

# Chapter 21

## Utilities and Service Systems

### 21.1 Affected Environment

This chapter describes the affected environment related to utilities and service systems for the dam and reservoir modifications proposed under SLWRI action alternatives.

Because of the potential influence of the proposed modification of Shasta Dam, and subsequent water deliveries over a large geographic area, the SLWRI includes both a primary and an extended study area. The primary area has been further divided into Shasta Lake and vicinity and upper Sacramento River (Shasta Dam to Red Bluff). The extended study area has been further divided into the lower Sacramento River and Delta and the CVP/SWP service areas.

The utilities and service systems addressed are water supply in the Shasta Lake and vicinity portion of the primary study area, wastewater infrastructure, stormwater drainage and infrastructure, solid waste management, electrical service and infrastructure, natural gas service and infrastructure, and telecommunications infrastructure. Hydropower generation, public services (e.g., fire protection law enforcement, emergency services), roadways and bridges, and recreation are addressed in separate chapters.

The utilities and service systems setting for the Shasta Lake and vicinity portion of the primary study area consists of the portion of Shasta County above Shasta Dam and includes the Shasta Unit of the Whiskeytown-Shasta-Trinity National Recreation Area (NRA). Utilities and service systems are influenced by rugged, mountainous terrain; lakeside communities; and Shasta Lake. The utilities and service systems setting for the upper Sacramento River portion of the primary study area consists of Shasta County below Shasta Dam and Tehama County. Two incorporated cities, Redding and Red Bluff, necessitate urban utilities and service systems needs in the otherwise rural upper Sacramento Valley, which is characterized by rolling hills with mountains to the north, east, and west.

The utilities and service systems setting for the extended study area consists of 21 counties downstream from the Red Bluff Pumping Plant and encompasses all areas served by the CVP and the SWP. A discussion of project impacts on CVP/SWP water supply and overall CVP and SWP management and operations is provided in DEIS Chapter 6, “Hydrology, Hydraulics, and Water Management,” and in the *Hydrology, Hydraulics, and Water Management Technical Report*.

1 **21.1.1 Water Supply**

2 ***Shasta Lake and Vicinity***

3 Water supplies for the Shasta Lake and vicinity portion of the primary study  
4 area are provided in one of three ways: by a community service area (CSA) run  
5 by Shasta County, by a mutual water company, or by an individual or group  
6 well. CSA #2 provides water for the Sugarloaf community, and CSA #6  
7 provides water for the Silverthorn community. Fifteen mutual water companies  
8 serve the Shasta Lake and vicinity portion of the primary study area. Mutual  
9 water companies are cooperative or mutual associations that furnish water to  
10 resorts and other developments (Reclamation 2007) (Figure 21-1).

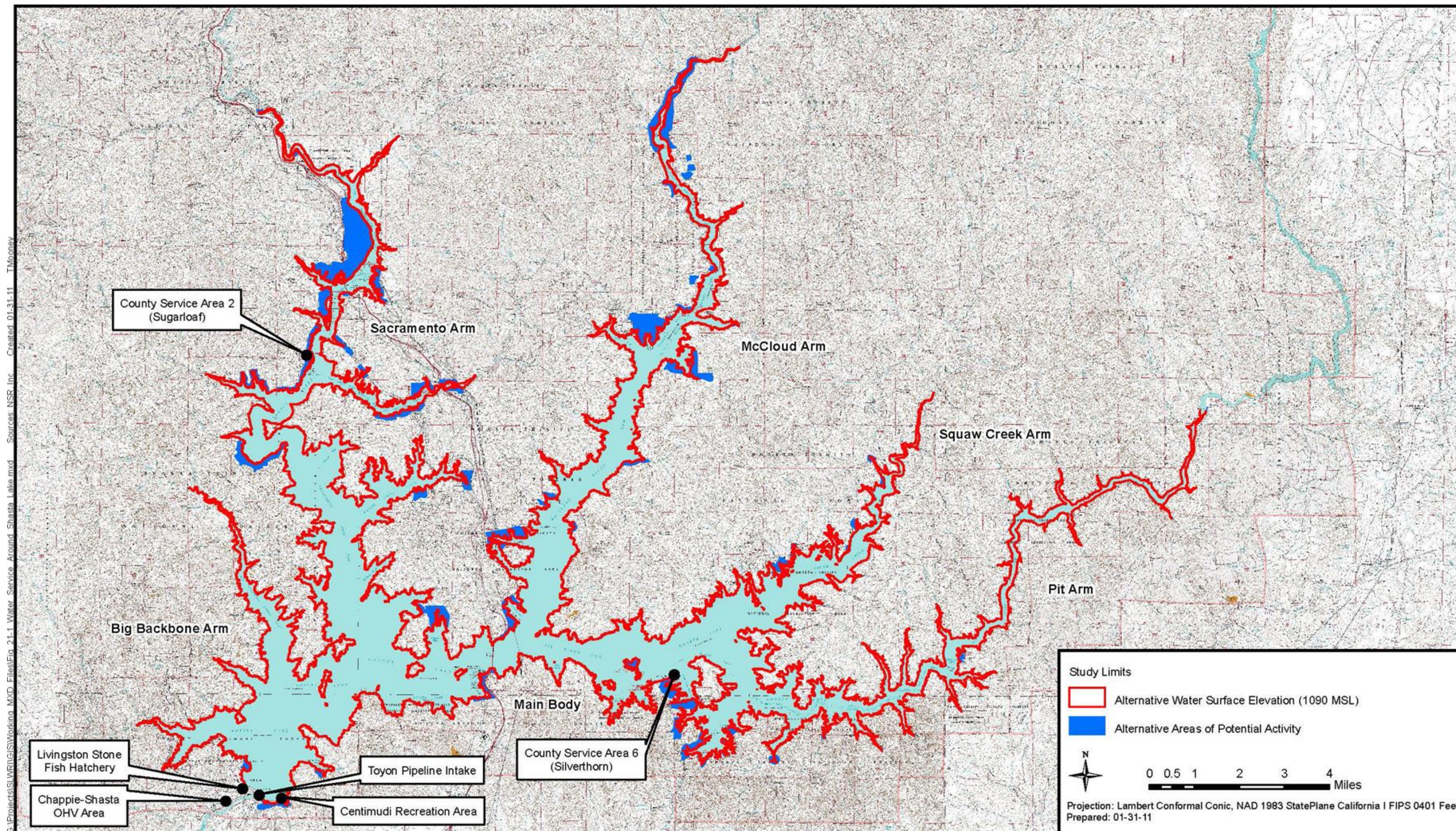
11 ***Upper Sacramento River (Shasta Dam to Red Bluff)***

12 Provided below are descriptions of each entity in Shasta County that currently  
13 relies on Reclamation to provide a portion of its water supply and the associated  
14 Shasta and Trinity River diversions and facilities. This information was taken  
15 from the *Final Environmental Assessment for the Long-Term Contract Renewal*  
16 *Shasta and Trinity River Divisions* (Reclamation 2005).

17 **City of Redding (Sacramento River, Spring Creek, Toyon)** Before 1941,  
18 water service for the City of Redding was provided by the California Water  
19 Service Company, which had water rights to the Sacramento River dating from  
20 1886. The City of Redding acquired the local facilities and water rights of the  
21 company in 1941 and filed for an additional appropriative water right of 5 cubic  
22 feet per second in 1944. Subsequent annexations to the City of Redding's  
23 service area consist of the Buckeye County Water District, the Cascade  
24 Community Services District, and the Enterprise Public Utility District in 1967,  
25 1976, and 1977, respectively.

26 The Buckeye zone service area includes two City of Redding pressure zones:  
27 Buckeye and Summit City. Approximately half of the Buckeye zone is located  
28 within the Redding city limits, and the other half is in an unincorporated area of  
29 Shasta County. Approximately one-quarter of the Summit City zone is in an  
30 unincorporated area of Shasta County, and three-quarters is in the City of Shasta  
31 Lake. The City of Redding currently receives water to its Buckeye zone under a  
32 long-term CVP contract with Reclamation (the water comes from Whiskeytown  
33 Lake via the Spring Creek tunnel). There are no known groundwater resources  
34 within the Buckeye zone service area. During peak-demand periods,  
35 supplemental water is pumped from the Sacramento River, then treated and  
36 delivered into the Buckeye zone service area. The municipal and industrial  
37 (M&I) connections in the Summit City zone are supplied exclusively by water  
38 diverted from Shasta Lake via the Toyon pipeline. The water is treated by the  
39 City of Shasta Lake and delivered to the Summit City zone.

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Figure 21-1. Water Service Around Shasta Lake

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1 The City of Redding has one additional water contract with Reclamation.  
2 Redding's 1966 Settlement Contract with Reclamation specifies a base supply  
3 and a project water supply. In 2003, the maximum base supply was set at  
4 17,850 acre-feet per year, and the project water supply was set at 3,150 acre-feet  
5 per year; since 1995, project water supply entitlements have been increased by  
6 45 acre-feet annually.

7 Redding's surface-water supply comes from the Sacramento River and  
8 Whiskeytown Lake. Sacramento River water is treated at the Foothill Water  
9 Treatment Plant (24 million gallons per day (mgd)), and Whiskeytown Lake  
10 water is treated at the 7-mgd Buckeye Water Treatment Plant. Redding  
11 supplements its surface-water supply with well production capacity from the  
12 Redding groundwater basin primarily during peak-demand periods. Currently,  
13 14 wells are operational, providing a total capacity of up to 12 mgd.

14 Redding provides CVP and non-CVP water service to about 24,709  
15 connections. Connections provide water primarily for M&I uses and a small  
16 number of agricultural uses. The city administers 4,179 connections in the  
17 Buckeye zone and 58 M&I connections in the Summit City zone.

18 **City of Shasta Lake** Water for the City of Shasta Lake comes from Shasta  
19 Lake via a pump station at Shasta Dam that has a maximum diversion of 5.0  
20 mgd. Water is pumped from an intake in the face of Shasta Dam through the  
21 Toyon pipeline to a storage/treatment facility immediately east of the Shasta  
22 Dam compound. From there it is delivered to the City of Shasta Lake (Figure  
23 21-1). An interim contract with Reclamation (Contract No. 4-7-20-W1134-  
24 IR10) provides an allocation of 4,400 acre-feet per year from this source.  
25 Reclaimed water is also available for industrial and landscaping use.  
26 Groundwater use is limited because of low aquifer yields.

27 Prior to incorporation, the community water supply and utility services were  
28 provided by the Shasta Dam Area Public Utilities District (PUD), which was  
29 formed in 1945 to provide a reliable water supply for an area of 3.5 square  
30 miles. Originally, the PUD service area was a residential area established to  
31 house workers who were constructing Shasta Dam. Reclamation constructed the  
32 Toyon pipeline to transport water from Shasta Lake to the PUD in 1948, and the  
33 PUD concurrently constructed water storage and distribution systems. The  
34 Summit City PUD was annexed in 1978. Before annexation, water was supplied  
35 by a series of wells with low and unreliable yields.

36 The City of Shasta Lake provides water service to 3,800 connections for  
37 primarily urban and residential uses, although industrial use has increased over  
38 the past decade. The City of Shasta Lake also provides water service to  
39 Reclamation's Northern California Area Office.

40 **Bella Vista Water District** The Bella Vista Water District (BVWD) is a  
41 publicly owned water agency formed in 1957 to serve agricultural irrigation

1 demands (California Water Code Division 13, Sections 34000–38501). The  
2 BVWD service area is located generally east of Redding and south of Shasta  
3 Lake. The service area includes the rural communities of Bella Vista and Palo  
4 Cedro.

5 BVWD’s primary water source is the Sacramento River. The BVWD supply  
6 system consists of the Wintu Pump Station on the Sacramento River and five  
7 wells. Water pumped from the river is treated at the district’s treatment plant,  
8 which provides inline filtration. Distribution facilities include a network of  
9 transmission and distribution pipelines, three storage tanks, nine booster pump  
10 stations, and pressure-reducing facilities. The major distribution piping was  
11 initially constructed by Reclamation but has been expanded over time. The main  
12 supply system is still Federally owned, but it was constructed solely for use by  
13 BVWD. Both domestic and agricultural users are served through the same  
14 distribution system, so all water is treated to meet the higher water quality  
15 standards for domestic use. The CVP water that BVWD purchases from the  
16 Shasta County Water Agency (SCWA) is described below.

17 BVWD’s original contract allows for up to 24,000 acre-feet per year, which is  
18 supplemented with 578 acre-feet per year of CVP water purchased through  
19 SCWA. Both of these allotments are subject to reduction during dry years. In  
20 the severe drought years of 1991 and 1992, water supplies for M&I were  
21 reduced by 25 percent and water for agricultural uses was reduced by 75  
22 percent. Available surface water was supplemented with groundwater from  
23 wells located near the southern boundary of the district. These reductions in  
24 supply caused severe drought restrictions to be imposed, which have had a  
25 continuing impact on district water sales. The supplementary water provided by  
26 the wells constitutes about 10 percent of the supply normally available from the  
27 Sacramento River and about 15–20 percent of the reduced supply during a  
28 severe drought year. The aquifers in the district have limited yield, so it is not  
29 practical to greatly increase the production of wells in the district.

30 Agricultural and irrigation still represent 70–80 percent of the district’s water  
31 demand. However, most of the service connections are now either domestic or  
32 rural residential. BVWD currently has 4,538 residential connections and 615  
33 agricultural connections. Urban uses predominate in the southeast portion of the  
34 district where sewage disposal facilities are available. Residential uses, with lot  
35 sizes between 1 and 5 acres, are dispersed across the rest of the district.  
36 Agricultural uses are almost exclusively confined to the fertile soil along  
37 Stillwater Creek and Cow Creek. Pasture represents the bulk of agricultural use,  
38 although there is a broad range of other crops.

39 **Centerville Community Services District** The Centerville Community  
40 Services District (CCSD) was originally formed in September 1959 to supply  
41 water for domestic use, irrigation, sanitation, industrial use, fire protection, and  
42 recreation (California Government Code, Division 3, Community Services  
43 Districts, Section 61000 et seq.). The CCSD service boundary encompasses

1 11,278 acres in the unincorporated area of Shasta County immediately west of  
2 Redding.

3 The source of the district's water supply is Whiskeytown Lake, a key feature of  
4 the Trinity River Division of the CVP. This reservoir covers about 3,250 acres  
5 at maximum capacity and provides water storage of about 241 thousand acre-  
6 feet. The reservoir regulates the flows of the Clear Creek watershed and the  
7 imported flows from the Trinity River, which discharge through the Carr  
8 Powerhouse into the reservoir.

9 Designed and constructed by Reclamation, the district's water system dates  
10 back to 1967. Water is diverted to the district through 2 intakes in Whiskeytown  
11 Dam, 1 at an elevation of 1,110 feet and the other at an elevation of 965 feet.  
12 The ability to select the depth of the diverted water gives CCSD the capacity to  
13 draw less turbid water. The water is treated at a 30-mgd-capacity plant located  
14 at the base of Whiskeytown Dam. CCSD shares the inline treatment facility  
15 with the Clear Creek Community Services District (CCCSD).

16 Treated water is distributed to the district through an aqueduct that begins at  
17 Whiskeytown Dam and terminates at a 250,000-gallon control tank about 8.5  
18 miles south of the dam. This aqueduct, commonly called the Muletown  
19 Aqueduct (also Muletown Conduit), consists of about 27,500 feet of 45-inch  
20 pipe and 17,400 feet of 42-inch pipe buried along Muletown Road, paralleling  
21 Clear Creek. The steel pipe, lined and coated in coal tar, was installed in 1965.

22 CCSD has a contract with CCCSD that allocates CCSD a 25 percent share of  
23 the capacity. CCSD holds 2 contracts with Reclamation for a total allocation of  
24 3,800 acre-feet per year. The first contract, entered into on April 11, 2001, is an  
25 assignment contract. This contract permanently assigned 2,900 acre-feet per  
26 year of CVP water from SCWA's 5,000 acre-feet per year contract with  
27 Reclamation. This contract carries with it those terms and conditions defined in  
28 SCWA's contract, which also includes a binding agreement for early renewal.  
29 The second contract, entered into on August 11, 2000, is an exchange contract.  
30 This contract with Reclamation for 900 acre-feet per year was intended to  
31 provide CCSD with substitute project water for its pre-1914 water rights on  
32 Clear Creek. The district does not have access to a groundwater supply source.

33 CCSD currently provides M&I water to 1,125 metered connections that serve a  
34 population of approximately 2,850.

35 **Clear Creek Community Services District** CCCSD was formed in 1961 and  
36 encompasses about 14,314 acres. The facilities were designed and constructed  
37 by Reclamation, and CCCSD began operating in 1967. CCCSD is located  
38 approximately 10 miles southwest of Redding and 6 miles west of Anderson in  
39 southern Shasta County. The district's service area includes the rural areas  
40 known as Olinda and Cloverdale. The general area served by the district is  
41 commonly known as Happy Valley.

1 The source and treatment of CCCSD water is the same as those of CCSD water;  
2 water from Whiskeytown Lake is treated and diverted to service connections via  
3 the Muletown Aqueduct. The distribution system within the district's  
4 boundaries consists of approximately 75 miles of pipe ranging in size from 2  
5 inches to 45 inches. Title to the distribution line system was transferred to  
6 CCCSD on May 29, 2001.

7 CCCSD has 1 storage tank along the aqueduct with a capacity of 1 million  
8 gallons. A control tank with a 250,000-gallon capacity regulates pressure at the  
9 upper elevation of the district. A 32,000-gallon storage tank is located outside of  
10 the district boundary at the booster station facility.

11 The district has developed the first of 3 planned wells, and it has installed  
12 13,800 feet of 18-inch pipeline to connect a groundwater supply to the  
13 distribution system. The first well attached to the distribution system (Well #1)  
14 became operational in October 1992. Well #1 and the two proposed wells are  
15 intended for use only when surface supplies are inadequate to meet emergency  
16 demands.

17 CCCSD currently provides service for approximately 5,817 acres of irrigated  
18 agricultural land and approximately 4,000 acres of rural residences receiving  
19 M&I water. Approximately 4,497 acres in the district are undeveloped. The  
20 majority of the developed agricultural property in the district is ditch or flood  
21 irrigated. The balance of irrigation is done by overhead and drip systems.

22 **Shasta Community Services District** The Shasta Community Services  
23 District (SCSD), located west of Redding, was formed in 1959 to supply water  
24 for domestic use and fire protection for the City of Shasta Lake and adjacent  
25 developed areas of the district (Community Services District Laws: California  
26 Government Code, Sections 61000–61934). Congress authorized a water system  
27 for the area as part of the Trinity River Division of the CVP. Bonds that were  
28 issued by SCSD to finance construction of the transmission and distribution  
29 systems have been repaid.

30 A long-term CVP water service contract provides up to 1,000 acre-feet  
31 annually. Water is supplied by gravity from Whiskeytown Lake via a turnout on  
32 the Spring Creek conduit. The Spring Creek conduit is the only source of  
33 supply, and there are only 0.30 million gallons of storage located near the  
34 source. Downstream from the turnout, a single transmission main serves as the  
35 backbone of the distribution system and most mains are not looped.  
36 Historically, SCSD has been vulnerable to disruptions in supply from its  
37 Reclamation contract. During the 1991 drought, Reclamation reduced SCSD's  
38 allotment by 25 percent to 750 acre-feet per year.

39 The district currently serves 630 connections. Virtually all of the active land use  
40 is residential or municipal, consisting primarily of ranchettes. Wells are not  
41 feasible because the district does not lie over an aquifer.



1           **Shasta County Water Agency** SCWA was formed in 1957 to develop water  
2 resources for Shasta County (Shasta County Water Agency Act (Legislative Act  
3 7580)). SCWA evolved from the Shasta County Department of Water  
4 Resources, which organized Shasta County efforts in conjunction with the  
5 Trinity River Division of the CVP.

6 SCWA has assisted with the creation of BVWD, CCSD, CCCSD, and SCSD  
7 and helped create CSAs for water and sewer services in Shasta County. The  
8 agency also acts as staff to the Redding Area Water Council, a group that works  
9 to preserve the quality and quantity of water in the Redding groundwater basin.  
10 Funding for SCWA comes from Shasta County property taxes.

11           **Other Shasta and Trinity River Divisions CVP Contractors** Three smaller  
12 water districts (see below) are served by either the Shasta or Trinity River  
13 division of the CVP. The three districts constitute about 1 percent of the CVP  
14 long-term contract water supply to the divisions.

15           *Keswick County Service Area* The Keswick County Service Area (KCSA),  
16 located west of Redding, was formed in 1990 (California Government Code,  
17 Sections 25210.1–25250). Previously, KCSA operated as the Keswick  
18 Community Services District, which was formed in the early 1960s to supply  
19 water for domestic use and fire protection for the town of Keswick and adjacent  
20 developed areas (California Government Code Section 61000 et seq.). The  
21 district boundary encompasses Keswick Dam and the Spring Creek Diversion  
22 Dam; however, these facilities are not served by the district.

23 Congress authorized a water system for the Keswick area as part of the Trinity  
24 Project Act (69 Stat. 719), and the facilities were constructed in 1965. A  
25 repayment schedule was established whereby the Federal government would be  
26 reimbursed by KCSA for delivery system construction costs. On completion of  
27 repayment, ownership of all project facilities was to remain with the Federal  
28 government.

29 The water source for KCSA is Whiskeytown Lake. Water is transported by  
30 gravity flow to a turnout on the Spring Creek conduit that is located upstream  
31 from the Spring Creek powerhouse. Two storage tanks provide 0.2 million  
32 gallons of storage.

33 A CVP water service contract provides for up to 500 acre-feet annually. KCSA  
34 serves about 195 connections, which are concentrated in the town of Keswick.  
35 Land served by KCSA is exclusively rural residential properties.

36           *Mountain Gate Community Services District* The Mountain Gate Community  
37 Services District (MGCSD) was initially formed in 1956 to provide water  
38 service for a 2-square-mile area north of the City of Shasta Lake (California  
39 Government Code, Section 61000 et seq.). The water source for MGCSD is  
40 Shasta Lake. The distribution system consists of 29 miles of pipelines that serve

1 3,750 acres in MGCSD and Bridge Bay Resort (located between the  
2 Sacramento and McCloud arms of Shasta Lake on USFS land).

3 A CVP water service contract provides 350 acre-feet annually. District water  
4 supplies are supplemented by a contract with SCWA that provides 1,000 acre-  
5 feet annually. MGCSD also operates three wells that take water from a local  
6 aquifer. The wells supply nearly half of MGCSD's total needs. There is no  
7 water storage in the district.

8 MGCSD provides water service to 593 connections and fire protection services  
9 for its service area. Although MGCSD primarily provides water for residential  
10 uses, it also serves municipal and industrial customers.

11 *U.S. Forest Service* A memorandum of agreement between USFS and  
12 Reclamation provides USFS with up to 10 acre-feet of municipal, industrial,  
13 and domestic water diverted from the City of Shasta Lake's water main to  
14 supply the Centimudi Recreation Area (Figure 21-1). The Centimudi facilities  
15 continue to receive water under this memorandum of agreement.

16 *Livingston Stone National Fish Hatchery* The Livingston Stone National Fish  
17 Hatchery is located near the foot of Shasta Dam and is managed by USFWS.  
18 The hatchery receives its water from the penstocks of Shasta Dam. Water flows  
19 through pipes fitted with pressure-reducing valves that pierce manhole covers  
20 near the bases of the penstocks. Then the water is routed via a buried pipeline to  
21 the hatchery, where it passes through a degassing device, flows through the  
22 hatchery, and then returns to the Sacramento River.

23 *Other Users of Lake Water* Some of the recreation residences at Campbell  
24 Creek and Didallas draw water from the lake for domestic uses. Also, some  
25 marinas draw raw water from the lake for washing out boats. Return water  
26 drains back into the lake.

27 *Shasta County* Water supplies in Shasta County are provided by the CVP,  
28 surface water diversions, and groundwater wells. The City of Redding uses  
29 groundwater wells for 40 percent of its water supply to supplement the CVP  
30 water sources described in the preceding section. Maximum available  
31 groundwater production is approximately 19,000 acre-feet per year. Most city  
32 groundwater comes from 10 wells located near Redding Municipal Airport,  
33 within the Redding groundwater basin. These wells supply a maximum of 16.5  
34 mgd. Four additional wells in the county supply a maximum of 0.7 mgd.

35 *Tehama County* Water supplies in Tehama County are provided by CVP, local  
36 surface water diversions, and groundwater wells. The recent trend in the county  
37 is a shift from reliance on CVP water supplies to groundwater supplies. There  
38 are more than 10,000 wells designated for domestic, irrigation, municipal,  
39 monitoring, and other uses in the county. CVP deliveries provide 21,300 acre-  
40 feet per year; local stream diversions provide 106,300 acre-feet in a normal

1 water year; and groundwater provides approximately 382,000 acre-feet per year,  
2 which represents two-thirds of the county's irrigated water supply.

3 *Red Bluff* The City of Red Bluff obtains all of its water from 14 wells. It  
4 maintains a 3-million-gallon storage tank used for equalizing storage, fire flow,  
5 and emergency storage. The City of Red Bluff is in the process of seeking  
6 funding for an additional storage tank similar to the first. The wells produce  
7 between 500 and 2,500 gallons per minute, with the majority producing  
8 between 800 and 1,000 gallons per minute. Well depths range from 150 to 250  
9 feet.

10 *Other Nearby Uses* The Chappie-Shasta Off-Highway Vehicle Area and  
11 residential and commercial uses in the community of Coram draw water from  
12 local groundwater wells.

13 **Lower Sacramento River and Delta and CVP/SWP Service Areas** The  
14 overall CVP/SWP water supply discussion describes the environmental setting  
15 for water supply for the extended study area. Other water supplies come from  
16 local surface water diversions and wells, which serve domestic, irrigation,  
17 municipal, and commercial uses. A detailed discussion of the overall CVP and  
18 SWP management and operations is provided in DEIS Chapter 6, "Hydrology,  
19 Hydraulics, and Water Management," and in the *Hydrology, Hydraulics, and*  
20 *Water Management Technical Report*.

## 21 21.1.2 Wastewater Infrastructure

### 22 ***Shasta Lake and Vicinity***

23 Wastewater is treated and returned to the natural environment using one of  
24 several technical methods with either community or individual on-site disposal  
25 systems. Most residential, commercial, and recreational developments located  
26 in the Shasta Lake and vicinity portion of the primary study area use on-site  
27 septic tank/leachfield systems for wastewater treatment. Typically, individual  
28 homes, cabins, or businesses are routed to individual septic systems. Large  
29 resorts route septic from several buildings to a single tank/leachfield system.  
30 Campgrounds and public restrooms use either septic tank/leachfield systems or  
31 vault/pit toilets (Reclamation 2007). Marinas also use booster pumps to lift gray  
32 water to upslope leachfield areas. No large wastewater collection or treatment  
33 systems are located near Shasta Lake.

34 The highest concentrations of wastewater facilities near Shasta Lake are located  
35 in the Lakeshore and Sugarloaf areas, with a substantial number of facilities in  
36 the Bridge Bay, Holiday Harbor, Salt Creek, Campbell Creek, Silverthorn,  
37 Jones Valley, Tsasdi Resort, and Digger Bay Marina areas (Figure 21-2). The  
38 Utilities and Miscellaneous Minor Infrastructure Technical Memorandum  
39 shows detailed maps of the wastewater facilities in the ancillary areas near  
40 Shasta Lake (Reclamation 2007).

1                    ***Upper Sacramento River (Shasta Dam to Red Bluff)***

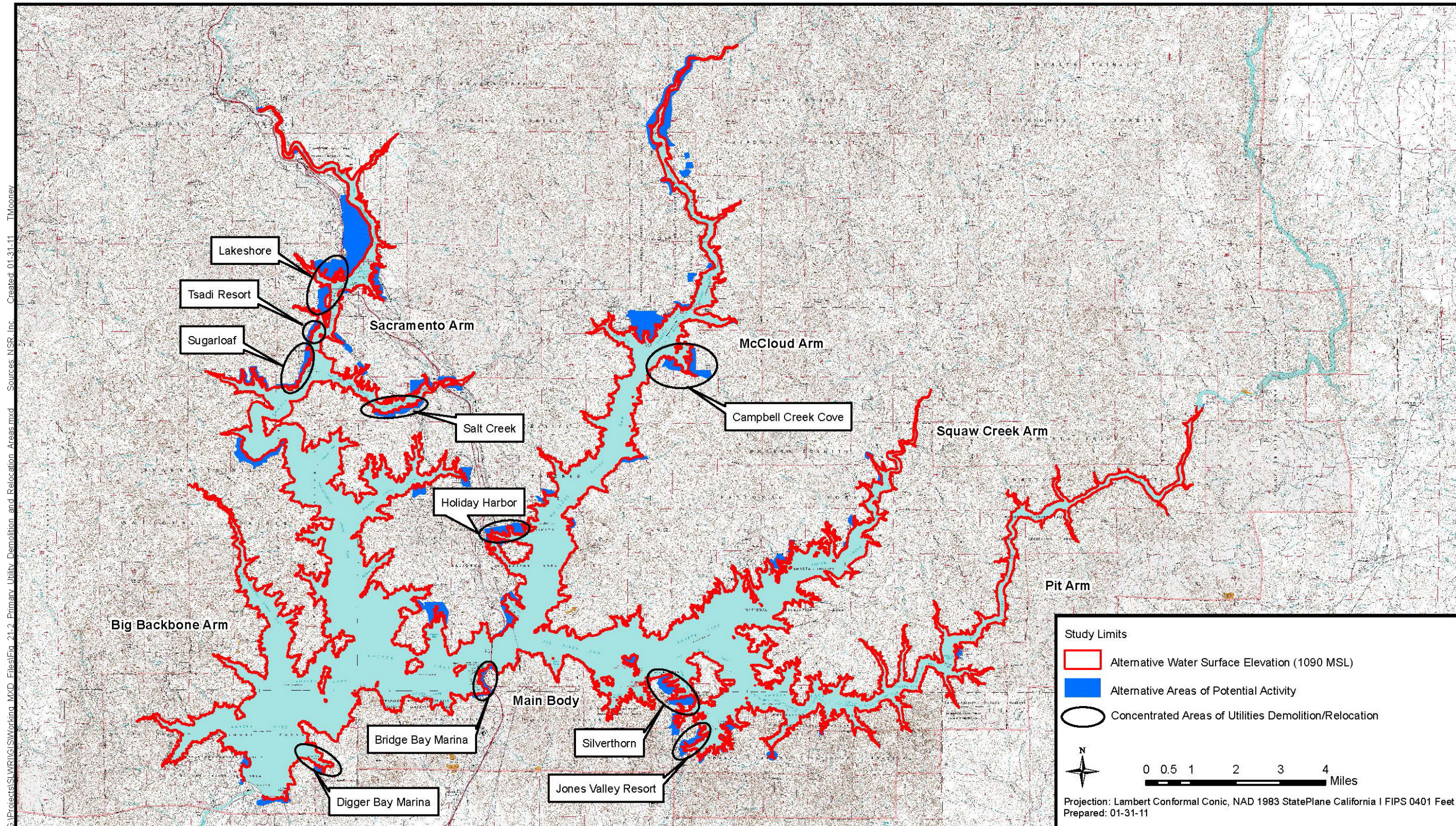
2                    Many areas scattered throughout Shasta and Tehama counties are serviced by  
3                    individual septic systems. The remaining wastewater treatment systems are a  
4                    form of community collection, treatment, and disposal. The most common form  
5                    of community system is the treatment plant, which discharges treated effluent to  
6                    a storage and irrigation system (land disposal) or, diluted, to a surface  
7                    watercourse.

8                    Below Shasta Dam, a number of community wastewater systems are operated  
9                    by the cities of Anderson, Redding, Red Bluff, and Shasta Lake. Several  
10                    unincorporated communities have community wastewater systems that are  
11                    operated by CSAs.

12                    Redding operates both the Clear Creek Wastewater Treatment Plant (WWTP)  
13                    and Stillwater WWTP, both of which discharge treated effluent year round to  
14                    the Sacramento River. The Clear Creek WWTP is currently permitted by the  
15                    Central Valley Regional Water Quality Control Board to discharge up to 8.8  
16                    mgd of average dry-weather flow into the Sacramento River. The wastewater  
17                    receives advanced secondary treatment. The Stillwater WWTP receives an  
18                    average of 2.0 mgd of wastewater, approximately one-third of its design  
19                    capacity of 6 mgd for average dry-weather flow. The Anderson WWTP  
20                    discharges year round into the Sacramento River at a location approximately  
21                    0.25 mile from the Stillwater WWTP.

22                    The City of Shasta Lake operates a large community wastewater system that is  
23                    permitted to seasonally discharge treated effluent to surface water, namely  
24                    Churn Creek; a major goal of the city's capital improvement plan has been to  
25                    significantly reduce these discharges. Churn Creek eventually discharges to the  
26                    Sacramento River about 0.5 mile upstream from the Stillwater WWTP.

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1  
2 **Figure 21-2. Primary Utility Demolition and Relocation Areas**

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1 The Red Bluff WWTP has a treatment capacity of 4.8 mgd and discharges  
2 tertiary-treated wastewater by gravity into the Sacramento River at  
3 approximately 1.4 mgd. The City of Red Bluff operates a wastewater treatment  
4 system at the south end of the city. The Rio Alto Water District provides  
5 wastewater treatment services for some portions of the community of  
6 Cottonwood. Septic/leachfield systems or seepage pits are used in areas not  
7 served by these systems.

8 ***Lower Sacramento River and Delta and CVP/SWP Service Areas***

9 Wastewater systems in the extended study area are similar to those discussed for  
10 the primary study area. Community wastewater service systems are provided  
11 through a collection network of gravity and force main sewer lines operated  
12 primarily by local utility agencies. Pump stations and lift stations augment  
13 sewer line networks. These conveyance systems terminate at WWTPs that  
14 discharge treated effluent to storage and irrigation systems (land disposal) or to  
15 surface watercourses where the treated effluent is diluted. Individual on-site  
16 wastewater treatment methods are also used where the land is able to  
17 accommodate a leachfield/septic tank system.

18 **21.1.3 Stormwater Drainage and Infrastructure**

19 ***Shasta Lake and Vicinity***

20 Stormwater drainage is primarily a function of the precipitation and runoff  
21 characteristics of a watershed. About 6.5 percent (5.8 million acre-feet) of all  
22 surface runoff in the state of California originates in Shasta County,  
23 representing a substantial portion of the total surface runoff in the Sacramento  
24 River system. Runoff in the Shasta Lake and vicinity portion of the primary  
25 study area is discharged to the McCloud River, the Sacramento River, and the  
26 Pit River, which drain into Shasta Lake. Numerous creeks and small local  
27 tributaries also drain into Shasta Lake.

28 The California Department of Transportation maintains a stormwater drainage  
29 system along the Interstate 5 (I-5) corridor. Drainage facilities in developed  
30 communities include gutters, swales, ditches, culverts, storm drain inlets, catch  
31 basins, storm drainage pipes, and detention basins. Roads also channel  
32 stormwater drainage from residences, commercial, and industrial land uses to  
33 adjacent lands and stormwater drains.

34 ***Upper Sacramento River (Shasta Dam to Red Bluff)***

35 Runoff in the upper Sacramento River portion of the primary study area is  
36 discharged to the Sacramento River directly and indirectly via numerous major  
37 creeks and small local tributaries in rural and urban areas. Stormwater drainage  
38 in undeveloped portions of Shasta and Tehama counties generally consists of  
39 natural swales and topographic features.

40 Stormwater collection systems are present in urban areas and developed  
41 communities. Drainage facilities in urban areas include gutters, swales, ditches,

1 culverts, storm drain inlets, catch basins, storm drainage pipes, canals, detention  
2 basins, and pump stations. Roads also channel stormwater drainage from  
3 residences and commercial and industrial land uses to adjacent lands and  
4 stormwater drains. The Cities of Redding, Anderson, and Red Bluff and the  
5 City of Shasta Lake each operate municipal storm drainage systems in the city  
6 limits. The California Department of Transportation's I-5 stormwater drainage  
7 system continues along I-5 in the upper Sacramento River area.

#### 8 ***Lower Sacramento River and Delta and CVP/SWP Service Areas***

9 Stormwater systems in the extended study area are similar to those discussed for  
10 the primary study area. Various storm drainage facilities and  
11 collection/conveyance systems are located throughout the extended study area.  
12 Stormwater facilities and infrastructure are operated primarily by local districts  
13 and road departments, and include gutters, swales, ditches, culverts, storm drain  
14 inlets, catch basins, storm drainage pipes, canals, detention basins, and pump  
15 stations. Treated stormwater is often discharged to rivers, tributaries, and major  
16 creeks throughout the extended study area.

### 17 **21.1.4 Solid Waste Management**

#### 18 ***Shasta Lake and Vicinity***

19 Contractors, under the auspices of Shasta County, provide solid waste disposal  
20 services for the private sector. The Shasta-Trinity National Forest (STNF),  
21 Reclamation, and California Department of Transportation use contractors to  
22 provide disposal services for facilities on public lands. A number of sites are  
23 used to collect solid waste and recyclables, which are later transferred to  
24 landfills or recycling centers in the extended study area, primarily in Shasta  
25 County.

#### 26 ***Upper Sacramento River (Shasta Dam to Red Bluff)***

27 The Shasta County Department of Public Works is responsible for providing  
28 solid waste management in unincorporated areas of the county. Three landfills  
29 (West Central Landfill, Anderson Landfill, and Twin Bridges Landfill) and 11  
30 collection/transfer stations are currently operating in Shasta County. Shasta  
31 County generated 187,909 tons of solid waste in 2006; however, 307,568 tons  
32 of solid waste were disposed of in the county during the same period (CIWMB  
33 2008).

34 In 2006, the 1,200-acre West Central Landfill received approximately 417 tons  
35 per day (CIWMB 2008) of nonhazardous waste from residential, commercial,  
36 industrial, and agricultural sources. This Class III landfill has a permitted  
37 capacity of 7,078,000 cubic yards and a storage area of 107 acres. In 2001, the  
38 State of California estimated that the landfill had a remaining capacity of  
39 6,606,000 cubic yards (CalRecycle 2010). Under existing State permits, the  
40 landfill has sufficient capacity to accommodate the disposal of solid waste at  
41 least until the year 2019. In 2006, the 246-acre Anderson Landfill, a Class III  
42 landfill and asbestos-containing waste disposal site, received approximately 426



1 tons of solid waste per day (CIWMB 2008). This landfill has a permitted  
2 capacity of 16,840,000 cubic yards, and in 2008 the State of California  
3 estimated that the landfill had a remaining capacity of 11,914,000 cubic yards  
4 (CalRecycle 2010). The estimated year of closure is 2055. The Twin Bridges  
5 Landfill is a Class II landfill that has ceased accepting solid waste and is  
6 undergoing closure (CIWMB 2008).

7 Tehama County operates the 102-acre Tehama County/Red Bluff Sanitary  
8 Landfill, located approximately 2.5 miles northwest of Red Bluff. This landfill,  
9 a Class III facility, has a maximum permitted daily capacity of 400 tons  
10 (CIWMB 2008). This landfill has a permitted capacity of 5,097,000 cubic yards,  
11 and in 2008 the State of California estimated that the landfill had a remaining  
12 capacity of 2,149,000 cubic yards (CalRecycle 2010). The estimated year of  
13 closure is 2040. The landfill is owned by the Tehama County Sanitary Landfill  
14 Association, a joint-powers authority composed of Tehama County and the  
15 cities of Red Bluff, Corning, and Tehama. The Tehama County/Red Bluff  
16 Landfill Management Agency oversees daily landfill operations at the Tehama  
17 County/Red Bluff Landfill and at the Material Recovery Facility. Tehama  
18 County/Red Bluff Landfill Management Agency is another joint-powers  
19 authority and is composed of Tehama County and the City of Red Bluff. This  
20 agency is also responsible for maintaining permits and monitoring  
21 environmental compliance at the landfill.

22 In addition to the landfill and material recovery facilities, Tehama County  
23 operates two household hazardous waste facilities, in Corning and Red Bluff,  
24 and four transfer stations in the outlying rural areas of Manton, Payne's Creek,  
25 Mineral, and Rancho Tehama. There are no facilities authorized to accept  
26 commercial hazardous waste within the primary study area.

### 27 ***Lower Sacramento River and Delta and CVP/SWP Service Areas***

28 Solid waste services and infrastructure in the extended study area are similar to  
29 those discussed for the primary service area. Urban centers in the extended  
30 study area may generate more solid waste than the population centers in the  
31 primary study area; however, the mechanisms used for transfer and disposal of  
32 the waste are similar. Solid waste facilities, including landfills and transfer  
33 stations, provide pickup and disposal services. There are three commercial  
34 hazardous waste disposal facilities authorized to accept various types of  
35 commercial hazardous waste in the extended study area. These facilities are  
36 located in Kings, Kern, and Imperial counties. Only the facility in Kings County  
37 is certified to accept materials that contain polychlorinated biphenyls.

## 38 **21.1.5 Electrical Service and Infrastructure**

### 39 ***Shasta Lake and Vicinity***

40 Pacific Gas and Electric Company (PG&E) provides electrical service to Shasta  
41 Lake and vicinity. This service area is part of a larger PG&E territory, which  
42 encompasses 70,000 square miles in Northern and Central California, from

1 Eureka in the north to Bakersfield in the south. Power transmission facilities  
2 serving the Shasta Lake and vicinity portion of the primary study area have  
3 developed mostly parallel to I-5 and adjacent to developed communities.

4 Currently, PG&E is capable of providing three-phase power parallel to the I-5  
5 corridor, north to Bridge Bay and south from Lakehead to Turntable Bay. Power  
6 lines around Shasta Lake are typically routed overhead on utility poles or  
7 towers, although a portion of the lines serving individual businesses, homes, and  
8 cabins are routed underground. Power lines serving the Shasta Lake and vicinity  
9 portion of the primary study area are frequently attached to bridges when routed  
10 over rivers and lake inlets. The voltage of local distribution lines is typically 12  
11 kilovolts (kV), whereas the voltage of high-voltage power transmission lines is  
12 typically 60–230 kV. Service to individual homes and businesses is typically  
13 120–480 volts.

14 The highest concentrations of electrical service facilities near Shasta Lake are in  
15 the Lakeshore and Sugarloaf areas, with a substantial number of facilities in the  
16 Bridge Bay, Holiday Harbor, Salt Creek, Campbell Creek, Silverthorn, Jones  
17 Valley, Tsasdi Resort, and Digger Bay Marina areas (Figure 21-2). The Utilities  
18 and Miscellaneous Minor Infrastructure Technical Memorandum shows detailed  
19 maps of the electrical service facilities in the ancillary areas near Shasta Lake  
20 (Reclamation 2007).

#### 21 ***Upper Sacramento River (Shasta Dam to Red Bluff)***

22 Electrical service and related infrastructure in the upper Sacramento River  
23 portion of the primary study area are similar to those discussed for the Shasta  
24 Lake and vicinity portion. The City of Shasta Lake, City of Anderson, outlying  
25 rural areas of Shasta County, and Tehama County (Red Bluff and Corning)  
26 receive electrical service from PG&E.

27 The City of Redding owns and operates a looped 115-kV system, which  
28 delivers energy to eleven 115/12-kV distribution substations that step the  
29 voltage down to 12 kV for delivery to the city’s customers. The system is  
30 managed by the Redding Electric Utility. In total, Redding’s distribution system  
31 has 67.3 miles of 115-kV local transmission lines and approximately 610 miles  
32 of overhead and underground 12-kV distribution lines. Delivery of all power  
33 from outside the city is made to the Redding Municipal Airport 230/115-kV  
34 transmission substation and to the Keswick Dam switch yard. Redding jointly  
35 owns the airport substation with the Western Area Power Administration. The  
36 Western Area Power Administration owns and operates the Keswick switching  
37 substation and an electrical transmission line that runs north and south along the  
38 western side of the City of Redding and the City of Shasta Lake.

#### 39 ***Lower Sacramento River and Delta and CVP/SWP Service Areas***

40 Electrical services and infrastructure in the extended study area are similar to  
41 those discussed for the primary study area. Power generation and transmission  
42 facilities have developed parallel to population centers, power, natural gas,

1 nuclear, oil, hydroelectric, wind, solar, and other technologies used for power  
2 production.

3 Infrastructure in the Sacramento River basin downstream from the Red Bluff  
4 Pumping Plant, the American River basin, and the San Joaquin River basin  
5 consists primarily of natural gas-fired and hydroelectric generating facilities,  
6 transmission lines, substations, and distribution lines. In the Delta, PG&E and  
7 the Western Area Power Administration have developed power transmission  
8 lines across Delta islands and waterways. Many of the corridors are within the  
9 periphery of the Delta upland areas, including several natural gas-fired plants.  
10 There are no power-generating facilities in the central Delta. In other portions of  
11 the CVP and SWP service areas, a complex system of electrical generating  
12 facilities, substations, and transmission infrastructure exists.

### 13 **21.1.6 Natural Gas Service and Infrastructure**

#### 14 ***Shasta Lake and Vicinity and Upper Sacramento River (Shasta Dam to*** 15 ***Red Bluff)***

16 PG&E is responsible for providing natural gas service to the primary study area.  
17 Gas is delivered to customers below Shasta Dam, including residents of the  
18 cities of Redding, Anderson, and Red Bluff and the city of Shasta Lake.  
19 Although the study area is bisected by a large PG&E natural gas pipeline,  
20 service varies based on PG&E's distribution system. No natural gas facilities  
21 are present in the Shasta Lake and vicinity portion of the primary study area.

22 The USFS facility at Turntable Bay, the USFS Lakeshore Guard Station, and a  
23 number of rural residences and businesses in the primary study area rely on  
24 propane for various purposes. Propane is supplied by various local providers to  
25 individual on-site tanks. Propane tanks for homes and businesses are portable  
26 and are typically leased (Reclamation 2007).

#### 27 ***Lower Sacramento River and Delta and CVP/SWP Service Areas***

28 Natural gas services and infrastructure are located throughout the extended  
29 study area and are supplied by various energy providers. Pipelines, storage  
30 areas, and compressor stations are located in the Sacramento River and San  
31 Joaquin River valleys and in the CVP/SWP service areas. Natural gas  
32 discovered in the Delta region has been developed into a significant supply  
33 source and depot for underground storage. Gas fields, pipelines, and related  
34 infrastructure have been developed throughout the CVP/SWP service areas.  
35 Natural gas infrastructure is owned by oil and gas companies, public utilities,  
36 and various independent leaseholders.

### 37 **21.1.7 Telecommunications**

#### 38 ***Shasta Lake and Vicinity and Upper Sacramento River (Shasta Dam to*** 39 ***Red Bluff)***

40 Landline telephone service in the primary study area is provided by various  
41 commercial communications companies. The majority of the landline facilities

1 are located in county- or city-owned rights-of-way and on private easements.  
2 Telecommunications lines are either copper wire or fiber optic cable and are  
3 routed overhead on utility poles and underground. Telephone lines are  
4 frequently attached to bridges when routed over rivers and lake inlets. There are  
5 no transcontinental fiber optic lines in the Shasta Lake and vicinity portion of  
6 the primary study area.

7 In addition to landline service, a large number of communications towers have  
8 been constructed throughout the primary study area for cellular phone service.  
9 Cellular towers have been erected along major travel corridors to meet  
10 emergency service objectives. Cellular service is available, to varying degrees,  
11 throughout the service area.

### 12 ***Lower Sacramento River and Delta and CVP/SWP Service Areas***

13 Telecommunications systems in the extended study area are similar to those  
14 discussed for the primary study area and are supplied by various providers.  
15 Associated infrastructure is located throughout the extended study area and  
16 consists of underground fiber optic cable, telephone transmission lines  
17 (overhead and underground), and cellular towers owned or leased by  
18 telecommunications service providers.

## 19 **21.2 Regulatory Framework**

### 20 **21.2.1 Federal**

#### 21 ***Reclamation Act***

22 The 1902 Reclamation Act authorized the Federal government to finance and  
23 build water supply projects. The act set up the Reclamation Fund to finance  
24 single-purpose irrigation projects in the western United States. Since that time,  
25 water supply projects and the financing needed to construct and maintain  
26 infrastructure have grown substantially. The act has been amended several  
27 times, most recently in 1982 with the passage of the Reclamation Reform Act.

#### 28 ***Safe Drinking Water Act***

29 The Safe Drinking Water Act (SDWA) was passed to protect public health by  
30 regulating the nation's drinking water supply. The law requires many actions to  
31 protect drinking water and its sources: rivers, lakes, reservoirs, springs, and  
32 groundwater wells. Originally, the SDWA focused on water treatment as the  
33 primary means to provide safe drinking water at the tap. In 1996, amendments  
34 to the SDWA expanded the act to include source water protections.

35 The U.S. Environmental Protection Agency (EPA) is responsible for  
36 administering the act. EPA establishes National Primary Drinking Water  
37 Regulations for contaminants that may cause adverse public health effects.  
38 These regulations set maximum contaminant levels and nonenforceable health

1 goals (called Maximum Contaminant Level Goals) for recognized  
2 contaminants.

3 The SDWA does not regulate private wells that serve fewer than 25 people.  
4 However, the act does apply to all public water systems. A public water system  
5 is a system that provides water for public consumption that regularly serves at  
6 least 25 people or has at least 15 service connections. This includes facilities  
7 such as resorts and marinas.

### 8 ***Clean Water Act***

9 The objective of the Clean Water Act is to restore and maintain the chemical,  
10 physical, and biological integrity of the nation’s waters by preventing point and  
11 nonpoint pollution sources, providing assistance to publicly owned treatment  
12 works for the improvement of wastewater treatment, and maintaining the  
13 integrity of wetlands. The act regulates discharges of pollutants into the waters  
14 of the United States. EPA is responsible for administering waste discharge  
15 permits under the National Pollutant Discharge Elimination System. M&I  
16 wastewater facilities that discharge effluent into surface waters are required to  
17 obtain National Pollutant Discharge Elimination System permits. Large and  
18 medium storm sewer systems also require a National Pollutant Discharge  
19 Elimination System permit. The stormwater permits often require  
20 implementation of a pollution prevention plan to prevent contaminants from  
21 reaching surface waters.

### 22 ***Resource Conservation and Recovery Act***

23 The Resource Conservation and Recovery Act (RCRA) is designed to provide  
24 “cradle to grave” control of hazardous waste by imposing management  
25 requirements on generators and transporters of hazardous wastes and on owners  
26 and operators of treatment, storage, and disposal facilities. The RCRA also  
27 applies to the management of nonhazardous solid waste through the municipal  
28 solid waste landfill. EPA is responsible for administering the RCRA.

### 29 ***Shasta-Trinity National Forest Land and Resource Management Plan***

30 The STNF Land and Resource Management Plan (LRMP) identifies goals,  
31 standards, and guidelines related to utilities and service systems in the Shasta-  
32 Trinity National Forest. The following public services goals, standards, and  
33 guidelines related to the project area were excerpted from the LRMP (USFS  
34 1995).

#### 35 **Facilities Goals**

- 36 • Provide and maintain those administrative facilities that effectively and  
37 safely serve the public and Forest Service workforce.

#### 38 **Facilities Standards and Guidelines**

- 39 • Manage, construct, and maintain buildings and administrative sites to  
40 meet applicable codes and to provide the necessary facilities to support  
41 resource management.

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**Lands Goals**

- Provide for continued use and new development of hydroelectric facilities.

**Lands, Special Uses Standards and Guidelines**

- Do not approve special use applications if such use can reasonably be accommodated on private land.
- Bury new telephone lines and new or reconstructed power distribution lines less than 35 kV, unless:
  - Visual quality objectives (VQO) can be met without burying,
  - Geologic conditions make burying infeasible, and
  - Burying will produce greater long-term site disturbance.

**Whiskeytown-Shasta-Trinity National Recreation Area Management Plan**

- Road construction will be restricted to that which is compatible with the purpose of the NRA and to provide essential private land access.
- Road closures will be implemented as opportunities arise in order to decrease road density and associated wildlife disturbance.
- No additional roads will be constructed for timber harvest.
- Any timber harvest must be consistent with NRA goals and objectives.
- All developments and long-term activities in the NRA will be designed with the intent of meeting VQOs. Those objectives include areas designated as retention, partial retention, and modification.
- Management activities that can be seen from within developed recreation sites will meet a VQO of retention in the foreground and partial retention in the middle ground.
- Best management practices and soil quality standards apply to all management activities.
- Riparian reserve standards and guidelines apply to all management activities within riparian reserves.

***U.S. Bureau of Land Management Resource Management Plans***

The U.S. Department of the Interior, Bureau of Land Management (BLM) manages a number of public lands adjacent to the Sacramento River corridor downstream from Shasta Dam. The study area falls under two BLM districts (Northern California and Central California) and the resource management plans of three BLM field offices: Redding, Ukiah, and Mother Lode (BLM

1 2006). The purpose of BLM’s resource management plans is to provide overall  
2 direction for managing and allocating public resources in each planning area.  
3 The Resource Management Plan (RMP) for the Redding field office designates  
4 utility corridors as all existing or occupied corridors delineated in BLM’s  
5 Western Regional Corridor Study of 1986, with the exception of several  
6 avoidance areas that include portions of the Sacramento River Management  
7 Area. The RMP also states that no additional utility corridors will be permitted  
8 in the Sacramento River Management Area, except for a 2-acre aerial  
9 communications site on Inks Ridge (BLM 1993).

## 10 21.2.2 State

### 11 ***California Water Plan***

12 The California Water Plan provides a framework for water supply planning for  
13 the state. It identifies and evaluates existing and proposed statewide demand,  
14 water supply programs, and projects to address the state’s water supply needs.  
15 DWR is responsible for the preparation of the California Water Plan and the  
16 management of the state’s surface water and groundwater resources (DWR  
17 2009). DWR also oversees California’s SWP and the regulation and protection  
18 of dams, assists local agencies in preparing urban water management plans, and  
19 reviews the plans to ensure compliance with the Urban Water Management Act.

20 The State Water Resources Control Board (SWRCB) has broad authority over  
21 water rights and regulations for the state. The SWRCB and its nine regional  
22 water quality control boards administer water rights and enforce pollution  
23 control standards throughout the state. The SWRCB is responsible for granting  
24 water rights through an appropriation process following public hearings and  
25 requisite environmental review by applicants and responsible agencies. In  
26 granting water rights permits, the SWRCB must consider all beneficial uses,  
27 including water for downstream human and environmental needs.

28 Water suppliers must obtain a permit from the California Department of Public  
29 Health, Office of Drinking Water, for a community water system, defined as a  
30 “public water system that serves at least 15 service connections used by year-  
31 round residents or regularly serves at least 25 year-round residents of the area  
32 served by the system” (42 Code of Federal Regulations Section 300f).

### 33 ***Water Quality Control Plan for the Sacramento and San Joaquin River*** 34 ***Basins***

35 The *Water Quality Control Plan for the Sacramento and San Joaquin River*  
36 *Basins* (Basin Plan) provides guidance for wastewater and stormwater facilities  
37 and development that could affect water quality in the basins. Basin Plan  
38 objectives are incorporated into county and city general plans, zoning  
39 ordinances, building codes, and subdivision ordinances. The Central Valley  
40 Regional Water Quality Control Board is responsible for issuing and enforcing  
41 waste discharge requirements, including discharge prohibitions and user reuse  
42 requirements for wastewater reclamation projects.

1                   ***Nonhazardous Solid Waste Disposal Standards***

2                   Title 14, Chapter 3, of the California Code of Regulations provides minimum  
3                   standards for solid waste handling and disposal in California and pertains to  
4                   nonhazardous solid waste management. The California Department of  
5                   Resources Recycling and Recovery is a new department in the California  
6                   Natural Resources Agency that administers the programs formerly managed by  
7                   the California Integrated Waste Management Board, including the regulation of  
8                   nonhazardous solid waste facilities in the state.

9                   ***Hazardous Waste Control Act***

10                  The California Hazardous Waste Control Act governs hazardous waste  
11                  management and cleanup in California (Health and Safety Code, Chapters 6.5–  
12                  6.98). The act mirrors the RCRA and imposes a “cradle to grave” regulatory  
13                  system for handling hazardous waste in a manner that protects human health  
14                  and the environment. County Environmental Health Departments and California  
15                  Environmental Protection Agency Certified Unified Program Agencies assume  
16                  responsibility for enforcing local hazardous waste reporting requirements. Sites  
17                  that store, handle, or transport specified quantities of hazardous materials are  
18                  inspected annually. The California Department of Toxic Substances Control,  
19                  part of the California Environmental Protection Agency, regulates the  
20                  generation, transportation, treatment, storage, and disposal of hazardous waste  
21                  under the RCRA and the California Hazardous Waste Control Act.

22                  ***California Public Utilities Code***

23                  The California Public Utilities Code has broad regulatory authority over public  
24                  utilities in California, which include electrical utilities, mutual water companies,  
25                  private energy producers, telephone corporations, and railroad corporations. The  
26                  California Public Utilities Commission is the government body that administers  
27                  the California Public Utilities Code. The California Public Utilities Commission  
28                  issued General Order 95 to provide safety standards for construction of power  
29                  transmission facilities.

30   **21.2.3 Regional and Local**

31                  ***City and County General Plans***

32                  The general plans for the counties and cities in the primary and extended study  
33                  areas contain policies regarding utilities and services systems. Water supply,  
34                  wastewater treatment, solid waste disposal, and utilities are subjects covered in  
35                  the general plans and are considered essential public services required by all  
36                  types and densities of development.

37   **21.3 Environmental Consequences and Mitigation Measures**

38   **21.3.1 Methods and Assumptions**

39                  Evaluation of potential utility and services system impacts was based on a  
40                  review of planning documents pertaining to the primary and extended study



1 areas, including the STNF LRMP, California Department of Toxic Substances  
2 Control databases, and the general plans for the Cities of Redding and Red  
3 Bluff, the City of Shasta Lake, and Shasta and Tehama counties. The analysis  
4 also uses an inventory of utilities and service system infrastructure in the  
5 primary study area as it relates to the SLWRI.

6 Effects on water supply in the Shasta Lake and vicinity portion of the primary  
7 study area were evaluated based on construction and operational activities that  
8 would result from project implementation. It was generally assumed that  
9 construction activities associated with modifying Shasta Dam could result in  
10 short-term effects on the delivery of local water supplies if the surface elevation  
11 of the reservoir were lowered to accommodate construction. A long-term effect  
12 would result if project operation would create a substantial disruption or  
13 reduction in the distribution or quantity of water supply.

14 Impacts on utilities and service systems were evaluated based on the duration  
15 and extent to which such services would be affected, as well as the ability of the  
16 service provider to continue to provide a level of service that could meet the  
17 needs of the public. The evaluation compares the duration of the effect with the  
18 service provided, taking into account the ability of the provider to maintain  
19 necessary services through alternative means.

### 20 **21.3.2 Criteria for Determining Significance of Effects**

21 An environmental document prepared to comply with NEPA must consider the  
22 context and intensity of the environmental effects that would be caused by, or  
23 result from, the proposed action. Under NEPA, the significance of an effect is  
24 used solely to determine whether an EIS must be prepared. An environmental  
25 document prepared to comply with CEQA must identify the potentially  
26 significant environmental effects of a proposed project. A “[s]ignificant effect  
27 on the environment” means a substantial, or potentially substantial, adverse  
28 change in any of the physical conditions within the area affected by the project  
29 (State CEQA Guidelines, Section 15382). CEQA also requires that the  
30 environmental document propose feasible measures to avoid or substantially  
31 reduce significant environmental effects (State CEQA Guidelines, Section  
32 15126.4(a)).

33 The following significance criteria were developed based on guidance provided  
34 by State CEQA Guidelines and consider the context and intensity of the  
35 environmental effects as required under NEPA. Impacts of an alternative related  
36 to utilities and service systems would be significant if project implementation  
37 would do any of the following:

- 38 • Not comply with published local, State, or Federal statutes, regulations,  
39 or standards relating to solid waste
- 40 • Exceed permitted landfill capacity with waste generated by the project

- 1                   • Degrade the level of service of a public utility or services system
- 2                   • Require relocating utility infrastructure
- 3                   • Exceed wastewater treatment requirements of the applicable regional
- 4                   water quality control board
- 5                   • Exceed water supplies available to service the project from existing
- 6                   entitlements and resources, such that new or expanded entitlements
- 7                   would be needed
- 8                   • Disrupt utilities service to create a public health hazard or extended
- 9                   service disruption
- 10                  • Require substantial improvements to the infrastructure or level of
- 11                  staffing of a utility or services system to maintain its existing level of
- 12                  service
- 13                  • Require or result in the construction of new water treatment,
- 14                  wastewater treatment, or stormwater drainage facilities, or the
- 15                  expansion of such existing facilities, the construction of which could
- 16                  cause significant environmental effects

### 17 **21.3.3 Topics Eliminated from Further Consideration**

18                   The action alternatives would increase availability of water supply for water  
19                   users on the Sacramento River and Delta. Increased water supplies might  
20                   increase demand for new or expanded WWTPs that discharge to the Sacramento  
21                   River or Delta. The SWRCB has review, approval, and permitting authority  
22                   over operation of new or expanded WWTPs, and the environmental effects of  
23                   approving WWTPs must be evaluated under CEQA. If approved, WWTPs must  
24                   operate within the limits established in the waste discharge requirements issued  
25                   by the SWRCB. Although increased water supplies might increase demand for  
26                   new or expanded WWTPs that discharge to the Sacramento River or Delta, it is  
27                   speculative to assume that the SWRCB would approve new or expanded  
28                   WWTPs. Therefore, increased discharge of treated wastewater into the  
29                   Sacramento River or Delta that is not currently authorized as a result of this  
30                   project (and that has not already been evaluated under CEQA) is not reasonably  
31                   foreseeable and is eliminated from further consideration.

### 32 **21.3.4 Direct and Indirect Effects**

33                   Utilities and service system impacts in the primary study area – Shasta Lake and  
34                   vicinity and upper Sacramento River (Shasta Dam to Red Bluff) – caused by  
35                   project construction and operation are described below. Only minimal, if any,  
36                   project-related impacts on utilities and service systems are expected to occur  
37                   downstream from the Red Bluff Pumping Plant or in the remainder of the  
38                   extended study area.

1                   **No-Action Alternative**

2                   **Shasta Lake and Vicinity, Upper Sacramento River (Shasta Dam to Red**  
3                   **Bluff), Lower Sacramento and Delta, and CVP/SWP Service Areas** The  
4                   impact discussion for the No-Action Alternative addresses all of both the  
5                   primary and extended study areas together, because this alternative would not  
6                   affect utilities in either the primary or extended study area.

7                   *Impact Util-1 (No-Action): Damage to or Disruption of Public Utility and*  
8                   *Service Systems Infrastructure* Under the No-Action Alternative, no new  
9                   facilities would be constructed and no existing facilities would be altered,  
10                  expanded, or demolished. Therefore, no damage to public utilities infrastructure  
11                  or temporary disruption of services in the vicinity of Shasta Lake would occur  
12                  from implementing the No-Action Alternative. No impact would occur.  
13                  Mitigation is not required for the No-Action Alternative.

14                  *Impact Util-2 (No-Action): Utility Infrastructure Relocation or Modification*  
15                  Under the No-Action Alternative, no new facilities would be constructed and no  
16                  existing facilities would be altered, expanded, or demolished. Therefore,  
17                  relocation or modification of existing utilities infrastructure in the vicinity of  
18                  Shasta Lake would not occur from implementing the No-Action Alternative. No  
19                  impact would occur. Mitigation is not required for the No-Action Alternative.

20                  *Impact Util-3 (No-Action): Short-Term Increase in Solid Waste Generation*  
21                  Under the No-Action Alternative, no new facilities would be constructed and no  
22                  existing facilities would be altered, expanded, or demolished. Therefore, no  
23                  solid waste would be generated as a result of implementing the No-Action  
24                  Alternative. No impact would occur. Mitigation is not required for the No-  
25                  Action Alternative.

26                  *Impact Util-4 (No-Action): Increases in Solid Waste Generation from Increased*  
27                  *Recreational Opportunities* Under the No-Action Alternative, no new facilities  
28                  would be constructed and no existing facilities would be altered, expanded, or  
29                  demolished. Therefore, no solid waste associated with increased recreational  
30                  opportunities would be generated as a result of implementing the No-Action  
31                  Alternative. No impact would occur. Mitigation is not required for the No-  
32                  Action Alternative.

33                  *Impact Util-5 (No-Action): Increased Demand for Water Treatment and*  
34                  *Distribution Facilities Resulting from Increases in Water Supply* Under the  
35                  No-Action Alternative, no new facilities would be constructed and no existing  
36                  facilities would be altered, expanded, or demolished. Therefore, increased  
37                  demand for water treatment and distribution facilities related to increases in  
38                  water supply would not occur from implementing the No-Action Alternative.  
39                  No impact would occur. Mitigation is not required for the No-Action  
40                  Alternative.

1                   **CP1 – 6.5-Foot Dam Raise, Anadromous Fish Survival and Water Supply**  
2                   **Reliability**

3                   Utilities and service systems impacts would occur primarily in the Shasta Lake  
4                   and vicinity portion of the primary study area. The majority of impacts  
5                   identified would be short-term impacts resulting from the abandonment and  
6                   relocation of utilities and service systems. Individual utilities or service systems  
7                   are discussed where project detail is available. However, stormwater,  
8                   wastewater, solid waste management, and water supply systems are also  
9                   referred to as service systems when a general reference to all of the systems  
10                  would be appropriate; and electrical service and infrastructure, natural gas  
11                  service and infrastructure, and telecommunications service and infrastructure  
12                  are referred to as utilities when a general reference to all of the utilities would  
13                  be appropriate.

14                 **Shasta Lake and Vicinity and Upper Sacramento River (Shasta Dam to**  
15                 **Red Bluff)** The impact discussion for CP1 addresses the Shasta Lake and  
16                 vicinity and upper Sacramento River portions of the primary study area  
17                 together, because impacts from construction activities would affect both areas.

18                 *Impact Util-1 (CP1): Damage to or Disruption of Public Utility and Service*  
19                 *Systems Infrastructure* Project construction activities could damage public  
20                 utility and service systems infrastructure, which could result in short-term  
21                 disruptions of service. Construction activities would occur in areas proposed for  
22                 utilities or service systems abandonment and relocation. Project implementation  
23                 could require disruption of public utilities or service systems to accommodate  
24                 construction activity. This impact would be potentially significant.

25                 The quantity of utility and service systems infrastructure relocation varies for  
26                 the developed areas in the general vicinity of Shasta Lake. The bulk of the work  
27                 would be done along the shores of the Sacramento Arm, the most developed  
28                 portion of Shasta Lake. Utility abandonment and relocation would take  
29                 approximately 4.5 years. Some service systems construction would occur in the  
30                 upper Sacramento River portion of the primary study area, primarily at the  
31                 Shasta Dam compound. Disruptions of utilities service in the upper Sacramento  
32                 River area could result from project implementation and are discussed below.

33                 Project construction activities associated with abandonment and relocation of  
34                 utilities and service systems infrastructure could damage existing public utility  
35                 lines. Excavation activities, vegetation clearing, and heavy equipment  
36                 operations could accidentally damage utility lines or service system  
37                 pipes/ditches, which could result in a disruption of public utilities or service  
38                 systems.

39                 Reclamation inventoried utilities and service systems on lands surrounding  
40                 Shasta Lake that could be inundated by an increased reservoir elevation. Based  
41                 on Reclamation's inventory, a 6.5-foot raise in the level of Shasta Lake would  
42                 require abandonment and relocation of approximately 31,000 feet (5.8 miles) of

1 power lines and 33,000 feet (6.2 miles) of telecommunications lines. Power and  
2 telecommunications facilities that could be inundated and that would require  
3 relocation include transmission towers, power poles, underground power and  
4 telecommunications lines, above-ground power and telecommunications lines,  
5 and cable lines. Approximately 20 percent of the power transmission facilities  
6 that could be inundated would consist of high-voltage power lines; the  
7 remaining 80 percent would consist of low-voltage power lines. Numerous  
8 individual on-site wastewater systems and stormwater systems (primarily  
9 adjacent to roads) would be relocated to areas that would not be affected under  
10 CP1 (Figure 21-2). The Utilities and Miscellaneous Minor Infrastructure  
11 Technical Memorandum shows detailed maps of the utilities in the ancillary  
12 areas that would need to be demolished or relocated (Reclamation 2007).

13 Disruptions in services resulting from damage to utility lines would likely be  
14 localized because the majority of power and telecommunication lines that would  
15 require relocation serve the local population around Shasta Lake. Reclamation  
16 or project contractors would likely repair potential infrastructure damage  
17 immediately after discovery of the damage. Therefore, disruptions of public  
18 utilities in the Shasta Lake and vicinity portion of the primary study area would  
19 not continue for extended periods of time. However, periodic service  
20 disruptions could occur throughout the 4.5-year construction period for CP1,  
21 which could inconvenience the local population.

22 Project construction activities associated with raising Shasta Dam could damage  
23 existing public utilities infrastructure and result in disruptions of public utilities  
24 service in the primary study area. Activities that could damage public utilities at  
25 the dam and result in disruptions of service include drilling activities, heavy  
26 equipment operations, and other worksite accidents. As explained above,  
27 infrastructure damage would be repaired immediately. If hydropower generation  
28 is interrupted at Shasta Dam, repair time could be extended and there would be  
29 prolonged impacts on the upper Sacramento River portion of the primary study  
30 area.

31 Public utilities or service systems could be disrupted during construction  
32 activities that require a temporary shut-off for safety or mechanical purposes.  
33 This effect would be most likely to occur in the Shasta Lake and vicinity portion  
34 of the primary study area because of the amount of project construction in that  
35 area relating to local utilities and service systems relocation activities.  
36 Occasional disruptions of public utilities could also occur in the upper  
37 Sacramento River area because of construction activities at Shasta Dam that  
38 require temporary power outages. Construction activities in the immediate  
39 vicinity of the Shasta Dam compound could occasionally affect the treatment  
40 and delivery of water to the City of Shasta Lake. This impact would be short  
41 term and would continue intermittently until project construction activities were  
42 completed. Construction would take approximately 4.5 years.

1 To minimize potential disruption of service and damage to the utilities and  
2 service systems infrastructure, project contractors would follow local, State, and  
3 Federal regulations pertaining to utilities and service systems location and  
4 construction. However, the magnitude of the project and number of utilities and  
5 service systems requiring relocation make it likely that utilities or service  
6 systems could be damaged or services disrupted. Therefore, this impact would  
7 be potentially significant. Mitigation for this impact is proposed in Section  
8 21.3.5.

9 *Impact Util-2 (CP1): Utility Infrastructure Relocation or Modification* Project  
10 implementation would require relocation or modification of utilities  
11 infrastructure, which could result in localized impacts on vegetation, land use,  
12 transportation, wildlife, noise, air quality, water quality, and utilities service.  
13 This impact would be potentially significant.

14 In general, short-term impacts that could result from relocation of utilities  
15 infrastructure would be localized (Shasta Lake and vicinity) and could include  
16 disruptions caused by noise, traffic, and dust associated with construction  
17 activities. Relocation of utilities infrastructure could result in localized long-  
18 term impacts related to visual quality, land use, vegetation, transportation, water  
19 quality, air quality, noise, and wildlife in the Shasta Lake and vicinity portion of  
20 the primary study area; these impacts are discussed in separate DEIS chapters.  
21 Some utilities infrastructure would also be modified in the upper Sacramento  
22 River portion of the primary study area, particularly in the general vicinity of  
23 the Shasta Dam compound.

24 As discussed in Impact Util-1 (CP1), project construction and operation would  
25 result in relocation and/or modification of utilities infrastructure at Shasta Dam  
26 and in communities in the Shasta Lake and vicinity portion of the primary study  
27 area (Figures 21-1 and 21-2). The infrastructure components include water and  
28 wastewater service and electrical infrastructure, telephone lines, and cable lines.  
29 Proposed infrastructure relocation was based on (1) whether utilities  
30 components would be inundated by an increased lake elevation and (2) whether  
31 the inundation would warrant relocation or permanent abandonment.

32 The largest potentially affected residential developments near Shasta Lake are  
33 in the Lakeshore and Sugarloaf areas. Recreational facilities (e.g., campgrounds  
34 and marinas) would also change substantially. The quantity of services and  
35 utilities infrastructure reconstruction would vary around Shasta Lake with an  
36 emphasis on the Sacramento, McCloud, and Pit arms as well as the Main Body.  
37 Abandonment and relocation of utilities infrastructure would take 4.5 years. The  
38 Utilities and Miscellaneous Minor Infrastructure Technical Memorandum  
39 shows detailed maps of the utilities in the ancillary areas that would need to be  
40 demolished or relocated (Reclamation 2007).

41 Consistent with Shasta County Development Standards, septic systems within  
42 200 feet of the new full pool waterline or 100 feet downslope of the new full

1 pool waterline would be demolished. Wastewater pipes, septic tanks, vaults/pits,  
2 and leachfields would be abandoned in place, and restroom buildings and  
3 contents would be removed and taken to an approved landfill. Relocation of  
4 septic systems in the project area would be done in one of two ways: (1)  
5 construct new septic systems on the property of the affected home or facility,  
6 where feasible; or (2) define a possible localized WWTP alternative for homes  
7 that do not meet Shasta County requirements for septic system separation from  
8 the lake. The general WWTP would include a pressurized sewer collection  
9 system to transport wastewater flows to several centralized package WWTPs.  
10 Localized WWTPs would likely be constructed to serve the areas of Salt Creek,  
11 Sugarloaf/Tsardi Resort, Lakeshore (possibly several plants), Antlers  
12 Campground, Campbell Creek Cove, Bridge Bay Marina, Silverthorn Resort,  
13 and Jones Valley.

14 WWTP operation can result in undesirable environmental effects. For example,  
15 discharge of treated wastewater could affect the water quality of Shasta Lake,  
16 pump stations could generate unwanted noise, and the treatment process could  
17 generate undesirable odors. The environmental impacts of constructing and  
18 operating wastewater treatment facilities are evaluated in the pertinent technical  
19 chapters of the DEIS.

20 Power lines and telecommunications lines usually follow parallel alignment and  
21 typically use the same power pole. Some of the utility lines serving individual  
22 houses, businesses, government facilities, and cabins are routed underground.  
23 All transmission towers, power poles, underground power lines, and  
24 telecommunications lines that would be inundated under CP1 would need to be  
25 removed and relocated.

26 Low-voltage power lines, telecommunications lines, or power poles located  
27 within 50 feet of the CP1 maximum lake elevation would be considered  
28 threatened by inundation, and high-voltage power lines and towers located  
29 within 100 feet would be considered inundated. Relocation of utilities  
30 infrastructure would be consistent with applicable local, State, and Federal  
31 requirements.

32 CP1 would inundate 31,000 feet (approximately 5.8 miles) of power lines and  
33 33,000 feet (about 6.2 miles) of telecommunications lines near Shasta Lake. All  
34 associated transmission towers, power poles, underground power lines,  
35 telecommunications lines, and cable lines that would be inundated under CP1  
36 would need to be removed and relocated.

37 Relocation of infrastructure would include vegetation removal, which would  
38 result in project impacts. Clearing of vegetation would be required to provide  
39 space for utilities structures and to create a safety buffer. Reclamation would  
40 clear the appropriate space for utilities infrastructure as provided by local, State,  
41 and Federal regulations. Additional space could be cleared to provide the  
42 highest level of safety for project operation and maintenance. In addition,

1 Reclamation would apply the National Electric Safety Code, a voluntary safety  
2 code followed by the utilities industry, to ensure that relocated infrastructure  
3 would operate as safely or safer than existing utilities. Widths of vegetation  
4 clearance would range from 40 to 75 feet. Cleared areas could be wider,  
5 depending on site-specific conditions, such as on steep slopes or when tall trees  
6 are nearby.

7 Impacts resulting from vegetation clearing associated with relocation of utilities  
8 infrastructure would be minimized where possible. When possible, Reclamation  
9 would locate utility corridors in sites that are not heavily forested to minimize  
10 vegetation clearing. Where heavily forested areas cannot be avoided for  
11 relocation of utilities infrastructure, Reclamation would coordinate vegetation  
12 removal with USFS and other landowners/managers to minimize impacts.  
13 Reclamation will consider co-locating and undergrounding relocated utility  
14 lines to the extent practicable.

15 Relocation of utilities infrastructure would require additional roads for  
16 construction and maintenance of the new facilities. Roads would be constructed  
17 in the rights-of-way of the cleared utility lines and would be constructed  
18 according to the appropriate jurisdiction's standards (i.e., USFS or Shasta  
19 County). New roads serving relocated utilities infrastructure would be located  
20 and designed to prevent erosion and avoid geologic hazards.

21 As discussed in Chapter 20, "Transportation and Traffic," some work in the  
22 road relocation areas could require a road closure with detours, lane closures, or  
23 a combination of both. Road closures would temporarily impede access to local  
24 connector roads and recreational land uses, affecting residents, local  
25 recreational and nonrecreational businesses, and visitors to Shasta Lake.

26 To minimize potential impacts resulting from relocation of utilities  
27 infrastructure, Reclamation and project contractors would follow local, State,  
28 and Federal regulations pertaining to installation of utilities infrastructure, the  
29 STNF LRMP standards and guidelines, and the *Shasta County General Plan*  
30 and zoning guidance. Before vacating a street or public service easement, the  
31 Shasta County Board of Supervisors must consider applicable consistency with  
32 the general plan. Shasta County Streets and Highways Code Section 8313 and  
33 California Public Utilities Code Section 12808.5 require cities and counties  
34 approving electrical transmission and distribution lines of municipal utilities  
35 districts to make a finding concerning the consistency of the lines with the  
36 general plan.

37 Reclamation is committed to funding the demolition and relocation of existing  
38 infrastructure and construction of replacement infrastructure, including  
39 localized WWTPs that might replace some individual septic systems.  
40 Reclamation is also committed to facilitating establishment of community  
41 services districts and transferring plant ownership to the districts, which would  
42 be responsible for long-term operation and management.



1 Project implementation would result in relocation or modification of utilities  
2 infrastructure. The extent of relocation of utilities infrastructure and/or  
3 modification that would be necessary could result in short-term impacts on  
4 noise, traffic, and utilities services; and project implementation could result in  
5 long-term impacts on land use, wildlife, water quality, and soils. Therefore, this  
6 impact would be potentially significant. Mitigation for this impact is proposed  
7 in Section 21.3.5.

8 *Impact Util-3 (CPI): Short-Term Increase in Solid Waste Generation* Project  
9 implementation would result in a short-term increase of solid waste generation  
10 during construction activities. The project would not generate construction  
11 waste materials that would exceed the capacity of local landfills. This impact  
12 would be less than significant.

13 Demolition and construction activities would generate waste materials,  
14 including concrete, metal, and other materials from the dam renovation;  
15 structural metal, concrete, and wood from demolished bridges and buildings;  
16 concrete and asphalt from relocated boat launch facilities; unusable recreation  
17 equipment from relocated campgrounds and picnic areas; cables, pumps, wiring,  
18 and power towers from utility relocations; and scrap material generated as a  
19 byproduct of construction. Demolition and construction waste for CPI would  
20 total about 176,627 cubic yards. Reclamation's contractors would take measures  
21 to recycle or reuse demolished materials, such as steel or copper wire, where  
22 practical. Therefore, some of the demolition and construction waste would be  
23 brought to nearby recycling facilities. Hazardous materials (e.g., asbestos, if  
24 found) would be brought to an approved hazardous waste landfill for disposal.  
25 Much of the underground utilities and service systems proposed for  
26 abandonment would be abandoned in place and would not be removed to a  
27 landfill or recycling facility.

28 Table 21-1 provides a summary of project-generated solid waste for the five  
29 action alternatives.

1 **Table 21-1. Waste Generated by Project Construction**

Feature	Estimated Volume (cubic yards)		
	CP1	CP2	CP3, CP4, CP5
Vehicle bridge replacements	10,700	10,700	10,700
Doney Creek UPRR bridge replacement	4,718	4,718	4,847
Sacramento River UPRR second crossing	15,558	15,558	15,558
Pit River Bridge piers 3 and 4 protection	0	0	0
Railroad realignment	2,420	2,420	2,420
Major road relocations	10,980	20,659	23,516
Reservoir area utilities (removals/relocations)	1,364	3,251	4,847
Reservoir area recreation (removals/relocations)	99,240	102,076	132,624
Main dam	2,263	1,553	1,553
Outlet works	388	388	388
Spillway	18,305	16,590	12,765
Temperature control device modification	20	20	20
Powerplant and penstocks	0	0	0
Right wing dam	531	511	511
Left wing dam	8,630	8,630	8,630
Visitor Center replacement	1,510	1,510	1,510
Reservoir area dikes	0	0	0
Pit 7 modifications	0	0	0
<b>Total</b>	<b>176,627</b>	<b>188,584</b>	<b>219,889</b>

Key:

CP = Comprehensive Plan

UPRR = Union Pacific Railroad

2  
 3 Two landfills are currently operational in Shasta County: the West Central  
 4 Landfill and the Anderson Landfill. The West Central Landfill, in the city of  
 5 Redding, is the closest facility to Shasta Dam and would likely receive the  
 6 majority of solid waste generated during construction. This landfill has  
 7 sufficient permitted capacity to accommodate solid waste disposal needs during  
 8 construction of the project. CP1 would generate roughly 176,627 cubic yards of  
 9 solid waste; the West Central Landfill has a remaining capacity of  
 10 approximately 5 million cubic yards, and the Anderson Landfill has a remaining  
 11 capacity of approximately 11 million cubic yards. Recycling of demolition and  
 12 construction waste materials would further reduce the volume of waste disposed  
 13 at landfills.

14 Three commercial hazardous waste landfills operate in Southern California.  
 15 Utilities poles, materials containing asbestos or lead-based paints, and  
 16 transformers containing polychlorinated biphenyls would be sent to one of these  
 17 landfills or to another EPA-permitted hazardous waste facility.

1 Solid waste generation by the project would be a short-term impact.  
2 Furthermore, accepting the project waste would not impair solid waste facilities  
3 that would serve the project. Therefore, this impact would be less than  
4 significant. Mitigation for this impact is not needed, and thus not proposed.

5 *Impact Util-4 (CPI): Increases in Solid Waste Generation from Increased*  
6 *Recreational Opportunities* Project implementation could result in more  
7 recreationists in and around Shasta Lake, on streams near Shasta Lake, and  
8 along the upper Sacramento River, which could cause incremental increases in  
9 the amount of solid waste generated. However, multiple landfills are located  
10 throughout the region with adequate capacity for disposal of solid waste  
11 generated from implementation of the project. Therefore, this impact would be  
12 less than significant.

13 Implementation of the project could increase and enhance recreational  
14 opportunities in and around Shasta Lake, on streams near Shasta Lake, and  
15 along the upper Sacramento River. Additional recreationists could  
16 incrementally increase the amount of solid waste generated. Multiple landfills,  
17 including the West Central Landfill, the Anderson Landfill, and the Tehama  
18 County/Red Bluff Landfill, are located in the project region and have a  
19 substantial amount of available capacity. Private transfer stations are located  
20 throughout the region as well. These multiple facilities have adequate capacity  
21 for disposal of solid waste generated by implementation of the project (CIWMB  
22 2008). Therefore, this impact would be less than significant. Mitigation for this  
23 impact is not needed, and thus not proposed.

24 *Impact Util-5 (CPI): Increased Demand for Water Treatment and Distribution*  
25 *Facilities Resulting from Increases in Water Supply* It is reasonable to assume  
26 that the increased water supply expected under this alternative would increase  
27 demand for construction and operation of water treatment and distribution  
28 facilities within the CVP service area. No information is currently available  
29 about future water facilities that might be built in response to the expected  
30 increase in water supply. Therefore, it is not possible to evaluate the  
31 environmental effects of building and operating such facilities. Such an  
32 evaluation would be too speculative for meaningful consideration and,  
33 therefore, is not provided in this document. Mitigation for this impact is not  
34 needed, and thus not proposed.

35 **Lower Sacramento River and Delta and CVP/SWP Service Areas**

36 *Impact Util-6 (CPI): Damage to or Disruption of Public Utility and Service*  
37 *Systems Infrastructure* Construction would not occur outside of the primary  
38 study area; therefore, there would be no temporary disruption of utilities during  
39 construction in the extended study area. No impact would occur. Mitigation for  
40 this impact is not needed, and thus not proposed.

41 *Impact Util-7 (CPI): Utility Infrastructure Relocation or Modification*  
42 Construction would not occur outside of the primary study area; therefore, there

1 would be no relocation or modification of utilities infrastructure in the extended  
2 study area. No impact would occur. Mitigation for this impact is not needed,  
3 and thus not proposed.

4 *Impact Util-8 (CP1): Short-Term Increase in Solid Waste Generation*  
5 Construction would not occur outside of the primary study area; therefore, there  
6 would be no increases in solid waste generation from construction activities in  
7 the extended study area. No impact would occur. Mitigation for this impact is  
8 not needed, and thus not proposed.

9 *Impact Util-9 (CP1): Increases in Solid Waste Generation from Increased*  
10 *Recreational Opportunities* Increased recreational opportunities resulting from  
11 project implementation would not occur outside of the primary study area;  
12 therefore, there would be no increases in solid waste generation from increased  
13 recreational opportunities in the extended study area. No impact would occur.  
14 Mitigation for this impact is not needed, and thus not proposed.

15 *Impact Util-10 (CP1): Increased Demand for Water Treatment and Distribution*  
16 *Facilities Resulting from Increases in Water Supply* It is reasonable to assume  
17 that the increased water supply expected under this alternative would increase  
18 demand for construction and operation of water treatment and distribution  
19 facilities within the extended study area. No information is currently available  
20 about future water facilities that might be built in response to the expected  
21 increase in water supply. Therefore, it is not possible to evaluate the  
22 environmental effects of building and operating such facilities. Such an  
23 evaluation would be too speculative for meaningful consideration and,  
24 therefore, is not provided in this document. Mitigation for this impact is not  
25 needed, and thus not proposed.

26 **CP2 – 12.5-Foot Dam Raise, Anadromous Fish Survival and Water Supply**  
27 **Reliability**

28 **Shasta Lake and Vicinity and Upper Sacramento River (Shasta Dam to**  
29 **Red Bluff)** The impact discussion for CP2 addresses the Shasta Lake and  
30 vicinity and upper Sacramento River portions of the primary study area  
31 together, because impacts from construction activities would affect both areas.

32 *Impact Util-1 (CP2): Damage to or Disruption of Public Utility and Service*  
33 *Systems Infrastructure* Project implementation could damage public utilities  
34 and service systems infrastructure, which could result in short-term disruptions  
35 of service. The potential exists for construction activities to damage or interfere  
36 with utilities and service systems infrastructure, and thus service, during  
37 construction operations. Construction activities would occur in areas proposed  
38 for abandonment of utilities or service systems, and implementation of  
39 relocation projects could require disruption of public utilities or services to  
40 accommodate construction activity. This impact would be potentially  
41 significant.

1 This impact would be similar to Impact Util-1 (CP1). An increase in the height  
2 of the dam could result in a larger area of inundation and additional  
3 infrastructure and service systems construction activities. Construction activities  
4 for CP2 would take longer than for CP1 and would extend the duration of  
5 impacts resulting from CP2. CP2 would require the relocation of approximately  
6 5,000 more feet of power lines and about 3,000 more feet of  
7 telecommunications lines, and would take approximately 6 more months than  
8 CP1. Additional service systems would need to be demolished and/or relocated  
9 for CP2.

10 Project implementation could damage public utilities and service systems  
11 infrastructure, or result in short-term disruption of utilities and service systems  
12 service. Therefore, this impact would be potentially significant. Mitigation for  
13 this impact is proposed in Section 21.3.5.

14 *Impact Util-2 (CP2): Utility Infrastructure Relocation or Modification* Project  
15 implementation would require relocation or modification of utilities  
16 infrastructure, which could result in localized impacts on vegetation, land use,  
17 transportation, wildlife, noise, water quality, and utility service. This impact  
18 would be potentially significant.

19 This impact would be similar to Impact Util-2 (CP1). An increase in the height  
20 of the dam could result in a larger area of inundation, which would result in  
21 additional relocation or modification of utilities infrastructure compared to  
22 Impact Util-1 (CP1). Construction activities for CP2 would take longer than for  
23 CP1 and would extend the duration of impacts resulting from CP2. CP2 would  
24 require the relocation of approximately 5,000 more feet of power lines and  
25 associated transmission facilities and relocation of about 3,000 more feet of  
26 telecommunications lines and associated facilities, and would take  
27 approximately 6 more months than CP1. Additional vegetation clearing would  
28 also be required to accommodate relocation of infrastructure.

29 Project implementation could result in localized impacts on vegetation, land  
30 use, transportation, wildlife, noise, water quality, and utilities service.  
31 Therefore, this impact would be potentially significant. Mitigation for this  
32 impact is proposed in Section 21.3.5.

33 *Impact Util-3 (CP2): Short-Term Increase in Solid Waste Generation* Project  
34 implementation would result in a short-term increase of solid waste generation  
35 during construction activities. The project would not generate construction  
36 waste materials that would exceed the capacity of local landfills. This impact  
37 would be less than significant.

38 This impact would be similar to Impact Util-3 (CP1). An increase in the height  
39 of the dam would result in a larger area of inundation, which could result in a  
40 greater potential for generation of construction waste materials compared to  
41 Impact Util-1 (CP1). CP2 would generate roughly 188,584 cubic yards of solid

1 waste (see Table 21-1). Similar to CP1, the anticipated increase in the amount  
2 of solid waste generated during construction of this alternative would still be  
3 sufficiently handled by the three local landfills and permitted hazardous waste  
4 landfills. Therefore, this impact would be less than significant. Mitigation for  
5 this impact is not needed, and thus not proposed.

6 *Impact Util-4 (CP2): Increases in Solid Waste Generation from Increased*  
7 *Recreational Opportunities* Project implementation could result in more  
8 recreationists around Shasta Lake, on streams near Shasta Lake, and along the  
9 upper Sacramento River, which could cause incremental increases in the  
10 amount of solid waste generated. However, multiple landfills are located  
11 throughout the region with adequate capacity for disposal of solid waste  
12 generated from implementation of the project. Therefore, this impact would be  
13 less than significant.

14 This impact would be similar to Impact Util-4 (CP1). An increase in the height  
15 of the dam could result in a larger area of inundation, which could result in  
16 more recreationists and greater potential for generation of solid waste materials  
17 than with Impact Util-1 (CP1). The anticipated increase in the amount of  
18 construction waste generated during long-term operation of this alternative is  
19 expected to be sufficiently handled by the three local landfills, which have a  
20 substantial amount of available capacity. Therefore, this impact would be less  
21 than significant. Mitigation for this impact is not needed, and thus not proposed.

22 *Impact Util-5 (CP2): Increased Demand for Water Treatment and Distribution*  
23 *Facilities Resulting from Increases in Water Supply* Similar to CP1, it is  
24 reasonable to assume that the increased water supply expected under CP2 would  
25 increase demand for construction and operation of water treatment and  
26 distribution facilities. However, evaluation of the environmental effects of  
27 building and operating such facilities would be too speculative for meaningful  
28 consideration and, therefore, is not provided in this document. Mitigation for  
29 this impact is not needed, and thus not proposed.

30 **Lower Sacramento River and Delta and CVP/SWP Service Areas**

31 *Impact Util-6 (CP2): Damage to or Disruption of Public Utility and Service*  
32 *Systems Infrastructure* Construction would not occur outside of the primary  
33 study area; therefore, there would be no temporary disruption of utilities service  
34 during construction in the extended study area. No impact would occur.  
35 Mitigation for this impact is not needed, and thus not proposed.

36 *Impact Util-7 (CP2): Utility Infrastructure Relocation or Modification*  
37 Construction would not occur outside of the primary study area; therefore, there  
38 would be no relocation or modification of utilities infrastructure in the extended  
39 study area. No impact would occur. Mitigation for this impact is not needed,  
40 and thus not proposed.

1            *Impact Util-8 (CP2): Short-Term Increase in Solid Waste Generation*  
2            Construction would not occur outside of the primary study area; therefore, there  
3            would be no increases in solid waste generation from construction activities in  
4            the extended study area. No impact would occur. Mitigation for this impact is  
5            not needed, and thus not proposed.

6            *Impact Util-9 (CP2): Increases in Solid Waste Generation from Increased*  
7            *Recreational Opportunities* Increased recreational opportunities resulting from  
8            project implementation would occur only in the primary study area; therefore,  
9            there would be no increases in solid waste generation from increased  
10            recreational opportunities in the extended study area. No impact would occur.  
11            Mitigation for this impact is not needed, and thus not proposed.

12           *Impact Util-10 (CP2): Increased Demand for Water Treatment and Distribution*  
13           *Facilities Resulting from Increases in Water Supply* Similar to CP1, it is  
14           reasonable to assume that the increased water supply expected under CP2 would  
15           increase demand for construction and operation of water treatment and  
16           distribution facilities within the extended study area. However, evaluation of the  
17           environmental effects of building and operating such facilities would be too  
18           speculative for meaningful consideration and, therefore, is not provided in this  
19           document. Mitigation for this impact is not needed, and thus not proposed.

20           **CP3 – 18.5-Foot Dam Raise, Agricultural Water Supply and Anadromous**  
21           **Fish Survival**

22           **Shasta Lake and Vicinity and Upper Sacramento River (Shasta Dam to**  
23           **Red Bluff)** The impact discussion for CP3 addresses the Shasta Lake and  
24           vicinity and upper Sacramento River portions of the primary study area  
25           together, because impacts from construction activities would affect both areas.

26           *Impact Util-1 (CP3): Damage to or Disruption of Public Utility and Service*  
27           *Systems Infrastructure* Project implementation could damage public utilities  
28           and service systems infrastructure, which could result in short-term disruptions  
29           of service. The potential exists for construction activities to damage or interfere  
30           with utilities and service systems infrastructure, and thus service, during  
31           construction operations. Construction activities would occur in areas proposed  
32           for abandonment and relocation of utilities or service systems. Project  
33           implementation could require disruption of public utilities or services to  
34           accommodate construction activity. This impact would be potentially  
35           significant.

36           This impact would be similar to Impact Util-1 (CP1). An increase in the height  
37           of the dam could result in a larger area of inundation and additional  
38           infrastructure and service systems construction activities. Construction activities  
39           for CP3 would take longer than for CP1 and would extend the duration of  
40           impacts resulting from CP3. CP3 would require the relocation of approximately  
41           8,000 more feet of power lines and about 6,000 more feet of  
42           telecommunications lines and would take approximately 6 more months than

1 CP1. Additional service systems would need to be demolished and/or relocated  
2 for CP3 to prevent inundation.

3 Project implementation could damage public utility and service systems  
4 infrastructure, or result in short-term disruption of utility and service systems  
5 service. Therefore, this impact would be potentially significant. Mitigation for  
6 this impact is proposed in Section 21.3.5.

7 *Impact Util-2 (CP3): Utility Infrastructure Relocation or Modification* Project  
8 implementation would require relocation or modification of utility  
9 infrastructure, which could result in localized impacts on vegetation, land use,  
10 transportation, wildlife, noise, water quality, and utility service. This impact  
11 would be potentially significant.

12 This impact would be similar to Impact Util-2 (CP1). An increase in the height  
13 of the dam could result in a larger area of inundation, which would result in  
14 additional relocation or modification of utility infrastructure compared to  
15 Impact Util-1 (CP1). Construction activities for CP3 would take longer than for  
16 CP1 and would extend the duration of impacts resulting from CP3. CP3 would  
17 require the relocation of approximately 8,000 more feet of power lines and  
18 associated transmission facilities and about 6,000 more feet of  
19 telecommunications lines and associated facilities; CP3 would take  
20 approximately 6 more months than CP1 to implement. Additional vegetation  
21 clearing would also be required to accommodate infrastructure relocation.

22 Project implementation could result in localized impacts on vegetation, land  
23 use, transportation, wildlife, noise, water quality, and utility service. Therefore,  
24 this impact would be potentially significant. Mitigation for this impact is  
25 proposed in Section 21.3.5.

26 *Impact Util-3 (CP3): Short-Term Increase in Solid Waste Generation* Project  
27 implementation would result in a short-term increase of solid waste generation  
28 during construction activities. The project would not generate construction  
29 waste materials that would exceed the capacity of local landfills. This impact  
30 would be less than significant.

31 This impact would be similar to Impact Util-3 (CP1). An increase in the height  
32 of the dam would result in a larger area of inundation, which could result in a  
33 greater potential for generation of construction waste materials compared to  
34 Impact Util-1 (CP1). CP3 would generate roughly 219,889 cubic yards of solid  
35 waste (see Table 21-1). Similar to CP1, the anticipated increase in the amount  
36 of solid waste generated during construction of this alternative would still be  
37 sufficiently handled by the three local landfills and permitted hazardous waste  
38 landfills. Therefore, this impact would be less than significant. Mitigation for  
39 this impact is not needed, and thus not proposed.



1            *Impact Util-4 (CP3): Increases in Solid Waste Generation from Increased*  
2            *Recreational Opportunities* Project implementation could result in more  
3            recreationists in and around Shasta Lake, on streams near Shasta Lake, and  
4            along the upper Sacramento River, creating incremental increases in the amount  
5            of solid waste generated. However, multiple landfills are located throughout the  
6            region with adequate capacity for disposal of solid waste generated from  
7            implementation of the project. Therefore, this impact would be less than  
8            significant. Mitigation for this impact is not needed, and thus not proposed.

9            This impact would be similar to Impact Util-4 (CP1). An increase in the height  
10           of the dam could result in a larger area of inundation, which could result in  
11           more recreationists and greater potential for generation of solid waste materials  
12           compared to Impact Util-1 (CP1). The anticipated increase in the amount of  
13           solid waste generated during long-term operation of this alternative would be  
14           handled by the three local landfills and permitted hazardous waste landfills.  
15           Therefore, this impact would be less than significant. Mitigation for this impact  
16           is not needed, and thus not proposed.

17           *Impact Util-5 (CP3): Increased Demand for Water Treatment and Distribution*  
18           *Facilities Resulting from Increases in Water Supply* Similar to CP1, it is  
19           reasonable to assume that the increased water supply expected under CP3 would  
20           increase demand for construction and operation of water treatment and  
21           distribution facilities. However, evaluation of the environmental effects of  
22           building and operating such facilities would be too speculative for meaningful  
23           consideration and, therefore, is not provided in this document. Mitigation for  
24           this impact is not needed, and thus not proposed.

25           **Lower Sacramento River and Delta/CVP/SWP Service Areas**

26           *Impact Util-6 (CP3): Damage to or Disruption of Public Utility and Service*  
27           *Systems Infrastructure* Construction would not occur outside of the primary  
28           study area; therefore, there would be no temporary disruption of utilities service  
29           during construction in the extended study area. No impact would occur.  
30           Mitigation for this impact is not needed, and thus not proposed.

31           *Impact Util-7 (CP3): Utility Infrastructure Relocation or Modification*  
32           Construction would not occur outside of the primary study area; therefore, there  
33           would be no relocation or modification of utilities infrastructure in the extended  
34           study area. No impact would occur. Mitigation for this impact is not needed,  
35           and thus not proposed.

36           *Impact Util-8 (CP3): Short-Term Increase in Solid Waste Generation*  
37           Construction would not occur outside of the primary study area; therefore, there  
38           would be no increases in solid waste generation from construction activities in  
39           the extended study area. No impact would occur. Mitigation for this impact is  
40           not needed, and thus not proposed.

1                    *Impact Util-9 (CP3): Increases in Solid Waste Generation from Increased*  
2                    *Recreational Opportunities* Increased recreational opportunities resulting from  
3                    project implementation would occur only in the primary study area; therefore,  
4                    there would be no increases in solid waste generation from increased  
5                    recreational opportunities in the extended study area. No impact would occur.  
6                    Mitigation for this impact is not needed, and thus not proposed.

7                    *Impact Util-10 (CP3): Increased Demand for Water Treatment and Distribution*  
8                    *Facilities Resulting from Increases in Water Supply* Similar to CP1, it is  
9                    reasonable to assume that the increased water supply expected under CP3 would  
10                   increase demand for construction and operation of water treatment and  
11                   distribution facilities within the extended study area. However, evaluation of the  
12                   environmental effects of building and operating such facilities would be too  
13                   speculative for meaningful consideration and, therefore, is not provided in this  
14                   document. Mitigation for this impact is not needed, and thus not proposed.

15                    ***CP4 – 18.5-Foot Dam Raise, Anadromous Fish Focus with Water Supply***  
16                    ***Reliability***

17                    **Shasta Lake and Vicinity and Upper Sacramento River (Shasta Dam to**  
18                    **Red Bluff)** The impact discussion for CP4 addresses the Shasta Lake and  
19                    vicinity and upper Sacramento River portions of the primary study area  
20                    together, because impacts from construction activities would affect both areas.

21                    *Impact Util-1 (CP4): Damage to or Disruption of Public Utility and Service*  
22                    *Systems Infrastructure* Project implementation, including gravel augmentation  
23                    and habitat restoration activities along the upper Sacramento River, could  
24                    damage public utilities and service systems infrastructure, which could result in  
25                    short-term disruptions of service. The potential exists for construction activities  
26                    to damage or interfere with utilities and service systems infrastructure, and thus  
27                    service, during construction operations. Construction activities would occur in  
28                    areas proposed for utilities or service systems abandonment and relocation.  
29                    Project implementation could require disruption of public utilities or services to  
30                    accommodate construction activity. This impact would be potentially  
31                    significant.

32                    This impact would be similar to Impact Util-1 (CP1). Therefore, this impact  
33                    would be potentially significant. Mitigation for this impact is proposed in  
34                    Section 21.3.5.

35                    *Impact Util-2 (CP4): Utility Infrastructure Relocation or Modification* Project  
36                    implementation would require relocation or modification of utilities  
37                    infrastructure, which could result in localized impacts on vegetation, land use,  
38                    transportation, wildlife, noise, water quality, and utility service. Gravel  
39                    augmentation and habitat restoration activities along the upper Sacramento  
40                    River might also require relocation or modification of utilities infrastructure.  
41                    This impact would be potentially significant.

1 This impact would be similar to Impact Util-2 (CP1). Therefore, this impact  
2 would be potentially significant. Mitigation for this impact is proposed in  
3 Section 21.3.5.

4 *Impact Util-3 (CP4): Short-Term Increase in Solid Waste Generation* Project  
5 implementation, including gravel augmentation and habitat restoration activities  
6 along the upper Sacramento River, would result in a short-term increase of solid  
7 waste generation during construction activities. The project would not generate  
8 construction waste materials that would exceed the capacity of local landfills.  
9 This impact would be less than significant.

10 This impact would be similar to Impact Util-3 (CP3), with a very slight increase  
11 in solid waste generation related to downstream restoration construction  
12 activities. Therefore, this impact would be less than significant. Mitigation for  
13 this impact is not needed, and thus not proposed.

14 *Impact Util-4 (CP4): Increases in Solid Waste Generation from Increased*  
15 *Recreational Opportunities* Project implementation could result in more  
16 recreationists in and around Shasta Lake, on streams near Shasta Lake, and  
17 along the upper Sacramento River, which could cause incremental increases in  
18 the amount of solid waste generated. However, multiple landfills are located  
19 throughout the region with adequate capacity for disposal of solid waste  
20 generated from project implementation. Therefore, this impact would be less  
21 than significant.

22 This impact would be similar to Impact Util-4 (CP1) and identical to Impact  
23 Util-4 (CP3). Therefore, this impact would be less than significant. Mitigation  
24 for this impact is not needed, and thus not proposed.

25 *Impact Util-5 (CP4): Increased Demand for Water Treatment and Distribution*  
26 *Facilities Resulting from Increases in Water Supply* Similar to CP1, it is  
27 reasonable to assume that the increased water supply expected under CP4 would  
28 increase demand for construction and operation of water treatment and  
29 distribution facilities. However, evaluation of the environmental effects of  
30 building and operating such facilities would be too speculative for meaningful  
31 consideration and, therefore, is not provided in this document. Mitigation for  
32 this impact is not needed, and thus not proposed.

33 **Lower Sacramento River and Delta and CVP/SWP Service Areas**

34 *Impact Util-6 (CP4): Damage to or Disruption of Public Utility and Service*  
35 *Systems Infrastructure* Construction would not occur outside of the primary  
36 study area; therefore, there would be no temporary disruption of utilities service  
37 in the extended study area. No impact would occur. Mitigation for this impact is  
38 not needed, and thus not proposed.

39 *Impact Util-7 (CP4): Utility Infrastructure Relocation or Modification* No  
40 utility infrastructure relocation or modification would occur outside of the

1 primary study area; therefore, there would be no relocation or modification of  
2 utilities infrastructure in the extended study area. No impact would occur.  
3 Mitigation for this impact is not needed, and thus not proposed.

4 *Impact Util-8 (CP4): Short-Term Increase in Solid Waste Generation*

5 Construction would not occur outside of the primary study area; therefore, there  
6 would be no increases in solid waste generation in the extended study area. No  
7 impact would occur. Mitigation for this impact is not needed, and thus not  
8 proposed.

9 *Impact Util-9 (CP4): Increases in Solid Waste Generation from Increased*  
10 *Recreational Opportunities* Increased recreational opportunities resulting from  
11 project implementation would occur only in the primary study area; therefore,  
12 there would be no increases in solid waste generation from increased  
13 recreational opportunities in the extended study area. No impact would occur.  
14 Mitigation for this impact is not needed, and thus not proposed.

15 *Impact Util-10 (CP4): Increased Demand for Water Treatment and Distribution*  
16 *Facilities Resulting from Increases in Water Supply* Similar to CP1, it is  
17 reasonable to assume that the increased water supply expected under CP4 would  
18 increase demand for construction and operation of water treatment and  
19 distribution facilities within the extended study area. However, evaluation of the  
20 environmental effects of building and operating such facilities would be too  
21 speculative for meaningful consideration and is, therefore, not provided in this  
22 document. Mitigation for this impact is not needed, and thus not proposed.

23 **CP5 – 18.5-Foot Dam Raise, Combination Plan**

24 **Shasta Lake and Vicinity and Upper Sacramento River (Shasta Dam to**  
25 **Red Bluff)** The impact discussion for CP5 addresses the Shasta Lake and  
26 vicinity and upper Sacramento River portions of the primary study area  
27 together, because impacts from construction activities would affect both areas.

28 *Impact Util-1 (CP5): Damage to or Disruption of Public Utility and Service*  
29 *Systems Infrastructure* Project implementation, including gravel augmentation  
30 and the habitat restoration activities along the upper Sacramento River, could  
31 damage public utilities and service systems infrastructure, which could result in  
32 short-term disruptions of service. The potential exists for construction activities  
33 to damage or interfere with utilities and service systems infrastructure, and thus  
34 service, during construction operations. Construction activities would occur in  
35 areas proposed for abandonment and relocation of utilities or service systems.  
36 Project implementation could require disruption of public utilities or services to  
37 accommodate construction activity. This impact would be potentially  
38 significant.

39 This impact would be similar to Impact Util-1 (CP1) and identical to Impact  
40 Util-1 (CP4). Therefore, this impact would be potentially significant. Mitigation  
41 for this impact is proposed in Section 21.3.5.

1                    *Impact Util-2 (CP5): Utility Infrastructure Relocation or Modification* Project  
2 implementation would require relocation or modification of utilities  
3 infrastructure, which could result in localized impacts on vegetation, land use,  
4 transportation, wildlife, noise, water quality, and utility service. Gravel  
5 augmentation and the habitat restoration activities along the upper Sacramento  
6 River might also require relocation or modification of utilities infrastructure.  
7 This impact would be potentially significant.

8                    This impact would be similar to Impact Util-2 (CP1) and identical to Impact  
9 Util-2 (CP4). Therefore, this impact would be potentially significant. Mitigation  
10 for this impact is proposed in Section 21.3.5.

11                   *Impact Util-3 (CP5): Short-Term Increase in Solid Waste Generation* Project  
12 implementation, including gravel augmentation and habitat restoration activities  
13 along the upper Sacramento River, would result in a short-term increase of solid  
14 waste generation during construction activities. The project would not generate  
15 construction waste materials that would exceed the capacity of local landfills.  
16 This impact would be less than significant.

17                   This impact would be similar to Impact Util-3 (CP4), with a very slight increase  
18 in solid waste generation related to enhancement of tributary and warm-water  
19 habitat and recreational trails. Therefore, this impact would be less than  
20 significant. Mitigation for this impact is not needed, and thus not proposed.

21                   *Impact Util-4 (CP5): Increases in Solid Waste Generation from Increased*  
22 *Recreational Opportunities* Project implementation could result in more  
23 recreationists in and around Shasta Lake, on streams near Shasta Lake, and  
24 along the upper Sacramento River, which could cause incremental increases in  
25 the amount of solid waste generated. However, multiple landfills are located  
26 throughout the region with adequate capacity for disposal of solid waste  
27 generated from implementation of the project. Therefore, this impact would be  
28 less than significant.

29                   This impact would be similar to Impact Util-4 (CP1) and identical to Impact  
30 Util-4 (CP4). Therefore, this impact would be less than significant. Mitigation  
31 for this impact is not needed, and thus not proposed.

32                   *Impact Util-5 (CP5): Increased Demand for Water Treatment and Distribution*  
33 *Facilities Resulting from Increases in Water Supply* Similar to CP1, it is  
34 reasonable to assume that the increased water supply expected under CP5 would  
35 increase demand for construction and operation of water treatment and  
36 distribution facilities. However, evaluation of the environmental effects of  
37 building and operating such facilities would be too speculative for meaningful  
38 consideration and, therefore, is not provided in this document. Mitigation for  
39 this impact is not needed, and thus not proposed.

1                   **Lower Sacramento River and Delta and CVP/SWP Service Areas**

2                   *Impact Util-6 (CP5): Damage to or Disruption of Public Utility and Service*  
3                   *Systems Infrastructure* Construction would not occur outside of the primary  
4                   study area; therefore, there would be no temporary disruption of utilities service  
5                   in the extended study area. No impact would occur. Mitigation for this impact is  
6                   not needed, and thus not proposed.

7                   *Impact Util-7 (CP5): Utility Infrastructure Relocation or Modification* No  
8                   utility infrastructure relocation or modification would occur outside of the  
9                   primary study area; therefore, there would be no relocation or modification of  
10                  utilities infrastructure in the extended study area. No impact would occur.  
11                  Mitigation for this impact is not needed, and thus not proposed.

12                  *Impact Util-8 (CP5): Short-Term Increase in Solid Waste Generation*  
13                  Construction would not occur outside of the primary study area; therefore, there  
14                  would be no increases in solid waste generation in the extended study area. No  
15                  impact would occur. Mitigation for this impact is not needed, and thus not  
16                  proposed.

17                  *Impact Util-9 (CP5): Increases in Solid Waste Generation from Increased*  
18                  *Recreational Opportunities* Increased recreational opportunities caused by  
19                  project implementation would occur only in the primary study area; therefore,  
20                  there would be no increases in solid waste generation from increased  
21                  recreational opportunities in the extended study area. No impact would occur.  
22                  Mitigation for this impact is not needed, and thus not proposed.

23                  *Impact Util-10 (CP5): Increased Demand for Water Treatment and Distribution*  
24                  *Facilities Resulting from Increases in Water Supply* Similar to CP1, it is  
25                  reasonable to assume that the increased water supply expected under CP5 would  
26                  increase demand for construction and operation of water treatment and  
27                  distribution facilities within the extended study area. However, evaluation of the  
28                  environmental effects of building and operating such facilities would be too  
29                  speculative for meaningful consideration and, therefore, is not provided in this  
30                  document. Mitigation for this impact is not needed, and thus not proposed.

31                  **21.3.5 Mitigation Measures**

32                  Table 21-2 presents a summary of mitigation measures for utilities and service  
33                  systems.

1 **Table 21-2. Summary of Mitigation Measures for Utilities and Service Systems**

<b>Impact</b>		<b>No-Action Alternative</b>	<b>CP1</b>	<b>CP2</b>	<b>CP3</b>	<b>CP4</b>	<b>CP5</b>
Impact Util-1: Damage to or Disruption of Public Utility and Service Systems Infrastructure (Shasta Lake and Vicinity and Upper Sacramento River)	LOS before Mitigation	NI	PS	PS	PS	PS	PS
	Mitigation Measure	None required.	Util-1: Implement Procedures to Avoid Damage to or Temporary Disruption of Service.				
	LOS after Mitigation	NI	LTS	LTS	LTS	LTS	LTS
Impact Util-2: Utility Infrastructure Relocation or Modification (Shasta Lake and Vicinity and Upper Sacramento River)	LOS before Mitigation	NI	PS	PS	PS	PS	PS
	Mitigation Measure	None required.	Util-2: Adopt Measures to Minimize Infrastructure Relocation Impacts.				
	LOS after Mitigation	NI	LTS	LTS	LTS	LTS	LTS
Impact Util-3: Short-Term Increase in Solid Waste Generation (Shasta Lake and Vicinity and Upper Sacramento River)	LOS before Mitigation	NI	LTS	LTS	LTS	LTS	LTS
	Mitigation Measure	None required.	None needed; thus none proposed.				
	LOS after Mitigation	NI	LTS	LTS	LTS	LTS	LTS
Impact Util-4: Increases in Solid Waste Generation from Increased Recreational Opportunities (Shasta Lake and Vicinity and Upper Sacramento River)	LOS before Mitigation	NI	LTS	LTS	LTS	LTS	LTS
	Mitigation Measure	None required.	None needed; thus none proposed.				
	LOS after Mitigation	NI	LTS	LTS	LTS	LTS	LTS
Impact Util-5: Increased Demand for Water Treatment and Distribution Facilities Resulting from Increases in Water Supply (Shasta Lake and Vicinity and Upper Sacramento River)	LOS before Mitigation	NI	TS	TS	TS	TS	TS
	Mitigation Measure	None required.	None needed; thus none proposed.				
	LOS after Mitigation	NI	TS	TS	TS	TS	TS

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1 **Table 21-2. Summary of Mitigation Measures for Utilities and Service Systems (contd.)**

Impact		No-Action Alternative	CP1	CP2	CP3	CP4	CP5
Impact Util-6: Damage to or Disruption of Public Utility and Service Systems Infrastructure (Lower Sacramento River, Delta, CVP/SWP Service Areas)	LOS before Mitigation	N/A	NI	NI	NI	NI	NI
	Mitigation Measure	None required.	None needed; thus none proposed.				
	LOS after Mitigation	N/A	NI	NI	NI	NI	NI
Impact Util-7: Utility Infrastructure Relocation or Modification (Lower Sacramento River, Delta, CVP/SWP Service Areas)	LOS before Mitigation	N/A	NI	NI	NI	NI	NI
	Mitigation Measure	None required.	None needed; thus none proposed.				
	LOS after Mitigation	N/A	NI	NI	NI	NI	NI
Impact Util-8: Short-Term Increase in Solid Waste Generation (Lower Sacramento River, Delta, CVP/SWP Service Areas)	LOS before Mitigation	N/A	NI	NI	NI	NI	NI
	Mitigation Measure	None required.	None needed; thus none proposed.				
	LOS after Mitigation	N/A	NI	NI	NI	NI	NI
Impact Util-9: Increases in Solid Waste Generation from Increased Recreational Opportunities (Lower Sacramento River, Delta, CVP/SWP Service Areas)	LOS before Mitigation	N/A	NI	NI	NI	NI	NI
	Mitigation Measure	None required.	None needed; thus none proposed.				
	LOS after Mitigation	N/A	NI	NI	NI	NI	NI
Impact Util-10: Increased Demand for Water Treatment and Distribution Facilities Resulting from Increases in Water Supply (Lower Sacramento River, Delta, CVP/SWP Service Areas)	LOS before Mitigation	N/A	TS	TS	TS	TS	TS
	Mitigation Measure	None required.	None needed; thus none proposed.				
	LOS after Mitigation	N/A	TS	TS	TS	TS	TS

Key:

- B = beneficial
- LOS = level of significance
- LTS = less than significant
- N/A = not applicable
- NI = no impact
- PS = potentially significant
- S = significant

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1           **No-Action Alternative**

2           No mitigation is required for the No-Action Alternative.

3           **CP1 – 6.5-Foot Dam Raise, Anadromous Fish Survival and Water Supply**  
4           **Reliability**

5           No mitigation is required for Impacts Util-3 (CP1) through and Util-10 (CP1).  
6           Mitigation is provided below for other impacts of CP1 on utilities and service  
7           systems.

8           **Mitigation Measure Util-1 (CP1): Implement Procedures to Avoid Damage**  
9           **to or Temporary Disruption of Service** To avoid temporary disruption of  
10          service, the following measures will be implemented during project construction  
11          to ensure that existing utilities infrastructure is not damaged:

- 12                   • **Permits** – Reclamation will obtain utilities excavation or encroachment  
13                   permits as necessary before initiating any work with potential to affect  
14                   utility lines and will include all necessary permit terms in construction  
15                   contract specifications.
  
- 16                   • **Locating Line** – Utility locations will be identified through field  
17                   surveys and the use of the Underground Service Alert services. Any  
18                   buried utility lines will be clearly marked before initiation of any  
19                   ground-disturbing construction activity.
  
- 20                   • **Clearing Right-of-Way and Road Access** – If necessary,  
21                   infrastructure will be removed or reinforced in coordination with all  
22                   potential service providers known to have, or potentially having,  
23                   utilities infrastructure in the project area.
  
- 24                   • **Response Plan** – The construction contractor will prepare a response  
25                   plan to address potential accidental damage to utility lines prior to the  
26                   start of construction. The plan will identify chain of command rules for  
27                   notification of authorities and affected businesses and will identify  
28                   appropriate actions and responsibilities to ensure the safety of the  
29                   public and workers. The response plan will be circulated to the  
30                   potentially affected service system providers for review and approval  
31                   prior to the start of construction activities. Worker education training in  
32                   response to such situations will be conducted by the contractor.

33           Implementation of this mitigation measure would reduce Impact Util-1 (CP1) to  
34           a less-than-significant level.

35           **Mitigation Measure Util-2 (CP1): Adopt Measures to Minimize**  
36           **Infrastructure Relocation Impacts** For each segment of a utility line that  
37           would need to be relocated or modified as a result of project construction and  
38           operations, the following measures will be implemented:

- 1                   • **Permits** – Reclamation will obtain utilities excavation or encroachment  
2                   permits as necessary before initiating any work associated with  
3                   modification or relocation of an existing utility line and will include all  
4                   necessary permit terms in construction contract specifications.
  
- 5                   • **Locating and Staking Line** – Locations for relocated utility lines will  
6                   be identified in coordination with affected service providers.  
7                   Reclamation will consider co-locating and undergrounding relocated  
8                   utility lines to the extent practicable. As part of this effort, field surveys  
9                   will be conducted and the Underground Service Alert services will be  
10                  used to ensure that there are no conflicts with other existing utility  
11                  lines. After the alignment of the line has been finalized, a survey will  
12                  be made to map the route of the line. The results of the survey will be  
13                  plan and profile drawings, which will be used to spot the poles. After  
14                  exact positions have been fixed, a stake will be driven to indicate the  
15                  center of the structure or pole.
  
- 16                 • **Clearing Right-of-Way and Road Access** – The right-of-way will be  
17                 cleared of all obstructions that will interfere with the operation of the  
18                 power line. A strip of land will be cleared on each side of the centerline  
19                 of the transmission line by cutting or trimming the trees and brush. All  
20                 trees and brush should be cut 3 inches or less from the ground line so  
21                 that the passage of trucks and tractors will not be hindered. The cut  
22                 trees and brush will be disposed of by chipping or spreading, burning,  
23                 or hauling away. Disposal of the debris by burning, or otherwise, will  
24                 be accomplished in accordance with State and local laws and  
25                 regulations without creating a hazard or nuisance. The right-of-way  
26                 should be treated with chemical spray to retard the growth of brush or  
27                 trees that could endanger the operation of the transmission line.
  
- 28                 • **Installing Pole Footings and Foundations** – Pole sites will be  
29                 properly graded in accordance with the specifications. Usually the  
30                 slope of the grade will not be more than 3:1. All topsoil should be  
31                 removed prior to grading the pole location.
  
- 32                 • **Utilities Modification Plan** – The construction contractor will prepare  
33                 a utilities modification and relocation plan prior to the start of  
34                 construction. The plan will identify chain of command rules for  
35                 notification of authorities and appropriate actions and responsibilities to  
36                 ensure the safety of the public and workers and include a description of  
37                 how utilities infrastructure will be modified or relocated and  
38                 identification of precise alignment where utility lines will be relocated.  
39                 The plan will be circulated to the potentially affected service system  
40                 providers for review and approval prior to the start of construction  
41                 activities. Worker education training in response to such situations will  
42                 be conducted by the contractor.

- 1                   • The contractor will stage utility line modifications and relocations in a  
2                   manner that minimizes interruption of service.
  
- 3                   • In accordance with the STNF LRMP, relocated power lines less than 35  
4                   kV and telephone lines on USFS land within the STNF will be buried  
5                   unless the STNF VQO can be met without burying, geologic conditions  
6                   make burying infeasible, or burying will produce greater long-term site  
7                   disturbance.
  
- 8                   • **Traffic Control and Safety Assurance Plan** – Reclamation will  
9                   implement Mitigation Measure Trans-1 as described in DEIS Chapter  
10                  20, “Transportation and Traffic,” to reduce adverse effects of road  
11                  closures and detours or partial road closures on access to local streets  
12                  and adjacent uses.

13                  Implementation of this mitigation measure would reduce Impact Util-2 (CP1) to  
14                  a less-than-significant level.

15                  ***CP2 – 12.5-Foot Dam Raise, Anadromous Fish Survival and Water Supply***  
16                  ***Reliability***

17                  No mitigation is required for Impacts Util-3 (CP2) through Util-10 (CP2).  
18                  Mitigation is provided below for other impacts of CP2 on utilities and service  
19                  systems.

20                  **Mitigation Measure Util-1 (CP2): Implement Procedures to Avoid Damage**  
21                  **to or Temporary Disruption of Service** This mitigation measure is identical  
22                  to Mitigation Measure Util-1 (CP1). Implementation of this mitigation measure  
23                  would reduce Impact Util-1 (CP2) to a less-than-significant level.

24                  **Mitigation Measure Util-2 (CP2): Adopt Measures to Minimize**  
25                  **Infrastructure Relocation Impacts** This mitigation measure is identical to  
26                  Mitigation Measure Util-2 (CP1). Implementation of this mitigation measure  
27                  would reduce Impact Util-2 (CP2) to a less-than-significant level.

28                  ***CP3 – 18.5-Foot Dam Raise, Agricultural Water Supply and Anadromous***  
29                  ***Fish Survival***

30                  No mitigation is required for Impacts Util-3 (CP3) through Util-10 (CP3).  
31                  Mitigation is provided below for other impacts of CP3 on utilities and service  
32                  systems.

33                  **Mitigation Measure Util-1 (CP3): Implement Procedures to Avoid Damage**  
34                  **to or Temporary Disruption of Service** This mitigation measure is identical  
35                  to Mitigation Measure Util-1 (CP1). Implementation of this mitigation measure  
36                  would reduce Impact Util-1 (CP3) to a less-than-significant level.

37                  **Mitigation Measure Util-2 (CP3): Adopt Measures to Minimize**  
38                  **Infrastructure Relocation Impacts** This mitigation measure is identical to

1 Mitigation Measure Util-2 (CP1). Implementation of this mitigation measure  
2 would reduce Impact Util-2 (CP3) to a less-than-significant level.

3 ***CP4 – 18.5-Foot Dam Raise, Anadromous Fish Focus with Water Supply***  
4 ***Reliability***

5 No mitigation is required for Impacts Util-3 (CP4) through Util-10 (CP4).  
6 Mitigation is provided below for other impacts of CP4 on utilities and service  
7 systems.

8 **Mitigation Measure Util-1 (CP4): Implement Procedures to Avoid Damage**  
9 **to or Temporary Disruption of Service** This mitigation measure is identical  
10 to Mitigation Measure Util-1 (CP1). Implementation of this mitigation measure  
11 would reduce Impact Util-1 (CP4) to a less-than-significant level.

12 **Mitigation Measure Util-2 (CP4): Adopt Measures to Minimize**  
13 **Infrastructure Relocation Impacts** This mitigation measure is identical to  
14 Mitigation Measure Util-2 (CP1). Implementation of this mitigation measure  
15 would reduce Impact Util-2 (CP4) to a less-than-significant level.

16 ***CP5 – 18.5-Foot Dam Raise, Combination Plan***  
17 No mitigation is required for Impacts Util-3 (CP5) through Util-10 (CP5).  
18 Mitigation is provided below for other impacts of CP5 on utilities and service  
19 systems.

20 **Mitigation Measure Util-1 (CP5): Implement Procedures to Avoid Damage**  
21 **to or Temporary Disruption of Service** This mitigation measure is identical  
22 to Mitigation Measure Util-1 (CP1). Implementation of this mitigation measure  
23 would reduce Impact Util-1 (CP5) to a less-than-significant level.

24 **Mitigation Measure Util-2 (CP5): Adopt Measures to Minimize**  
25 **Infrastructure Relocation Impacts** This mitigation measure is identical to  
26 Mitigation Measure Util-2 (CP1). Implementation of this mitigation measure  
27 would reduce Impact Util-2 (CP5) to a less-than-significant level.

28 **21.3.6 Cumulative Effects**

29 Past, present, and reasonably foreseeable future projects would generate  
30 construction-related solid waste. As discussed in Impact Util-3 (CP1–CP5),  
31 affected landfills have sufficient capacity to accommodate project-generated  
32 solid waste, and are also expected to have sufficient capacity to accommodate  
33 reasonably foreseeable development in addition to project waste. Therefore,  
34 none of the action alternatives would contribute to cumulative effects related to  
35 solid waste disposal.

36 Implementing the proposed SLWRI alternatives would not have a significant  
37 cumulative effect on utilities and service systems in the primary study area. As  
38 discussed above, construction activities associated with CP1–CP5 could  
39 inadvertently damage utilities and public service systems infrastructure. In  
40 addition, utilities and service systems could be temporarily disrupted to

1 accommodate construction activities. These effects would be of greater  
2 magnitude and longer in duration with the larger dam raises. Thus, the effects of  
3 CP2 would be similar to but greater than those of CP1 and similar to but less  
4 than those of CP3–CP5. Although Mitigation Measure Util-1 would reduce  
5 these project-level effects, they would not be eliminated. Only two of the  
6 present or reasonably foreseeable future actions, the Antlers Bridge replacement  
7 and the Iron Mountain Restoration Plan, are located in the immediate vicinity of  
8 Shasta Lake and have the potential to damage or disrupt utilities and public  
9 service systems infrastructure. The Antlers Bridge replacement is currently  
10 under construction and is expected to be completed in 2015, which is before  
11 implementation of any of the action alternatives would begin. With respect to  
12 the Iron Mountain Mine Restoration Plan, it is unlikely that this activity would  
13 occur simultaneously with the action alternatives. Therefore, construction  
14 activities related to implementation of the proposed SLWRI alternatives would  
15 not contribute considerably to significant cumulative impacts related to utility  
16 impacts.

17 The effects of CP1–CP5 on utilities and service systems would diminish with  
18 distance from the project construction sites and would also not have  
19 cumulatively considerable effects on utilities and public service systems  
20 downstream from Red Bluff (i.e., in the extended study area).

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