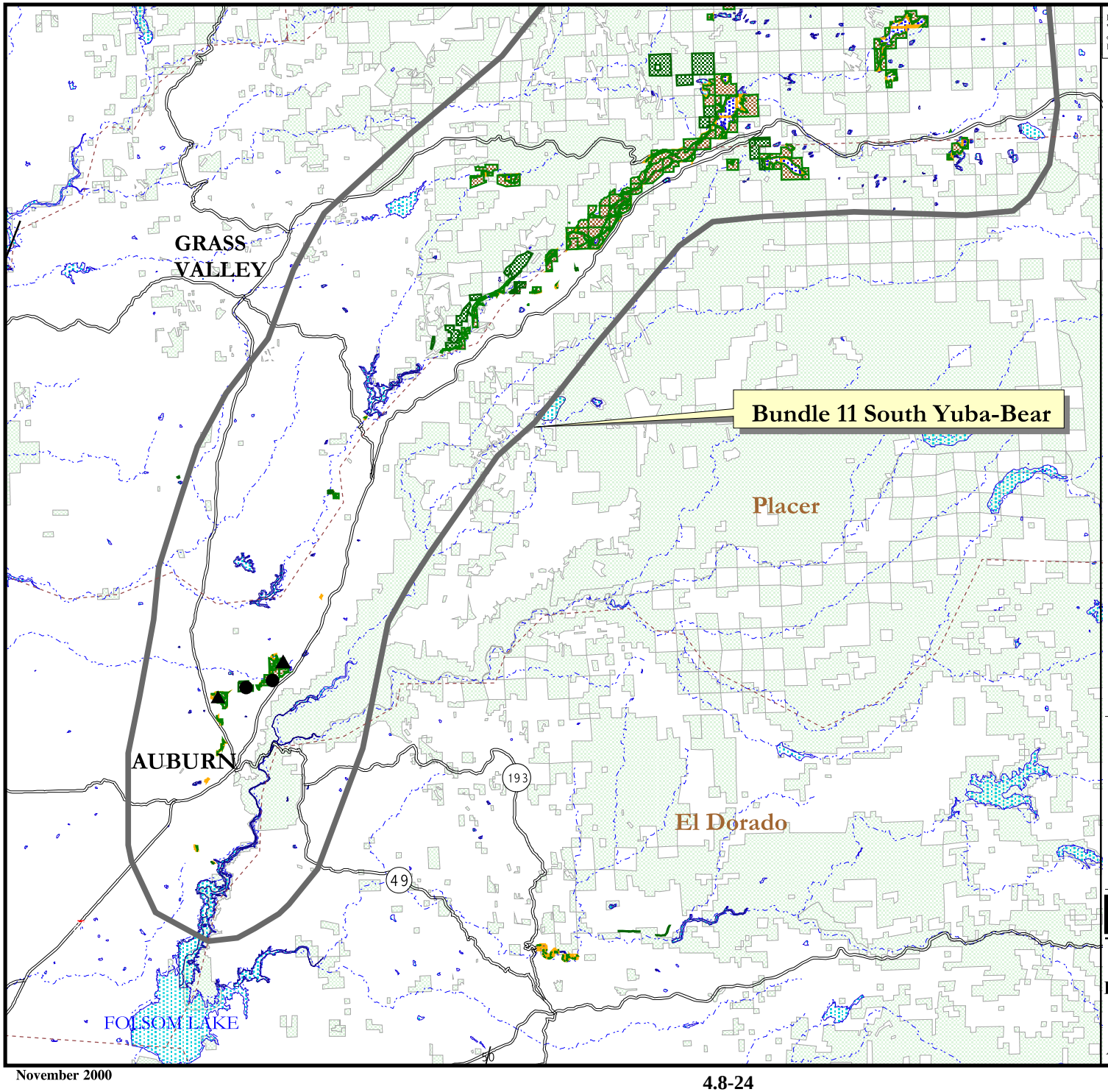
Table 4.8-15 Agricultural Land in Drum Regional Bundle

Bundle / Project		Acres Grazed	Acres Agriculture Other Than Grazing	Total Agriculture Acres
Bundle 9	Narrows FERC # 1403	0	0	0
Bundle 10	Potter Valley FERC # 0077	6	2	8
Bundle 11	Drum-Spaudling FERC # 2310	145	12	157
Bundle 12	Chili Bar FERC # 2155	0	0	0
Total Drum Region		**151**	**14**	**165**

There are seven leases in Eastern Drum Watershed within Placer County. The Summary of County Agricultural Commissioners' Gross Value of Agricultural Production - California and the County Agricultural Commissioners' Data, Calendar Year 1998 reports livestock production in Placer County generated $15,363,000 in gross revenue. Of this, cattle and calves contributed $9,990,000 in gross revenue and ranked third among all commodities produced in the county.

The total for Placer County’s crop and livestock sales in 1998 was $45,831,000 according to this report. The total acres in agricultural production in 1998 were 242,958.

The single Western Drum Watershed agricultural lease is within Mendocino County. Livestock production is an important part of this county's economy. The Summary of County Agricultural



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- FERC License Area
  - Water
  - Land
- Watershed Lands
  - Contiguous Land
  - Associated Land
- General Bundle Area
- State Highway
- Roads
- County Line
- Grazing Leases
- Other Leases

Map Location Reference

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Figure 4.8-3

Locations of Known Agricultural Leases

Drum Regional Bundle (Local Bundle 11)

Aspen Environmental Group

Commissioners' Gross Value of Agricultural Production - California and the County Agricultural Commissioners' Data, Calendar Year 1998 reports livestock production generated $16,913,300 in value or 14.5 percent of the top ten leading crops for this county. Cattle and calves contributed $6,113,100 and ranked third. The total for Mendocino County's crop and livestock sales in 1998 was $127,674,000 according to this report. The total acres in agricultural production in 1998 were 549,381

None of the project lands in this regional bundle are under a Williamson Act contract. There are no prime farmlands in this regional bundle identified by the California Department of Conservation's Farmland Mapping and Monitoring Program; however, portions of the Drum Regional Bundle are not mapped.

Water Resources for Agriculture

Pacific Gas and Electric Company has four water delivery or supply agreements to deliver water for agriculture within the Drum Regional Bundle. These agreements are with Nevada Irrigation District, Placer County Water Agency, Sonoma County Flood Control and Water Conservation District, and Potter Valley Irrigation District. Details of the agreements concerning these deliveries are described below in each associated bundle.

A portion of the non-consumptive water used to generate power is used for agricultural irrigation downstream of Pacific Gas and Electric Company's hydroelectric facilities. Detailed estimates of the sources and agricultural uses of this water are described below in each associated bundle.

Local Regulations and Policies

Mendocino and Placer Counties both recognize the importance of agriculture to the county economies. Each has a General Plan that has identified agriculture as a natural and cultural resource to preserve. These county governments recognize the importance of agricultural resources, and have instituted long-range goals, objectives, policies, and standards for preserving agricultural lands through their General Plans.

Bundle 9: North Yuba River

Narrows (FERC 1403)

Agricultural land use that occurs within the Narrows Project boundary and in the general vicinity is primarily low-intensity grazing.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. In addition, no contractual obligations to deliver or supply water have been identified for this project. There are no leases.

Watershed Lands. Agricultural land use on Watershed Lands associated with the Narrows Project is primarily low-intensity grazing.

Bundle 10: Potter Valley

Potter Valley (FERC 0077)

Agricultural land uses that occur within the Potter Valley Project boundary include grazing, crop farming and timber production. Regional agricultural land use is diverse. The primary use is wine grape vineyards, followed by hay, pasture and pear orchards. These and other crops in the 6,000-acre area of the Potter Valley and nearby Lake Mendocino area are estimated to have produced $23 million to $28.7 million in gross sales in 1998. Wine grapes were the main contributor to this sum, with approximately $20 million to $25.3 million in value. The nearby Redwood Valley region produced over $99 million in gross crop sales in 1998. Wine grapes were the main contributor to this sum, with approximately $81.9 million in value. Also nearby is the Alexander Valley, with approximately 12,800 acres producing an estimated $126 million in gross crop sales in 1998. Wine grapes were the main contributor to this sum, with approximately $125.1 million in value. Together, the three areas generate approximately $250 million in gross crop sales as of 1998.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. However Pacific Gas and Electric Company has entered into two separate agreements to supply water for agricultural uses. The first agreement, with Potter Valley Irrigation District, expires in April 2022. Under its terms, Pacific Gas and Electric Company sells and diverts up to 16,600 af of water between May 1st and October 15th (the summer period), and up to 19,000 af of water minus the amount of water diverted the previous summer period during the winter period (October 16th to April 30th) at the Potter Valley tailrace. The second agreement permits Sonoma County Flood Control and Water Conservation District to divert varying amounts of water to the District's at the East Branch of the Russian River at varying times to the extent that the diversions do not interfere with Pacific Gas and Electric Company's power generation. Mr. Randy Poole, General Manager of Sonoma County Water Agency, estimates that between 1923 and 1992, approximately 159,000 af has been diverted annually from the Potter Valley Project into the Russian River.

Both consumptive water and non-consumptive water used to generate power is used for agricultural irrigation downstream of Pacific Gas and Electric Company's hydroelectric facilities. The three crop production areas mentioned above, the Potter Valley and Lake Mendocino area, the Redwood Valley, and the Alexander Valley, receive irrigation water diversions from the Potter Valley Project. Mr. Robert Beach, former General Manager of and currently a consultant to The Sonoma County Water Agency, has stated in private correspondence that in 2000 an estimated 29,780 af will be supplied to the three areas for agricultural use. This is 73 percent of the water used in the area.

Ms. Janet Pauli, Member of the Board of Directors of the Potter Valley Irrigation District (PVID), stated that PVID has no other source of water than the Potter Valley Project. The water is used from early March through the fall months, and is critical for frost control on wine grapes in the spring, as well as for the irrigation of the perennial tree and vine crops of the area. In years of high rain and water availability, PVID obtains 50 cfs from Potter Valley Project in addition to the 19,000 af per year agreement.

Maximum storage capacity in the reservoirs of the Potter Valley Project is presented in Table 4.8-16.

Table 4.8-16 Total Water Storage Capacity of Western Drum Regional Bundle

Bundle & FERC License #	Reservoir	Storage Capacity, af
10 Potter Valley FERC 0077	Lake Pillsbury	80,556
10 Potter Valley FERC 0077	Van Arsdale Reservoir	390
Total Potter Valley Project		**80,964**

At maximum, the Potter Valley Project can store 80,964 af, and supplies essentially 100 percent of the agricultural water used in Potter Valley, and the majority of agricultural water used in the Redwood Valley. The Alexander Valley has other supply sources than the Potter Valley Project. Altogether, project water irrigates an estimated $72.5 million worth of crops in the three areas.

Watershed Lands. Agricultural land use that occurs on Watershed Lands associated with the Potter Valley Project primarily includes grazing. Table 4.8-17 summarizes agricultural leases found in Bundle 10.

Table 4.8-17 Bundle 10 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Eugene McFadden	Grazing & Ag. Activities	8	2/28/1998	Terminates upon notice	Watershed
Total Acres		8			

Bundle 11: South Yuba River

Drum-Spaulding (FERC 2310)

Agricultural land uses that occur within the Drum-Spaulding Project boundary include grazing and timber production, both on private and public lands. Some livestock grazing occurs in the vicinity of the project near Auburn and there are beehives throughout the region.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. However, Pacific Gas and Electric Company has contracts to deliver

and/or supply water to two water agencies for agricultural irrigation uses, Nevada Irrigation District and Placer County Water Agency.

Both Pacific Gas and Electric Company and Nevada Irrigation District operate facilities along the Yuba and Bear Rivers. Both parties have agreed to coordinate the operation of these facilities and the flow of water. In several agreements, Pacific Gas and Electric Company delivers or makes available to Nevada Irrigation District water in varying amounts and at varying locations, including Deer Creek Powerhouse tailrace and Wise Powerhouse tailrace. Nevada Irrigation District supplies itself with most of its own needs, according to Mr. James Chatigny, General Manager of Nevada Irrigation District. Nevertheless, Pacific Gas and Electric Company is required to sell varying amounts of water to Nevada Irrigation District at certain locations, primarily Rollins Reservoir. The contract also requires Pacific Gas and Electric Company to carry varying amounts of water for Nevada Irrigation District in the Bear River Aqueduct. These contracts expire in 2013.

The terms of the agreement with Placer County Water Agency require Pacific Gas and Electric Company to deliver up to 100,400 af annually from three zones above, between and below the Halsey and Wise Powerhouses. Another agreement requires Pacific Gas and Electric Company to deliver up to 25,000 af from the Alta powerhouse tailrace and Forebay. These contracts expire in 2013.

The flows of the Drum-Spaulding Project are used non-consumptively by Pacific Gas and Electric Company for power generation and consumptively by Nevada Irrigation District and Placer County Water Agency. Nevada Irrigation District, which has other sources of water than Drum-Spaudling, delivers approximately 140,000 af per year. Of this, approximately 130,000 af, or 93 percent is used for agriculture. The greatest portion of this is used for irrigated pasture, but wine grapes are also an important crop in the Nevada Irrigation District. Of the 125,400 af that Placer County Water Agency buys annually from Pacific Gas and Electric Company's Drum-Spaulding Project, approximately 100,000 af is sold as raw water; rice, irrigated pasture, orchard crops and wine grapes are the major crops and use about 52,500 af per year. At an average crop usage rate of 3.6 af per acre per year, this irrigates approximately 14,600 acres total. Rural uses, such as small pastures, gardens and ponds for fire protection use the remainder of the water.

The maximum amount of storage in the reservoirs of the Drum-Spaudling Bundle is presented in Table 4.8-18.

At maximum, the Drum-Spaulding Project can store 151,168 af, and supplies close to 100 percent of the 50,000 af used by agriculture in Placer County Water Agency's boundaries. Table 4.8-19 summarizes leases found in Bundle 11.

Table 4.8-18 Total Water Storage Capacity of Eastern Drum Regional Bundle

Bundle & FERC License #	Reservoir	Storage Capacity, af
11 Drum-Spaulding FERC 2310	Rock Lakes, Culbertson Lake, Lindsey Lakes	1,374
11 Drum-Spaulding FERC 2310	Feeley Lakes	889
11 Drum-Spaulding FERC 2310	Blue Lake, Rucker Lake	1811
11 Drum-Spaulding FERC 2310	Fuller Lake	1,127
11 Drum-Spaulding FERC 2310	Fordyce Lake, Meadow Lake, Lake Sterling, White Rock Lake	57,078
11 Drum-Spaulding FERC 2310	Kidd Lake, Peak Lake	3,735
11 Drum-Spaulding FERC 2310	Lake Spaulding	74,773
11 Drum-Spaulding FERC 2310	Lake Valley Reservoir, Kelly Lake	8,300
11 Drum-Spaulding FERC 2310	Drum Forebay	621
11 Drum-Spaulding FERC 2310	Drum Afterbay	341
11 Drum-Spaulding FERC 2310	Alta Forebay	28.5
11 Drum-Spaulding FERC 2310	Deer Creek Forebay	15.7
11 Drum-Spaulding FERC 2310	Halsey Forebay	240
11 Drum-Spaulding FERC 2310	Rock Creek Reservoir	803
11 Drum-Spaulding FERC 2310	Wise Afterbay	32
Total		151,168

Table 4.8-19 Bundle 11 Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Walley Wilson	Grazing	125	6/1/95	5/31/00	FERC
Ruth Rueter No. 2113-08-2618	Grazing	20	8/14/96	7/31/00	Watershed
David Jones No. 2113-10-0484	Christmas tree farm	5	6/24/92	5/31/02	Watershed
Luis Munoz	Christmas tree farm	5	10/20/99	1/31/03	FERC
Miller's Honey Farm, Inc.	Site for beehives	1	5/1/99	4/30/02	FERC
Wind River Honey Co.	Site for beehives	1+	9/1/98	8/31/01	FERC
Total Acres		**157**			

Bundle 12: Chili Bar

Chili Bar (FERC 2155)

There are no agricultural land uses that occur within the Chili Bar Project boundaries, nor in the area surrounding the project. Pacific Gas and Electric Company does not engage in agricultural activities, lease land, or use water for irrigation at this project. In addition, no contractual obligations to deliver or supply water have been identified for this project.

4.8.4.4 Motherlode Regional Bundle

This section describes agricultural activities within or in the vicinity of Pacific Gas and Electric Company's FERC projects in the Motherlode Regional Bundle and associated Watershed Lands. Agricultural activities including grazing, irrigated pasture, vegetable and cereal crop production, viticulture, and fruit and nut production (orchards) have been identified within this region. However, grazing is the principal agricultural activity. Agricultural activities within the Bundle are conducted under lease agreements, special use agreements, and informal agreements. Pacific Gas and Electric Company does not directly conduct any agricultural activities on its lands. Figure 4.8-4 shows project lands, in the Motherlode Regional Bundle, which are used for agriculture.

Regional Setting

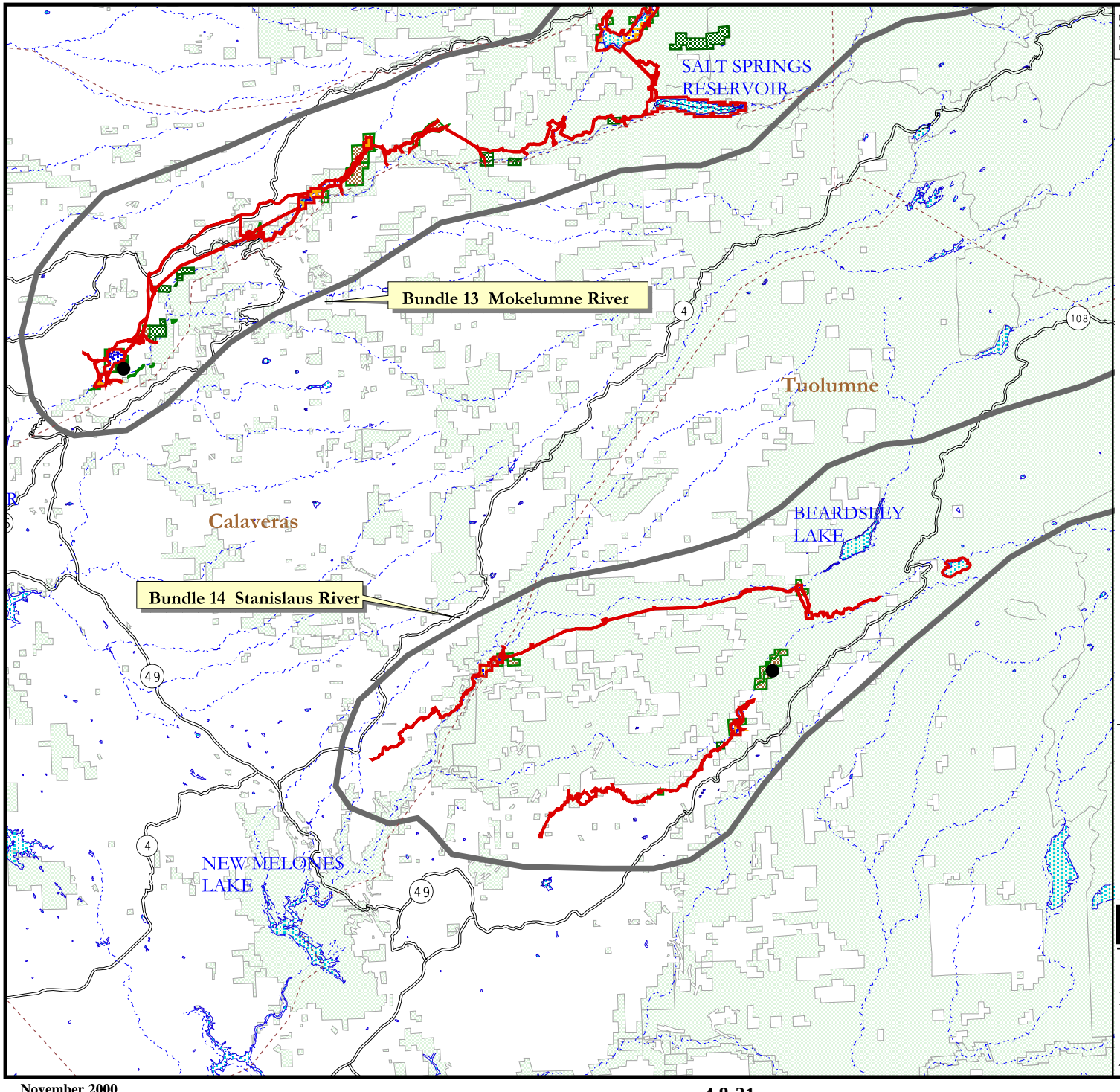
Agricultural Land Use Agreements

The agreements summarized in Table 4.8-20 have terms of five years, and cover relatively large areas.

Table 4.8-20 Agricultural Land in the Motherlode Regional Bundle

Bundle / Project		Acres Grazed	Acres Agriculture Other Than Grazing	Total Agriculture Acres
Bundle 13	Mokelumne River FERC # 137	300	0	300
Bundle 14	Spring Gap – Stanislaus FERC # 2130	0	0	0
	Phoenix FERC # 1061	640	0	640
Bundle 15	Merced Falls FERC # 2467	0	0	0
Total Motherlode Region		**940**	**0**	**940**

The Motherlode Watershed agricultural leases are within Amador and Tuolumne County. The Summary of County Agricultural Commissioners' Gross Value of Agricultural Production - California and the County Agricultural Commissioners' Data, Calendar Year 1998 reports livestock production generated $6,101,400 in gross revenue in Amador County. Of this, cattle and calves contributed $4,290,000 and ranked second among all the agricultural commodities produced in the county. The total for Amador County’s crop and livestock sales in 1998 was $15,104,000 according to this report. The total acres in agricultural production in Amador County in 1998 was 174,612. Tuolumne County reports total livestock production generated $3,932,000 in gross revenue. Of this, cattle and calves contributed $2,184,000 and ranked first among all the agricultural commodities produced in the county. The total for Tuolumne County’s crop and



DISCLAIMER
"This map is not a survey of legal boundaries or a depiction of actual FERC boundaries or watershed land boundaries. It should not be relied upon for such boundaries. Please see Figure 2-18 for full disclosure statement."

FERC License Area
Water
Land
Watershed Lands
Contiguous Land
Associated Land
General Bundle Area
State Highway
Roads
County Line
Grazing Leases
Other Leases

Map Location Reference

N

4 0 4 Miles

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Figure 4.8-4

Locations of Known Agricultural Leases

Motherlode Regional Bundle
(Local Bundles 13 & 14)

Aspen Environmental Group

livestock sales in 1998 was $13,986,000 according to this report. The total acres in agricultural production in Tuolumne County in 1998 were 205,400.

There are no Prime Farmlands in this regional bundle, and none of the project land within this regional bundle is under a Williamson Act contract.

Water Resources for Agriculture

Pacific Gas and Electric Company has two agreements to deliver water from the Motherlode Assets to two separate entities and one agreement with an individual for agricultural irrigation uses. The entities are Amador Water Agency and Tuolumne Utility District. Details of the agreements concerning these deliveries are described below in each associated watershed bundle. Two court adjudications, commonly referred to as the Lodi Decree, obligate Pacific Gas and Electric Company to make certain releases into the Electra Afterbay depending on precipitation and reservoir storage levels.

Additionally, a portion of the non-consumptive water used to generate power is used by agriculture downstream of Pacific Gas and Electric Company's hydroelectric facilities. Details of this usage are described below in each associated watershed bundle.

Local Regulations and Policies

Amador and Tuolumne Counties recognize the importance of agriculture to the county economies. Each has a General Plan that has identified agriculture as a natural and cultural resource to preserve. These county governments recognize the importance of agricultural resources, and have instituted long-range goals, objectives, policies, and standards for preserving agricultural lands through their General Plans.

Bundle 13: Mokelumne River

Mokelumne River (FERC 0137)

Grazing is the primary agricultural land use within the Mokelumne River Project boundary. In addition, other regional agricultural land uses include the production of forest products. Grazing also occurs in the general vicinity.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. However, Pacific Gas and Electric Company has contracts to deliver and/or supply water to Amador Water Agency. Under terms of one agreement with Amador Water Agency, Pacific Gas and Electric Company agrees to deliver up to 15,000 af of water annually from Lake Tabeaud. In a separate agreement, Amador Water Agency may store water in Lower Bear Reservoir and divert approximately 1,200 af of water annually from Tiger Creek Afterbay. Only a small amount of this total water, approximately 1,260 af is used for agricultural irrigation,

primarily wine grape vineyards approximately 350 acres. These contracts expire with the FERC license.

Watershed Lands. Agricultural land use on Watershed Lands associated with the Mokelumne River consists of grazing. Table 4.8-21 describes the lease associated with Bundle 13.

Table 4.8-21 Bundle 13 Associated Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
James Cuneo	Grazing	300	6/6/1990	5/31/2000	FERC & Watershed
Total Acres		**300**			

Bundle 14: Stanislaus River

Spring Gap-Stanislaus (FERC 2130)

Agricultural land uses that occur within the Spring Gap-Stanislaus Project boundary include grazing and timber production. Grazing is the primary regional agricultural land use.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. There are no leases. In addition, no contractual obligations to deliver or supply water have been identified for this project.

Watershed Lands. Agricultural land use that occurs on Watershed Lands associated with the Spring Gap-Stanislaus Project includes timber production and other agriculture. Grazing also occurs in the vicinity of the project.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. There are no leases. In addition, no contractual obligations to deliver or supply water have been identified for this project.

Phoenix (FERC 1061)

Agricultural land uses that occur within the Phoenix Project boundary include grazing and timber production. Grazing is the primary regional agricultural land use with several ranches near the project.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. However, Pacific Gas and Electric Company has contracts to deliver and/or supply water to Tuolumne County Utility District for agricultural irrigation and other consumptive uses. Melvin Questo also has an agreement with Pacific Gas and Electric Company to obtain 30 m.i. of water from Phoenix Afterbay, Powerhouse Creek, or Phoenix Bypass Canal.

According to Mr. Tim McCullough, General Manager, Tuolumne Utility District annually uses about 8,500 af consumptively for all purposes. Approximately 500 af is used for commercial agriculture, primarily irrigated pasture, apples and wine grapes. Approximately 3,600 af is used for rural purposes such as gardens, small pastures and fire protection. The balance flows through the Phoenix Project and is credited to Tuolumne Utility District. This contract can only be altered by mutual consent.

Table 4.8-22 summarizes leases associated with Bundle 14.

Table 4.8-22 Bundle 14 Associated Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
Gerald Engler	Grazing	640	7/24/1996	7/31/2001	FERC
Total Acres		640			

Bundle 15: Merced Falls

Merced Falls (FERC 2467)

There are no agricultural land uses that occur within the Merced Falls Project FERC Project boundary. There are no irrigation or incidental irrigation rights associated with this project.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. In addition, no contractual obligations to deliver or supply water have been identified for this project.

4.8.4.5 Kings Crane-Helms Regional Bundle

This section describes agricultural activities within or in the vicinity of Pacific Gas and Electric Company's FERC projects in the Kings Crane-Helms Regional Bundle and associated Watershed Lands. Agricultural activities including grazing, irrigated pasture, vegetable and cereal crop production, viticulture, and fruit and nut production (orchards) have been identified within this region. However, grazing is the principal agricultural activity. Agricultural activities within the Bundle are conducted under lease agreements, special use agreements, and informal agreements. Pacific Gas and Electric Company does not directly conduct any agricultural activities on its lands.

Regional Setting

Agricultural Land Use Agreements

Pacific Gas and Electric Company does not conduct agricultural activities on the Watershed Lands in this regional bundle but has entered into leases and other agreements with third parties that use the Watershed Lands for grazing. Figure 4.8-5 and Table 4.8-23 identifies the leases and

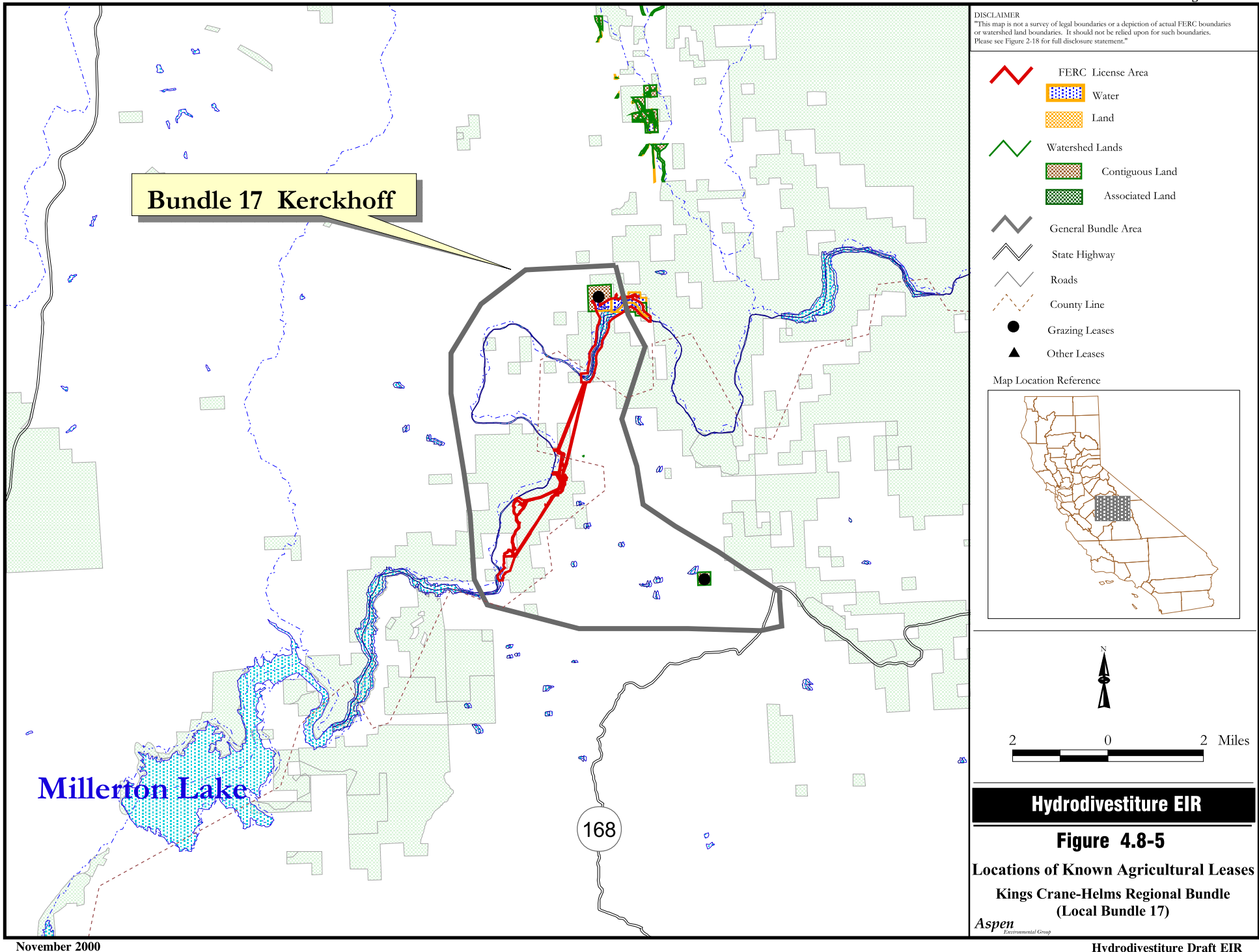

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Figure 4.8-5

Locations of Known Agricultural Leases

Kings Crane-Helms Regional Bundle (Local Bundle 17)

Aspen Environmental Group

Table 4.8-23 Agricultural Land in Kings Crane-Helms Regional Bundle

Bundle / Project		Acres grazed	Acres agriculture other than grazing	Total agriculture acres
Bundle 16	Crane Valley FERC # 1354	0	0	0
Bundle 17	Kerckhoff FERC #0096	150	0	150
Bundle 18	Helms Pumped Storage FERC # 2735	0	0	0
	Balch FERC # 0175	0	0	0
Bundle 19	Tule River FERC # 1333	0	0	0
Bundle 20	Haas-Kings River FERC # 2735	0	0	0
Total Kings-Crane-Helms Region		**150**	**0**	**150**

agreements associated with the Kings Crane-Helms Regional Bundle. Agreements vary in term from year-to-year to six years.

The Kings Crane-Helms Watershed agricultural leases are within Madera and Fresno Counties. The Summary of County Agricultural Commissioners' Gross Value of Agricultural Production - California and the County Agricultural Commissioners' Data, Calendar Year 1998 reports livestock production generated $107,319,000 in gross revenue in Madera County. Of this, cattle and calves contributed $18,106,000 and ranked seventh in gross revenue among all agricultural commodities produced in the county. The total for Madera County's crop and livestock sales in 1998 was $634,307,000 according to this report. The total acres in agricultural production in Madera County in 1998 was 668,246. Fresno county reports total livestock production generated $715,957,000 in gross revenue. Of this, cattle and calves contributed $105,034,000 and ranked seventh among all agricultural commodities produced in the county. The total for Fresno County's crop and livestock sales in 1998 was $3,286,806,000 according to this report. Fresno County's agricultural production value is the largest of any county in the nation. The total acres in agricultural production in Fresno County in 1998 were 2,120,705.

There are no Prime Farmlands in this regional bundle, and none of the project land within this regional bundle is under a Williamson Act contract.

Water Resources for Agriculture

Pacific Gas and Electric Company has two water delivery or supply agreements to deliver water for agriculture within the Kings Crane-Helms Regional Bundle. Details of the agreements are described below in each associated project bundle.

A portion of the non-consumptive water used to generate power is used for agricultural irrigation downstream of Pacific Gas and Electric Company's hydroelectric facilities. Detailed estimates of the sources and agricultural uses of this water are described below in each associated bundle.

Local Regulations and Policies

Fresno and Madera Counties recognize the importance of agriculture to the county economies. Each has a General Plan that has identified agriculture as a natural and cultural resource to preserve. These county governments recognize the importance of agricultural resources, and have instituted long-range goals, objectives, policies, and standards for preserving agricultural lands through their General Plans.

Bundle 16: Crane Valley

Crane Valley (FERC 1354)

Grazing is the primary agricultural land use that occurs within the Crane Valley FERC Project boundary. In addition, other regional agricultural land uses include the production of forest products. Horse grazing also occurs in the vicinity of the project.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. There are no agricultural leases. The project delivers water to Millerton Reservoir, which is managed by the U.S. Bureau of Reclamation, under the Miller-Lux Agreement.

Bundle 17: Kerckhoff

Kerckhoff (FERC 0096)

Agricultural land uses within the Kerckhoff FERC Project boundary include grazing and timber production. There is livestock grazing in the vicinity of the project.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. In addition, no contractual obligations to deliver or supply water have been identified for this project. Table 4.8-24 describes the leases associated with Bundle 17.

Table 4.8-24: Bundle 17 Associated Agricultural Leases

Tenant	Use	Acres	Start Date	End Date	Land Used
John Vincent	Grazing	100	1/18/1996	12/31/1999	FERC
Art Tait	Livestock	20	3/1/1998	2/28/2001	FERC
Bill Lovos	Equine	30	7/1/1999	year to year	FERC
Total Acres		**150**			

Bundle 18: Kings River

Helms Pumped Storage Project (FERC 2735)

Agricultural land uses in the area are livestock grazing and timber production.

Pacific Gas and Electric Company does not engage in agricultural activities or use water for irrigation at this project. There are no agricultural leases. In addition, no contractual obligations to deliver or supply water have been identified for this project.

Haas-Kings River (FERC 2735)

Neither Pacific Gas and Electric Company nor any third party engage in agricultural activities or use water for irrigation at this project. However, Pacific Gas and Electric Company has contracts to deliver and/or supply water to Kings River Water Association for agricultural irrigation uses. Under terms of the agreement, Pacific Gas and Electric Company must maintain 30,000 af of storage in Pine Flat Reservoir. This agreement expires with the FERC License.

Balch (FERC 0175)

Neither Pacific Gas and Electric Company nor any third party engage in agricultural activities or use water for irrigation at this project. There are no leases. However, Pacific Gas and Electric Company has contracts to deliver and/or supply water to Kings River Water Association for agricultural irrigation uses. Under terms of the agreement, Pacific Gas and Electric Company is permitted to store water owned by Kings River Water Association in Courtright and Wishon reservoirs, approximately 60,000 af, and use the water non-consumptively to generate power. However, the timing of release of this water is subject to specific contract terms favorable to Kings River Water Association. Other contracts that Pacific Gas and Electric Company has with Kings River Water Association state that Pacific Gas and Electric Company must maintain 30,000 af of storage in Pine Flat Reservoir.

According to Mr. Doug Woodman, Water Master, Kings River Water Association delivers approximately 1,700,000 af annually to 28 different water agencies. One hundred percent of this is used for agricultural irrigation. The 60,000 af stored by Pacific Gas and Electric Company thus represents approximately 3.5 percent of the water used by Kings River Water Association.

Bundle 19: Tule River

Tule River (FERC 1333)

Neither Pacific Gas and Electric Company nor any third party engage in agricultural activities or use water for irrigation at this project. There are no agricultural leases. In addition, no contractual obligations to deliver or supply water have been identified for this project.

Bundle 20: Kern Canyon

Kings Canyon (FERC 0178)

Neither Pacific Gas and Electric Company nor any third party engage in agricultural activities or use water for irrigation at this project. There are no agricultural leases. However, Pacific Gas and

Electric Company has contracts to deliver and/or supply water to La Hacienda, Inc. for agricultural irrigation uses. Under terms of the agreement, Pacific Gas and Electric Company must deliver up to 65 af annually to La Hacienda Inc. through the Kern Canyon Tunnel. This agreement expires with the FERC License.

4.8.5 STANDARDS OF SIGNIFICANCE

Appendix G of the California Environmental Quality Act, CEQA Guidelines provides the following standards to assist in determining whether impacts to agricultural resources are significant environmental effects. This same section recommends the California Agricultural Land and Site Assessment Model (1997), prepared by the California Department of Conservation, as an optional model for assessing impacts on agriculture and farmland. For the purpose of this analysis, impacts to agricultural lands classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown in maps prepared pursuant to the Farmland Monitoring Program of the California Resources Agency are considered significant if the project would:

1. Convert Prime Farmland, Unique Farmland, or Farmland, to non-agricultural use;
2. Conflict with existing zoning for agricultural use, or a Williamson Act contract; and/or
3. Involve other changes in the existing environment, which due to their location or nature, could result in conversion of Farmland to non-agricultural use.

For the purpose of this analysis, impacts to agricultural lands not classified as Prime Farmland, Unique Farmland, or Farmland are considered significant if the proposed project would:

1. Result in conversion of five percent of agricultural land, including grazing land, in any county.
2. Result in a five percent loss of agricultural productivity, either through operation in an unsuitable manner, or through reduced water availability, in any county.

4.8.6 ANALYTICAL METHODS

Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance

To determine whether the project would result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, each parcel of project land now being used for agriculture was identified and located on the California Department of Conservation's Farmland Mapping and Monitoring Program Maps. None of the Project Lands are mapped as Prime Farmland, and therefore, this will not be further evaluated. However, it was not possible to predict which off-site Prime Farmland parcels (i.e., outside the FERC Licensed Lands and Watershed lands) could be affected by alterations in downstream water delivery timing or availability.

Conversion of Williamson Act Contracts

To determine whether the project would result in cancellation or conflict with Williamson Act contracts, each county planning department was contacted. None of the Project Lands is under a Williamson Act contract and, therefore, this impact will not be further evaluated.

Conversion of Grazing Land

Although not Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, grazing land is considered agricultural land by The Farmland Mapping and Monitoring Program. A comparison of the maps illustrating the location of the Project Lands now in agricultural use as grazing (Figures 4.8-1 through 4.8-5) to the land use assumptions discussed in Section 4.1 indicates that several parcels currently being used for grazing have development potential. The acreage of the parcels are noted in the Tables 4.8-25 through 4.8-27.

Table 4.8-25 Agricultural Leases in Shasta Regional Bundle Having Development Potential

Bundle / Project		Acres	Tenant Name	County
Bundle 1	Hat Creek (FERC # 2661)	1200	Bosworth Ranch	Shasta
Bundle 2	Pit River (FERC #2687)	140	Fall River Ranch Co.	Shasta
		2020	Dusty & Shanna de Braga	Shasta
		970	Lemuel & James Earnest	Shasta
Bundle 4	Battle Creek (FERC # 1121)	680	Leland R. Davis	Shasta
Total Shasta Region		**5010**		

Table 4.8-26 Agricultural Leases in DeSabla Regional Bundle Having Development Potential

Bundle / Project		Acres	Tenant Name	County
Bundle 5	Hamilton Branch (unlicensed)	280	Elden Stroing	Lassen
Total DeSabla Region		**280**		

Table 4.8-27 Agricultural Leases in Drum Regional Bundle Having Development Potential

Bundle / Project		Acres	Tenant Name	County
Bundle 11	South Yuba-Bear River (FERC # 2310)	125	Walley Wilson	Placer
Total Drum Region		**125**		

It is important to note that leases for agricultural activity would be transferred to a new owner and a new owner would be bound by the same terms as Pacific Gas and Electric Company. These lease terms include termination clauses. Because grazing represents over 99 percent of the agricultural activity on Project Lands, the impact of terminating grazing leases is addressed in this analysis. Further, in order to take a conservative approach, this analysis assumes the termination of grazing leases upon expiration.

To measure the impact of loss of grazing land in each county attributed to the project, the contribution of that land to the county's total agricultural acres was estimated. Each county in California produces an annual report on its agricultural productivity called the County Agricultural Commissioner's Report. This report summarizes crop acreages grown in the county each year as

noted in Section 4.8.4 under each regional bundle. Dividing the project grazing acreage in each county by the total acres of agriculture as reported by the County Agricultural Commissioner's Report yields the percentage contribution of project grazing land to the county's total acres of agriculture. In no county is the amount of project land now used for grazing greater than five percent of the entire county's agricultural land.

Loss of Agricultural Productivity

To measure the impact of loss of agricultural productivity, the contribution of that land to the county's total agricultural gross revenue was estimated as follows: Only grazing value is estimated, as this represents over 99 percent of the agriculture identified on project lands.

First, the carrying capacity of the land is identified, as specified in the agricultural lease between Pacific Gas and Electric Company and the tenant, or using general information on carrying capacity of rangeland from The United States Natural Resource Conservation Service Soil Surveys. Assumed in the carrying capacity evaluation is the typical practice of grazing only 50 percent of total dry weight produced per year. Second, the carrying capacity was converted to estimated gross revenue based on the ten-year average (1988 to 1997) price for live cattle; ongoing livestock operation with 17 percent replacement rate, 90 percent calf crop, 2 percent mortality, and the appropriate number of bulls and horses grazed as part of the operation; and assumptions regarding the average weight for steers and heifers produced for sale.

Total gross revenue generated by project grazing land was then divided by the ten-year average total gross revenue of the county as reported by the County Agricultural Commissioner's Reports.

Table 4.8-28 tabulates the gross revenue for the ten-year period 1989 to 1998 of each county in which there are Project Lands with agricultural activity, along with the mean (X) and the standard deviation (s) for that time period.

Converted to a percentage, the standard deviations for the counties range from 5.0 to 25.8 percent indicating that agricultural gross revenue of each county listed varied by 5 to about 26 percent over the ten-year period. This is understandable given the variable nature of agricultural production and dependence on often highly variable weather and market conditions.

These data suggest that a production loss of more than 5 percent would be considered significant. In no county is the total gross revenue generated by project grazing lands greater than five percent of the entire county's agricultural gross revenue.

Irrigation Water

As discussed throughout Section 4.8.4, Pacific Gas and Electric Company diverts and stores water that is used for irrigation of agricultural crops. The PowerMax and WaterMax Scenarios represent possible changes in timing of release of water that might be used by agriculture. Another water availability issue is the cancellation or alteration of existing water delivery agreements to the

Table 4.8-28 Agricultural Gross Revenue by County 1989–1998 [a]

	Fresno	Madera	Butte	Mendocino	Placer	Lassen	Shasta	Plumas	Tuolumne	Amador
1998	$3,286,806	$634,307	$213,315	$127,674	$45,831	$42,588	$48,259	$15,400	$13,986	$15,104
1997	$3,425,794	$787,278	$305,568	$144,409	$49,641	$50,942	$52,852	$15,493	$13,912	$17,104
1996	$3,313,426	$712,113	$282,975	$108,973	$47,887	$47,385	$45,870	$13,462	$14,427	$16,889
1995	$3,167,157	$598,565	$260,273	$89,220	$48,283	$47,156	$46,305	$14,592	$13,607	$16,047
1994	$3,069,036	$607,078	$281,343	$76,103	$55,401	$51,831	$52,611	$15,303	$13,381	$12,501
1993	$3,014,412	$615,047	$278,030	$84,356	$55,401	$49,809	$49,780	$17,182	$13,440	$12,830
1992	$2,635,193	$601,180	$265,020	$87,925	$54,372	$45,431	$49,800	$16,052	$12,030	$11,918
1991	$2,,603,129	$480,243	$239,471	$78,589	$54,951	$50,474	$48,619	$16,899	$13,232	$14,186*
1990	$2,938,504	$514,797	$239,232	$66,459	$55,991	$48,263*	$52,399	$18,275	$11,365	$17,498*
1989	$3,005,673	$471,833	$231,543	$87,284	$57,916	$42,368	$50,492	$18,040	$12,988	$17,908*
X	$3,045,913	$602,244	$259,677	$95,099	$52,567	$47,625	$49,490	$16,070	$13,237	$15,199
s	$272,444	$98,363	$28,385	$24,498	$4,210	$3,335	$2,132	$1,528	$922	$2,224
s ÷X	8.9%	16.3%	10.9%	25.8%	8.0%	7.0%	5.0%	9.5%	7.0%	14.6%

a. Figures represent gross value of agricultural production in each county as reported by the agricultural commissioner in units of thousands of dollars. Nursery, livestock, and crops are included. Timber is not included.

detriment of the consumptive agricultural user(s). Below are discussed ramifications of these possible changes.

Water Delivery Contracts

Contracts and agreements that Pacific Gas and Electric Company has to deliver water for irrigation fall into several categories. The following are expected to be met under the proposed project:

- Those which can be cancelled or altered only by mutual consent between Pacific Gas and Electric Company and the water user;
- Court ordered flow or release obligations; and
- Water supply and flow release obligations that run with the applicable FERC licenses.

As discussed in Chapter 3, there are other contracts and agreements that are assumed, for analysis purposes, to not be met under the proposed project:

- Those with a specific expiration date; and
- Those that can be terminated "at will," namely, with relatively short notice.

Because these latter two types of water delivery agreements could possibly be cancelled or altered, these agreements were analyzed as they relate to agriculture and in the context of the significance criteria established in Section 4.8.5. There are 14 agreements, all for small flows of water, in the DeSabla Regional bundle that can be terminated at will or with short notice. Additionally, there are three water delivery agreements in the Drum Regional Bundle that will expire; one each with

Nevada Irrigation District and Placer County Water Agency expires in 2013; the third agreement, with Potter Valley Irrigation District, expires in 2022. The agreement with Nevada Irrigation District, provides only a small amount of the water used for agriculture in the county. The majority of this water is supplied by Nevada Irrigation District's own water rights.

Loss of Prime Farmland and Agricultural Land Loss to Individual Counties from Water Contract Cancellation

To determine whether cancellation or alteration of water delivery agreements would result in loss of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, we evaluated the location of these lands relative to anticipated water delivery. Since water which flows through or is stored in hydrofacilities is delivered to a relatively large geographic area, the general location where the water is used was located on the California Department of Conservation's Farmland Mapping and Monitoring Program Maps. These locations were then compared as a percentage of each individual county's total Prime Farmland and other acreage. A similar comparison was made for the land irrigated as a percentage of the total agricultural land in each individual county.

Agricultural Productivity Loss to Individual Counties from Water Contract Cancellation

To measure the impact of loss of agricultural productivity caused by potential loss of water due to non-renewal or termination of water delivery agreements, the following method was utilized. First, acreage estimates of various irrigated crops were obtained from sources at the various water agencies delivering the water to agricultural users. Second, a county average per acre value (obtained from the County Agricultural Commissioner's Report) for each crop was applied to the relevant acreage. Third, the crop contributions were summed. Finally, the sum of the crop values were compared as a percentage to the total value (ten year average) of all crops produced in the county.

Analysis of Effects on Downstream Users

As noted in Section 4.8.4, the greatest amount of water that passes through Pacific Gas and Electric Company's hydroelectric facilities is used non-consumptively for power generation, and released for use by downstream water rights holders. Although Pacific Gas and Electric Company's use of the water is non-consumptive, Pacific Gas and Electric Company retains some discretion over the timing and release of stored water, which can affect its availability for downstream agricultural users.

To determine the impact of this effect on downstream users, the following method was utilized. First, the maximum amount of water that can be stored in Pacific Gas and Electric Company owned reservoirs at full capacity was documented. This is the maximum amount of water over which Pacific Gas and Electric Company, or its successor, has control under No Project, PowerMax Scenario or WaterMax Scenario.

Second, the amount of water for which there is a supply or delivery contract that uses the water consumptively was subtracted. Table 4.8-2 in Section 4.8.3, above, tabulates these water delivery contracts and estimates irrigated acres. Table 4.8-29 lists the amount of stored water in each Regional Bundle that is available for downstream agricultural users, and an estimated number of acres that this water services.

Table 4.8-29 Project Water Available for Downstream Agriculture

lRegion	Total Reservoir Storage in Regional Bundle	Contacted Amount, af	Remaining for All Downstream Uses, af	Estimated Use by Downstream Agriculture, af [a]	Estimated Acres Irrigated Downsteam [b]
Shasta	157,666	0	157,666	86,716 to 100,906	24,088 to 28,030
DeSabla	1,339,313	145,365	1,193,948	656,671 to 764,127	182,409 to 212, 257
Drum West	80,964	19,000	61,964	29,780	8,272
Drum East	154,307	124,400	28,907	15,899 to 18,500	4,416 to 5,139
Motherlode	278,611	234,700 [c]	43,911	24,151 to 28,103	6,709 to 7,806
Kings Crane-Helms, Pine Flat	338,955	30,000	308,955	308,955	85,821
Kings Crane-Helms, Friant Dam	50,233	0	40,233	27,628 to 32,149	7,674 to 8,930

a. Based on usage of 55 percent to 64 percent of the total water in the Sacramento River and San Joaquin River systems, respectively (per the California Water Plan Update Bulletin 160-98, Appendix 5A), except for Drum West, in which majority water usage is as reported by Sonoma County Water Agency, and except for Kings Crane-Helms, in which the storage in Pine Flat is assumed to be 100 percent used by agriculture.

b. Based on an average usage of 3.6 af per acre in the state (per the California Water Plan Update Bulletin 160-98, California Department of Water Resources, page 4-2), and for Drum.

c. For Motherlode, East Bay Municipal Utility District has rights to 210,000 af in Pardee Reservoir.

Third, downstream irrigated acres are compared to total acres of agriculture within the counties (obtained from the County Agricultural Commissioner's Reports) receiving the irrigation water. Finally, the gross revenue generated in each county by this irrigation water is estimated and compared to the county's total agricultural production.

Irrigation Water Quality

Agricultural water quality is principally measured in terms of salinity, expressed as electrical conductivity, EC, and typically measured in milliohms per centimeter. At high concentrations (EC above 3.0 milliohms per centimeter) severe reduction in growth and productivity of most crop plants is expected. There is no evidence that changes in hydroelectric generation will increase salinity of the irrigation water. Therefore, this issue will not be further evaluated.

Another factor considered in agricultural water quality is specific ion toxicity from root absorption of the elements Sodium, Chloride, and Boron. There is no evidence that changes in hydroelectric generation will increase the concentration of these elements in project irrigation water. Therefore, this issue will not be further evaluated.

Also, important in irrigation water is pH, namely the concentration of hydrogen ions in the water measuring the acidity or alkalinity of the water. The range of pH 6.5 to 8.4 is considered normal for irrigation water. There is no evidence that changes in hydroelectric generation will substantially alter the pH of the irrigation water. Therefore, this issue will not be further evaluated.

4.8.7 INTRODUCTION TO IMPACTS AND MITIGATION MEASURES

For Agriculture, the following impacts have been identified:

- Impact 8-1: Loss of grazing opportunities on project lands could result in increased local grazing pressure on remaining leases (Less than Significant).
- Impact 8-2: Non-renewal of a water delivery agreement after its expiration date may affect agricultural productivity (Significant).
- Impact 8-3: The project could result in changes in timing and availability of water which could impact downstream agricultural productivity (Less than Significant).

Where impacts are significant, mitigation measures are recommended at the conclusion of the analysis of each impact.

4.8.8 IMPACT 8-1: IMPACT, ANALYSIS, AND MITIGATION MEASURES

Impact 8-1: Loss of grazing opportunities on project lands could result in increased local grazing pressure on remaining leases.

4.8.8.1 Evaluation of Impact 8-1 to Entire System

As discussed in the analytical methods, grazing leases would be transferred to a new owner, and a new owner would be bound by existing lease terms, including termination clauses. Upon expiration, leases would have to be either renewed or terminated. For the purpose of this analysis, it was assumed that grazing leases would be terminated upon expiration. As a result, the amount of available grazing land could be reduced and there would be pressure to intensify grazing on remaining grazing lands.

Good grazing land stewardship considers the carrying capacity of the land and uses appropriate stocking densities. Leases often specify the permitted number of AU, animal units (defined as a 1,000 pound cow or its equivalent). Overgrazing is uncommon for large ranching operations, which either own land or have long term leases. Typically the land is managed for long-term use; large ranches with herds of several thousand or more head, often have more than one lease location and could move herds to different leased areas without exceeding land carrying capacity. Small or hobby ranches are more likely to operate in a smaller geographic area and thus not have options to move grazing animals to adjacent unused leased lands. Therefore, animals could be added to lands already supporting grazing which could result in exceeding land carrying capacity, and result in overgrazing.

Project Lands in any given affected county would not exceed four percent of the county's total grazing land, let alone five percent of any county's total agricultural land. Nor would there be a loss of five percent of any county's agricultural productivity even if all of the project land now used for grazing was converted to other uses. For these reasons, the loss of grazing opportunities on project lands is considered *less than significant* in all project bundles.

4.8.8.2 Impact 8-1: Mitigation Measures

Mitigation Measures Proposed as Part of the Project

None.

Mitigation Measures Identified in this Report

None required.

4.8.9 IMPACT 8-2: IMPACT, ANALYSIS, AND MITIGATION MEASURES

Impact 8-2: Non-renewal of a water delivery agreement after its expiration date may affect agricultural productivity.

4.8.9.1 Impact 8-2: Shasta Regional Bundle

There are no water delivery agreements in the Shasta Regional Bundle; therefore, no impacts would occur.

4.8.9.2 Impact 8-2: DeSabla Regional Bundle

The water agreements in the DeSabla Regional Bundle irrigate at maximum 5,739 acres in Butte County, which amounts to approximately one percent of Butte County's 1998 agricultural acreage of 480,256. This is well under the five percent standard of significance. In addition, none of the deliveries in the DeSabla Regional Bundle are located in areas mapped as Prime Farmland, unique Farmland or Farmland of Statewide Importance. Therefore, impacts on agricultural productivity in this bundle are considered to be *less than significant*.

4.8.9.3 Impact 8-2: Drum Regional Bundle

There are no water delivery agreements in Bundle 9, therefore, no impact would occur in that area. The impacts for the other bundles in the Drum Regional Bundle are discussed bundle by bundle.

Bundle 10: Potter Valley

Potter Valley Irrigation District receives 100 percent of its water from the Potter Valley Project. The Potter Valley area of Mendocino County has not been mapped by the Farmland Mapping and Monitoring Program of the Department of Conservation making Prime Farmland determination difficult. However, examination of the Soil Survey of Mendocino County, Eastern Part indicates

the presence of soil units that are rated Class I and Class II by the Natural Resource Conservation Service, and are therefore likely to be mapped as Prime Farmland when the Department of Conservation completes its mapping of the area. It is unknown however, whether this would amount to 5 percent or more of Mendocino County's total Prime Farmland. In total, Potter Valley Irrigation District irrigates between 5,000 and 6,000 acres of land of a 1998 total of 549,381 agricultural acres in Mendocino County. The Potter Valley land area thus represents approximately one percent of the total agricultural land in the county.

Mendocino County estimates that the 6,000 acre Potter Valley area had agricultural gross sales of $23 to $28.7 million in 1998. Mendocino County had $127,674,000 in gross agricultural sales in 1998, according to the Summary of County Agricultural Commissioner's Reports published by the United States Department of Agriculture National Agricultural Statistics Service. This is approximately twenty percent of the county's total gross agricultural revenue. Therefore, the effect of non-renewal of the water delivery contract to PVID which expires in 2022 is considered *significant*.

Bundle 11: South Yuba River

Drum-Spaulding (FERC 2310)

According to the California Department of Conservation, as of 1998 there were 9,750 acres of Prime Farmland in Placer County. Since the total estimated acres irrigated from project water by the Placer County Water Agency is 13,900; it is likely therefore, that well over five percent of the Prime Farmland in the county would be affected by the loss of this water contract.

Placer County Water Agency (PCWA) is the sole source of irrigation water for approximately 14,600 acres in Placer County of which project water irrigates approximately 13,900. This is estimated by applying a usage rate of 3.6 af per acre per year to agriculture water delivery figures reported by PCWA. Project water thus irrigates just six percent of Placer County's total agricultural land (242,958 acres). The estimated value of the crops produced on this 13,900 acres is $20.75 million, using estimates of deliveries by PCWA, and county yield and crop value averages as reported by the Placer County Agricultural Commissioner. This is 45 percent of Placer County's total annual agricultural gross revenues of $45.8 million. For these reasons the termination and loss of this water delivery contract, which expires in 2013 is considered *significant*.

4.8.9.4 Impact 8-2: Motherlode Regional Bundle

Contracted water deliveries used for agriculture within the Motherlode Regional Bundle are limited to 1,260 af to Amador County Water Agency in Amador County, irrigating approximately 350 acres; and 500 af to Tuolumne Utility District in Tuolumne County, irrigating approximately 140 acres. The contract with Amador County Water Agency expires with the FERC license and therefore would not be impacted by the project. The contract with Tuolumne Utility District can be terminated only by mutual agreement, and therefore would not be affected by the project.

4.8.9.5 Impact 8-2: Kings Crane-Helms Regional Bundle

Both the water delivery contract with Kings River Water Association and the contract with La Hacienda Inc. expire with the FERC License, and therefore would not be affected by the project.

4.8.9.6 Impact 8-2: Evaluation of Impact to Entire System

Much of the agriculture in the Potter Valley and Placer County as described in this Section consists of high value crops. A loss of this acreage as described by this impact could cause the crops grown on this acreage to be grown in other areas of the project system, but would not lead to additional land loss and might increase revenues where adopted. Therefore, this issue will not be further evaluated.

4.8.9.7 Impact 8-2: Mitigation Measures

Mitigation Measures Proposed as Part of the Project

None.

Mitigation Measures Identified in this Report

Mitigation Measure 8-2: Prior to the transfer of title for Bundles 10 and 11, Pacific Gas and Electric Company shall extend the terms of the existing water delivery contracts with Placer County Water Agency and Potter Valley Irrigation District in their respective bundles so that these agreements extend to the same time period as the FERC license extends.

4.8.9.8 Impact 8-2: Level of Significance After Mitigation

Implementation of this mitigation measure would reduce the impact to *less than significant* levels.

4.8.10 IMPACT 8-3: IMPACT, ANALYSIS, AND MITIGATION MEASURES

Impact 8-3: The project could result in changes in timing and availability of water, which could impact downstream agricultural productivity.

It is understood that timing of water deliveries are critical to agriculture, and that Pacific Gas and Electric Company has some discretion over the timing and release of water used to generate hydro-electricity. In most cases, Pacific Gas and Electric Company uses and stores water in facilities upstream of consumptive users and does not directly control or manage flows from downstream facilities. In addition, the contribution of upstream, Pacific Gas and Electric Company hydroelectric generation water to total downstream storage is often very small. For example, all Pit River and Hat Creek flows are stored in Shasta Lake which is a component of the Central Valley Project managed by the Bureau of Reclamation and Department of Water Resources. The Pit River and Hat Creek projects have very little storage capacity relative to Shasta Lake which means flows

controlled by Pacific Gas and Electric Company for hydroelectric generation have little or no influence over deliveries from Shasta Lake and other downstream facilities.

Loss of agricultural productivity downstream of Pacific Gas and Electric Company facilities have to exceed the significance standards defined in Section 4.8.5 to be considered a *significant* impact.

4.8.10.1 Impact 8-3: Shasta Regional Bundle

The estimated 24,088 to 28,030 acres irrigated by water flowing through project facilities in this regional bundle, obtain their water from Shasta Lake. These acres are spread throughout the Central Valley. The ratio of Pacific Gas and Electric Company water storage in this regional bundle, 157,666 af, to the total amount of water stored in Shasta Lake, 4,522,000 af, is 3.46 percent and the majority of the water flowing through the Bundle is not stored or regulated. A change in timing or availability of this project water does not result in a loss of five percent of any agricultural land in any county, or a five percent loss of productivity. Therefore the effect of changes in the timing and availability of water delivery on downstream agricultural productivity in the Shasta Regional Bundle is considered a *less than significant* impact.

4.8.10.2 Impact 8-3: DeSabla Regional Bundle

The ratio of Pacific Gas and Electric Company water storage in this Regional Bundle to the total amount of water stored in Lake Oroville (downstream) is 37.9 percent. Lake Almanor is the primary upstream Pacific Gas and Electric Company reservoir, at 1,142,964 af maximum storage (32 percent of Lake Oroville's capacity supply of 3,537,577 af). However, according to the terms of an informal agreement, Pacific Gas and Electric Company has kept over 800,000 af, or 23 percent of the reservoir's storage capacity, in Lake Almanor until after September 1 each year. Since peak use of water by agriculture occurs from May through August, this indicates that irrigation water supply for Lake Oroville has been stored at least a year in advance of its demand. Under any change in timing scenario, early releases from Lake Almanor would merely make more water available for irrigation than had been available in the past. Such an effect does not cause a loss of five percent of any agricultural land in any county, or result in a five percent loss of productivity in any county. Therefore the effect of changes in the timing and availability of water delivery on downstream agricultural productivity in the DeSabla Regional Bundle is considered a *less than significant* impact.

4.8.10.3 Impact 8-3: Drum Regional Bundle

There are no water delivery agreements in Bundle 9 North Yuba River. Therefore, no impact would occur.

Bundle 10: Potter Valley

Potter Valley (FERC 0077)

Wine grapes and pears are the highest income producing crops in this area. Timing of the water delivery to this area is critical for spring frost control, particularly for wine grapes. Without water to sprinkle the vines during a frost, the tender growing shoots are easily injured, and the entire year's crop can be lost.

Potter Valley Irrigation District receives 100 percent of its water from the Potter Valley Project; nearby Redwood Valley and Alexander Valley also receive Potter Valley Project water from Sonoma County Flood Control and Water Conservation District. While the entire Potter-Redwood-Alexander Valleys area produced $250 million in gross agricultural revenues in 1998, approximately $72.5 million of this is directly attributable to the water of the Potter Valley Project, based on the usage figures supplied by Sonoma County Flood Control and Water Conservation District, and Potter Valley Irrigation District. The two counties in which these regions exist had a combined value of $581.2 million in 1998, according to the Summary of County Agricultural Commissioner's Reports published by the United States Department of Agriculture National Agricultural Statistics Service. Agriculture in the area serviced by the Potter Valley Project contributes 12.5 percent of the combined counties' gross agricultural revenues. Therefore the impact of a change in timing or availability of water is considered *significant*.

Bundle 11: South Yuba River

Drum-Spaulding (FERC 2310)

The Placer County Water Agency is the sole source of irrigation water for approximately 14,600 agricultural acres in Placer County, which generate a combined value of $21.8 million. Of this, approximately 13,900 acres are directly dependent on project water, producing $20.75 million in gross revenues in 1998. The principal crop types are rice, orchards and vineyards. Rice is flooded in April and May and cannot be grown without a large volume of water during this time period. Orchards and vineyards also require irrigation water early in the growing season, beginning about May. Holding the water until late summer or fall, as one possible outcome of the PowerMax Scenario, would adversely impact these crops; rice alone, contributing an estimated $3.491 million to the county's gross agricultural receipts in 1998, is 6.6 percent of the total; this alone exceeds the standards of significance discussed in Section 8.4.5. Therefore, a change in the timing and availability of water to Placer County is considered *significant*.

4.8.10.4 Impact 8-3: Motherlode Regional Bundle

Contracted water deliveries used for agriculture within the Motherlode Regional Bundle are limited to 1,260 af to Amador County Water Agency in Amador County, irrigating approximately 350 acres; and 500 af to Tuolumne Utility District in Tuolumne County, irrigating approximately

140 acres. Any changes in the timing or availability of water would have very little effect on these small acreages. Therefore, the effects of a change in timing or availability of water in the Motherlode Regional Bundle are considered a *less than significant* impact.

4.8.10.5 Impact 8-3: Kings Crane-Helms Regional Bundle

Due to the strict and detailed nature of the water supply and delivery agreements with Kings River Water Association, no change in timing or delivery patterns are expected as a result of the project. The maximum estimated amount of water delivered to La Hacienda Inc., under terms of its 65 cfs flow from Kern Canyon Penstock, would irrigate approximately 6,524 acres. In 1998 the Kern County Agricultural Commissioner reported 862,671 irrigated agricultural acres. The total estimated acres irrigated by La Hacienda Inc. is thus less than one percent of the county's total; similarly the contributory value of this acreage compared to the entire $2.068 billion produced in Kern County in 1998 is less than one percent. For these reasons, the effects of change in water delivery timing or availability to the Kings Crane-Helms Regional Bundle are considered a *less than significant* impact.

4.8.10.6 Impact 8-3: Mitigation Measures

Mitigation Measures Proposed as Part of the Project

None.

Mitigation Measures Identified in this Report

Mitigation Measure 8-3: Prior to the transfer of title for Bundles 10 and 11, Pacific Gas and Electric Company shall amend the water delivery agreements with Potter Valley Irrigation District and Sonoma County Flood Control and Water Conservation District (for Bundle 10) and Placer County Water Agency (for Bundle 11) to guarantee delivery of water according to specific crop needs of each area.

4.8.10.7 Impact 8-3: Level of Significance After Mitigation

Implementation of this mitigation measure would reduce the impacts of the project to *less than significant* levels.

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