2015 URBAN WATER MANAGEMENT PLAN

SUBMITTED BY: **SOUTH FEATHER WATER AND POWER AGENCY**
2310 Oro Quincy Highway
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ADOPTED: Public Meeting December 18, 2018

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Date plan submitted to the Department of Water Resources: **December 31, 2018**

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The Water supplier is an: **Public Agency formed pursuant to Water Code § 20500 et seq.** (formerly Oroville-Wyandotte Irrigation Agency).

The Water supplier is a: **Retailer**

Utility services provided by the water supplier include: **Domestic and irrigation water service, and wholesale hydropower generation.**

Is This Agency a Bureau of Reclamation Contractor? **No**

Is This Agency a State Water Project Contractor? **No**

CHAPTER 1 - INTRODUCTION AND OVERVIEW

This chapter discusses the importance and uses of this Urban Water Management Plan (UWMP), the relationship of this plan to the California Water Code (CWC), as well as other local and regional planning efforts, and how this plan is organized.

This chapter contains the following sections:

1.1 Background and Purpose

South Feather Water and Power Agency (SFWPA or Agency), originally named Oroville-Wyandotte Irrigation District (OWID), has roots extending back to the California gold rush. OWID was organized on November 17, 1919. Today, SFWPA has grown to provide drinking water to approximately 6,919 households and delivers irrigation water seasonally to over 500 customers.

SFWPA recognizes the importance of maintaining resource management planning documents that have been developed at the local level. Five-year incremental updates to the UWMP not only satisfy the requirements of the Urban Water Management Planning Act, but serve as a tracking mechanism for ensuring that adequate supplies of high quality water are available for future beneficial uses.

The purpose of the UWMP is to inform the public, and local and state agencies of South Feather Water and Power Agency's water supply availability, exposure during periods of drought, conservation efforts, and plans for future supply.

1.2 Urban Water Management Planning and the California Water Code

The California Water Code (CWC §10617) requires urban water suppliers to prepare and adopt an UWMP every five years. All urban water suppliers, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet annually are required to prepare an UWMP and submit the plan to the California Department of Water Resources (DWR).

This 2015 UWMP was prepared in compliance with the CWC, and follows the recommended structure established in the DWR 2015 Urban Water Management Plan Guidebook for Urban Water Suppliers.

1.3 Relation to Other Planning Efforts

This plan provides information specific to the water management and planning efforts of the Agency. However, SFWPA coordinates with the local planning and land development agencies by providing information on the adequacy of its water supply, distribution system, and water rates to meet the area's current and future growth needs, including: cooperation with the Butte Local Agency Formation Commission to assist in the development of Municipal Service Review Studies; cooperation with the respective planning departments of the City of Oroville and the County of Butte in the preparation of CEQA documents and processing applications for subdivisions and commercial developments; participation with other municipal water purveyors and fire departments in Butte County and the City of Oroville to plan for the implementation of new fire safety regulations; and, cooperation on an ongoing basis with North Yuba Water District (NYWD) regarding water supplies and their management (NYWD shares water storage facilities with SFWPA, as well as one of SFWPA's distribution facilities).

1.4 PLAN ORGANIZATION

The organization of this Plan follows the structure outlined in 2015 UWMP Guidebook.

Chapter 1 - Introduction and Overview
Chapter 2- Plan Preparation
Chapter 3 - System Description
Chapter 4 - System Water Use
Chapter 5- Baselines and Targets
Chapter 6 - System Supplies
Chapter 7— Water Supply Reliability
Chapter 8 – Water Shortage Contingency Planning
Chapter 9 — Demand Management Measures
Chapter 10 — Plan Adoption, Submittal, and Implementation

In addition to these ten chapters, this plan includes a number of appendices providing supporting documentation and supplemental information. Pursuant to CWC §10644(a)(2), this plan utilizes the standardized forms, tables, and displays developed by DWR for the reporting of water use and supply information required by the UWMP Act. This plan also includes other tables, figures, and maps, to augment the set developed by DWR.

CHAPTER 2 - PLAN PREPARATION

This chapter discusses the type of UWMP SFWPA is preparing and includes information that will apply throughout the plan. Coordination and outreach during the development of the plan is also discussed.

This chapter includes the following sections:

2.1 BASIS FOR PREPARING A PLAN

CWC *10617 "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems…*

10620(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

10621(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in subdivision (d).

(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.

SFWPA qualifies as an Urban Water Supplier based on the California Water Code definition of providing water to more than 3,000 customers and because it supplies over 3,000 acre-feet of water annually. The Agency has been completing updated Urban Water Management Plans every five years, in years ending in zero or five, since 1990. This 2015 Urban Water Management Plan (UWMP) is being completed in 2018 as required by California Water Code (CWC) 10621(d).

In this plan revision, SFWPA has reviewed and confirmed the calculations establishing its base gallons per capita per day (GPCD) that forms the baseline for the statutory 20 percent water use reduction. The Agency has made significant reductions in its water use in the last few years through pipeline replacement, leak detection and repair, efficiency improvements in treated water production, customer leak notification, and public response to the statewide drought. It will be important for SFWPA and its customers to remain diligent in their efforts to continue to use water wisely.

This plan document includes SFWPA's current supply calculations, what impacts a customer can expect during drought periods, and the impacts to water supply into the future.

SFWPA sent notification to the City of Oroville and the County of Butte, more than 60 days prior to the UWMP public hearing and advising them that the Plan was being reviewed and changes were being considered. The agency received no comments regarding the planning effort from local agencies or the public.

2.1.1 PUBLIC WATER SYSTEMS

CWC *10644 (a)(2) The plan, or amendments to the plan, submitted to the department … shall include any standardized forms, tables, or displays specified by the department.*

10608.52 (a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24… The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

California Health and Safety Code 116275

(h) "Public Water System" means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

Standardized tables provided by the department have been incorporated in this report and bear the numbering scheme created by DWR. For example Table 2-1 below is the first table in UWMP Chapter 2.

Public Water System information for SFWPA is summarized in Table 2-1, below.

2.1.2 Agencies Serving Multiple Service Areas/Public Water Systems

SFWPA serves one service area. This UWMP represents the water use and planning information for the SFWPA service area only.

Table 2-1 Retail Only: Public Water Systems (MG)

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
410006	SFWPA Miners Ranch	6,696	1,307
410012	SFWPA Bangor	23	4
	TOTAL	6,719	1,311

2.2 Regional Planning

SFWPA continues to promote cooperation and sharing of planning information with the Butte County Department of Water and Resource Conservation, and California Water Service Company, Oroville District and surrounding land owners, to facilitate the implementation of solutions to regional water supply reliability problems. SFWPA participated in the development of the Northern Sacramento Integrated Regional Water Management Plan, which covers Butte County, and portions of others in the Sacramento Valley area.

2.3 Individual or Regional Planning and Compliance

Urban water suppliers may elect to prepare individual or regional UWMPs (CWC §10620(d)(1)). SFWPA is preparing an individual UWMP.

Table 2-2: Plan Identification		
Select Only One	Type of Plan	
☑	**Individual UWMP**	
	☐	Water Supplier is also a member of a RUWMP
	☐	Water Supplier is also a member of a Regional Alliance
☐	**Regional Urban Water Management Plan (RUWMP)**	

2.3.1 REGIONAL UWMP

CWC *10620(d)(1) An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.*

This UWMP reports solely on the SFWPA service area. It has not been prepared to report on a combined regional service area. The SFWPA is not a member of a Regional UWMP.

2.3.2 Regional Alliance

CWC *10608.20(a)(1) …Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis as provided in subdivision (a) of Section 10608.28…*

10608.28(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537. (4) By an integrated regional water management funding area.
(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

South Feather Water and Power Agency is not a member of a regional alliance for the purpose of addressing the requirements of the Water Conservation Act of 2009 (SB X7-7).

2.4 Fiscal or Calendar Year and Units of Measure

CWC *1608.20(a)(1) Urban retail water suppliers…may determine the targets on a fiscal year or calendar year basis.*

Annual volumes of water reported in this UWMP are reported on a calendar year basis. Water use and planning data reported in this UWMP for the calendar year 2015 cover the full twelve months of the year, as required by the UWMP Guidelines. Volumes of water reported in this UWMP are in units of million gallons and converted to acre-feet as applicable. For clarification purposes, Agency raw water numbers are listed by volume in acre-feet and treated water is listed by volume in million gallons.

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
Units of Measure Used in UWMP (select from Drop down)	
Unit	MG
NOTES: Volumes of water reported in this UWMP are in units of million gallons and converted to acre-feet as applicable. Agency raw water numbers are listed by volume in acre-feet and treated water is listed by volume in million gallons .	

2.5 Coordination and Outreach

CWC *10631(j) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

2.5.1 Wholesale and Retail Coordination

There is no source of wholesale water supply available to SFWPA. Table 2-4 is not included here because it is not applicable.

2.5.2 COORDINATION WITH OTHER AGENCIES AND THE COMMUNITY

CWC *10620(d)(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

CWC *10642 Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan...*

On March 29, 2018 the Agency notified Butte County Water and Resource Conservation as well as City of Oroville Administration, that it was updating its UWMP.

SFWPA has actively encouraged community participation in its urban water management planning efforts since the first plan was developed in 1990. Public meetings were held for the 1990, 1995, 2000, 2005 and 2010 plans. The UWMP was discussed at public Board meetings prior to and during the preparation of the UWMP. The Agency actively encourages community participation from the public including the diverse social, cultural, and economic elements of the population.

2.5.3 NOTICE TO CITIES AND COUNTIES

CWC *10621 (b)Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

On March 29, 2018 SFWPA notified, by letter, the City of Oroville and the Butte County Department of Water and Resource Conservation that the Agency was updating its UWMP. These notifications are reported in Table 10-1 (see Chapter 10, below).

CHAPTER 3 - SYSTEM DESCRIPTION

This chapter provides a description of SFWPA's water system and the service area, including climate, population, and demographics, to help in understanding various elements of water supply and demand.

This chapter includes the following sections:

3.1 Service Area General Description
3.2 Service Area Map(s)
3.3 Service Area Climate
3.4 Service Area Population and Demographics

CWC *10631. (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

3.1 GENERAL DESCRIPTION

The Agency service area is located 70 miles north of Sacramento on the east side of California's Sacramento Valley in the Sierra foothills of southeast Butte County. The Upper Feather River Watershed includes the South Fork Feather River, which is the source of the Agency's water and lies mostly within the Plumas National Forest from its headwaters downstream to Lake Oroville. The 31,000-acre service area includes an elevation range from a low point of approximately 200 feet above sea level at the western boundary, to a high point of approximately 1,200 feet above sea level at the northeasterly boundary. There are a series of reservoirs owned and operated by SFWPA; Little Grass Valley, Sly Creek, Lost Creek, Ponderosa and Miners Ranch which have a combined storage of 164,577 acre-feet.

SFWPA provides treated water to approximately 2,000 residences in the northeast quadrant of the city. The Oroville Area Land Use Plan of the Butte County General Plan designates much of the service area of SFWPA as Agricultural-Residential. The purpose of the Agricultural-Residential designation is to provide areas for agricultural uses and single-family dwellings at rural densities. SFWPA's service area is wholly within Butte County's First Supervisorial Agency. In addition to the County of Butte, other public agencies with territory within SFWPA's boundaries are:

City of Oroville;
Oroville Union High School Agency;
Oroville City Elementary School Agency;
Palermo Elementary School Agency;
Bangor Elementary School Agency;
Oroville Mosquito Abatement Agency;
Butte County Mosquito and Vector Control Agency;
Lake Oroville Area Public Utility Agency; and,
Feather River Recreation and Park Agency.

Agency History

South Feather Water and Power Agency – originally named Oroville-Wyandotte Irrigation District (OWID) – has roots extending back to the California gold rush. The ditch system utilized by the Agency today to distribute its irrigation water is a modification and expansion of the ditch network constructed by early miners who diverted water from tributaries of the Feather River to their mining claims.

In 1852, a small ditch company was organized to construct a ditch from the South Fork of the Feather River to the mining sites at Forbestown, Wyandotte, Honcut, Ophir, and Bangor. The Palermo Ditch, completed in 1856 by the Feather River and Ophir Water Company, was a major impetus to the growth of gold mining within the area occupied by the present City of Oroville where rich gold deposits were discovered in 1849.

OWID was organized on November 17, 1919, and included 16,800 acres of land. The Agency was formed by assuming the old water rights from the South Feather Land and Water Company and the Palermo Land and Water Company. In July 1944, OWID initiated plans to sell water for domestic use, and between 1944 and 1967, approximately 80 miles of coal-tar lined and tar paper wrapped steel pipe was installed.

The residential growth rate within the Agency was greatly accelerated by the housing demands associated with the construction of the Oroville Dam in the early 1960's. The irrigation system in the northern part of the Agency was slowly abandoned as the domestic pipeline system was expanded to meet the growing residential demand. By 1962, OWID served approximately 4,800 acres of agricultural land, with 8,000 AF of irrigation water delivered by the Agency. In addition to irrigation service, the Agency furnished water to approximately 2,500 residences.

As a result of the concern for an adequate water supply and for a revenue source to fund the Agency's expanding infrastructure, the Agency's Board of Directors proposed the construction of the South Feather Power Project (originally named South Fork Project). The South Feather Power Project, covering 82 square miles in three counties, consisted of eight dams, 9 tunnels, 21 miles of canals and conduits, three hydroelectric power plants and 21 miles of road. The project was completed in 1963 at a cost of $62 million, and was financed through the sale of revenue bonds secured by the projected revenues from power generation. Those bonds were defeased in 2009.

In 1975, Congress passed the Clean Water Act that enacted sweeping changes in domestic drinking water standards. No longer would unfiltered surface water be acceptable for drinking water. Faced with a building moratorium, OWID voters passed a revenue bond in 1978 that allowed for the construction of Miners Ranch Treatment Plant.

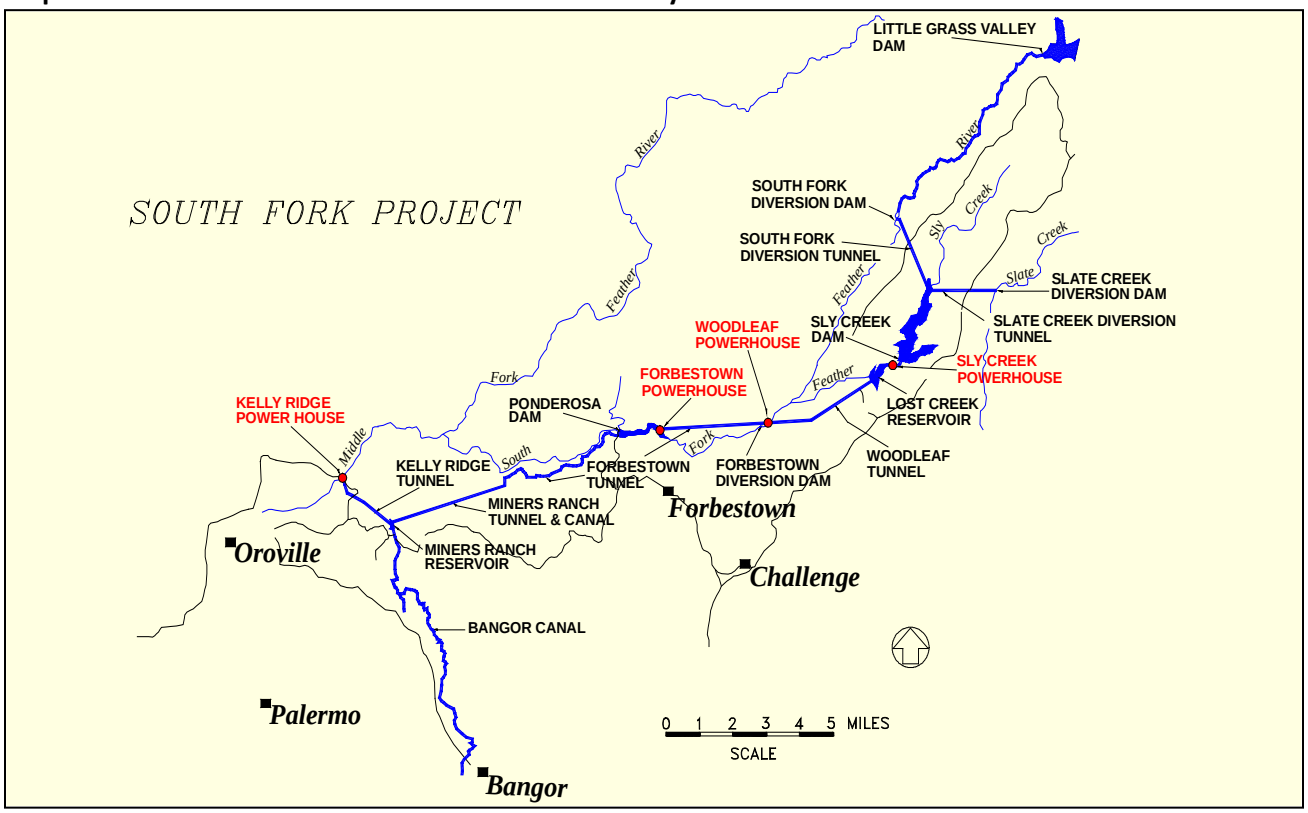
Today, SFWPA has grown to provide water to approximately 6,696 households, maintains a service area of over 31,000 acres supplied by 141 miles of pipeline, and delivers irrigation water seasonally to over 500 customers by way of 110 miles of primarily open earthen canals.

SFWPA's domestic-water facilities are comprised of two treatment plants that use a combination of filtration and chlorination to remove/mitigate contaminants. Following the treatment process, water is distributed through SFWPA's pipelines to one of its four storage facilities, and from there to consumption by SFWPA's customers.

The Agency operates a hydropower project (South Feather Power Project, FERC License No. 2088) located in Butte, Plumas and Yuba counties on the South Fork of the Feather River and Slate Creek, a tributary to the North Fork Yuba River, and mostly within the Plumas National Forest. The Project includes Little Grass Valley Reservoir, Sly Creek Reservoir, Lost Creek Reservoir, Ponderosa Reservoir, and Miners Ranch Reservoir, with a combined storage of 164,577 acre-feet (af).

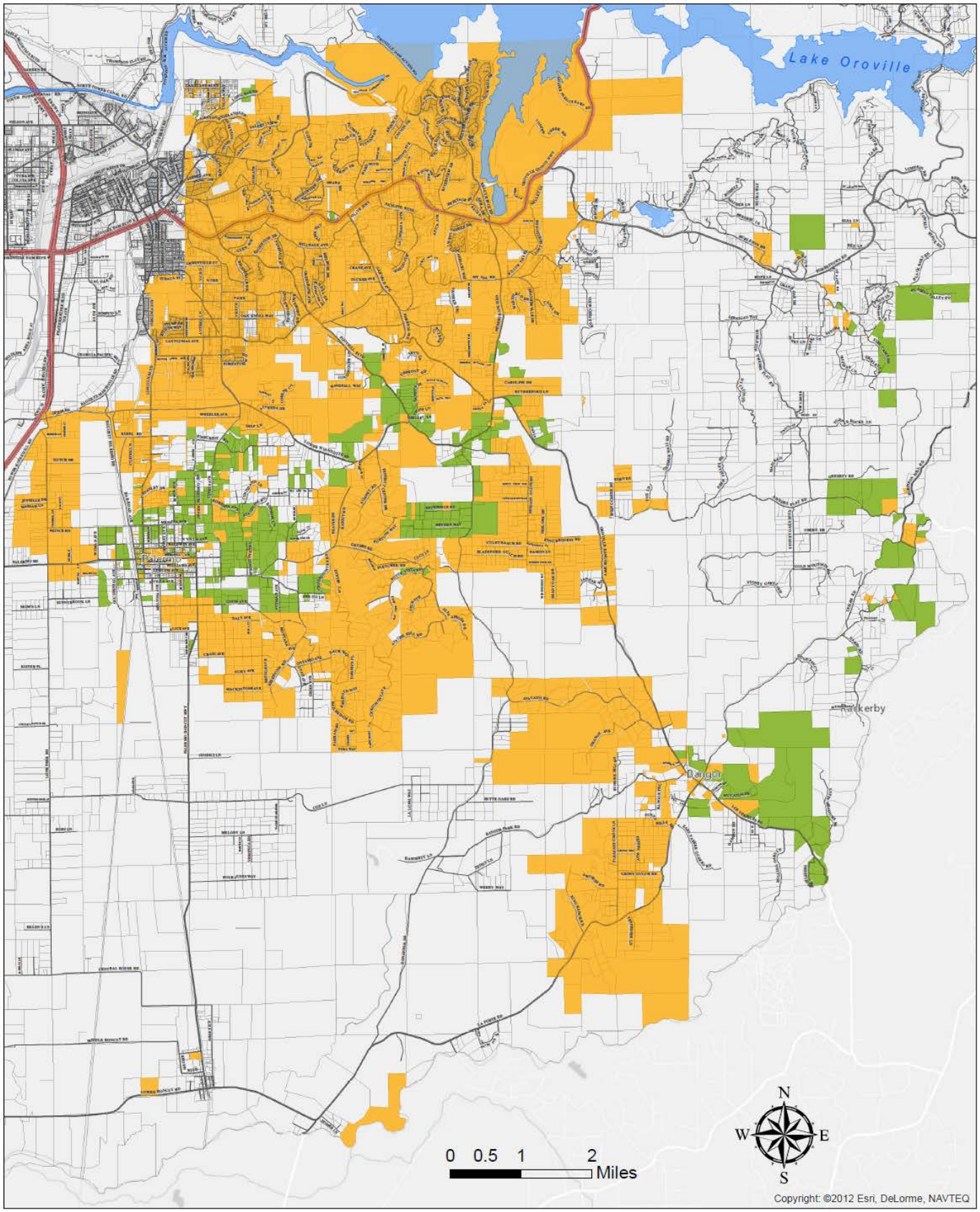
3.2 Service Area Maps

Map 1 – Raw Water Sources and Water Transmission System



NOTE: Miner's Ranch Reservoir is the point of treatment and distribution.

Map 2 - Distribution System Boundary



3.3 Service Area Climate

The Agency's service area has a Mediterranean-type climate with four distinct seasons. Winter months are cool to cold with temperatures from the mid 30s to low 60s. Summers are warm to hot with temperatures ranging from the upper 60s to low 110s, and an annual average temperature of 67ºF.

SFWPA's service area ranges in elevation from 200 feet above sea level to 1,200 feet. Winter monthly precipitation totals in the Agency's service area have varied over time from 0.06 inches in January 2007 to 18.7 inches in January 1995. The average annual precipitation is 32.7 inches with 78.9% occurring in November through March. Table 3-A, below, presents the annual precipitation totals measured at Lake Oroville (elevation 900 feet).

Table 3A Climate

	Average ETo*	Average Rainfall	Average Temperature
January	1.24	5.70	55
February	1.96	4.70	61
March	3.41	4.20	66
April	5.10	2.10	72
May	6.82	1.00	81
June	7.80	0.35	90
July	8.06	0.04	96
August	7.13	0.16	95
September	5.40	0.39	89
October	3.72	1.60	79
November	1.80	3.60	65
December	0.93	4.90	55
Annual	53	29	75

* Eto - Reference Evapotranspiration

References:

Western Regional Climate Center OROVILLE, CALIFORNIA (046521),

NOAA Cooperative Station Period of Record Monthly Climate Summary 4/22/1953 to 12/31/2005

https://cimis.water.ca.gov/Content/PDF/CimisRefEvapZones.pdf

3.3.1 CLIMATE CHANGE

For the purposes of considering how climate change in Northern California may impact water resource providers, it is noted that many climatologists agree on the following:

1. Northern California will experience an increase in individual storm intensity.[1]
2. Mountain areas will likely see an increase in precipitation, though the snow/rain mix is likely to change toward more rain and less snow.[2]
3. California as a whole will experience hotter summers and possibly wetter winters.[3]
4. The potential for wildfires will increase. [4]

Although there are other impacts that will likely occur as a result of climate change (e.g., rising sea levels), the above issues, which are expanded upon below, represent the most immediate and direct impacts to the Agency.

More Rain and Less Snow

While individual storm events may be more severe, resulting in more snow and rain within an individual storm, the increase in temperature is expected to result in less snow overall and more rain in the foothills of California. Less snow pack will result in less "natural" storage and gradual runoff as the snow melts. Instead, runoff from rain would be more immediate and less sustained into spring. The California Department of Water Resources has projected that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by the year 2050.

Hotter Summers

As summers become hotter for longer periods of time, there will be proportionally greater demand for water use; for example, for landscape irrigation. Energy use patterns and costs are also expected to be effected as temperatures during the summer increase between 5 and 10 degrees, causing greater use of air conditioning. Warmer temperatures and extended dry periods will likely increase evapotranspiration rates and extend growing seasons, thereby increasing the amount of water that will be needed for the irrigation of crops, urban landscaping and environmental water needs. Reduced soil moisture and surface flows will disproportionately affect the environment and other water users that rely on annual rainfall such as non-irrigated agriculture and livestock grazing on non-irrigated rangeland.

Increased Wildfire Danger

As summers become hotter and drier, the already pervasive risk of wildfire will increase even more. It is expected that, because of prolonged dry periods, forests and foothill grass and chaparral lands will experience more frequent and intense fires, resulting in changes in vegetation cover and, eventually, a reduction in the water supply and storage capacity benefits of a healthy watershed.

3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

SFWPA provided domestic water service to 6,696 customer accounts in 2015 (average). Given the predominantly residential makeup of the Agency's service area, almost all of its customer accounts represent a household. According to California Department of Finance (DOF) data, the population of Butte County, including the incorporated municipalities, was approximately 224,285 people January 1, 2015. The 2015 population reflects a 9.9 percent increase over State population estimates in 2000. The majority of these residents, approximately 140,417 people, live in the incorporated municipalities. The balance of these residents, approximately 83,868,

[1] California Climate Change Center. *Our Changing Climate: Assessing Risks to California*. July 2006.

[2] California Climate Change Center. *Scenarios of Climate Change in California.* February 2006.

[3] Union of Concerned Scientists, *Confronting Climate Change in California*, October 2006.

[4] California Climate Change Center. *Scenarios of Climate Change in California.* February 2006.

live in the County's unincorporated areas.

Not all households within the Agency's domestic water distribution system sphere of influence are connected to the system. Many get their potable water from individual on-site wells. Based on 2010 census data, it is estimated that an approximate population of 21,400 reside within the Agency's sphere of influence. New connections to the Agency's potable-water distribution system have increased by 0.7% annually between 2000 and 2010. The Butte County Association of Governments forecasts 2010-2035 annual population growth for the unincorporated areas within Butte County at 1.13% ("low scenario"). This is the rate used in Table 3B to project the population within the Agency's service area through 2035.

Population projections for the Agency were based on review of the data used in previous Agency plans, the City of Oroville General Plan, Butte County General Plan, Butte County Association of Governments (BCAG), and Local Agency Formation Commission (LAFCo). Table 3-1 below shows the estimated future population total for the Agency through 2040. The High Scenario of population estimates were used from the Butte County Association of Government data. Based upon their information it is assumed a 0.8% annual growth rate will be experienced from 2015 -2040. The 2010 Census reported the average household size in Oroville as 2.6 persons per household vs. the County average which is 2.45 persons per household. The Census defines a "household" as all persons occupying a housing unit, which may include single persons living alone, families related through marriage or blood, or unrelated persons sharing a single unit. Persons in group quarters such as dormitories, retirement or convalescent homes, or other group living situations are included in population totals but are not considered households.

Table 3-1 Retail: Population - Current and Projected

Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	16,405	17,333	18,313	19,348	20,442	21,598

NOTES: Department of Finance 2.45 per household
Butte County Growth = 1.13%

The following table shows the population data provided by the California Department of Finance, Demographic Research Unit. The future population projections are from data provided by the Butte County Association of governments.

Table 3B Population Data for Base Daily Per Capita Water Use				
Year	Population	Adjustment	Adjusted Population	Annual Percentage Change
1999	14,823	0	14,823	0
2000	14,928	0	14,928	0.71
2001	15,041	0	15,041	0.75
2002	15,217	0	15,217	1.17
2003	15,609	0	15,609	2.58
2004	15,785	0	15,785	1.13
2005	15,974	0	15,974	1.20
2006	16,234	0	16,234	1.63
2007	16,425	0	16,425	1.18
2008	16,518	0	16,518	0.57
2009	16,273	0	16,273	-1.48
2010	16,293	0	16,293	0.12
2011	16,199	0	16,199	-0.57
2012	16,231	0	16,231	0.20
2013	16,293	0	16,293	0.38
2014	16,346	0	16,346	0.33
2015	16,405	0	16,405	0.36
2020	17,333	0	17,333	1.13
2025	18,313	0	18,313	1.13
2030	19,348	0	19,348	1.13
2035	20,442	0	20,442	1.13

Source: California Department of Finance, Demographic Research Unit

CHAPTER 4 - SYSTEM WATER USE

This chapter provides descriptions and quantifications of SFWPA's current water use and the projected uses through the year 2040. For purposes of the UWMP, the terms "water use" and "water demand" are used interchangeably.

This chapter is divided into the following subsections:

4.1 Recycled vs Potable and Raw Water Demand
4.2 Water Uses by Sector
4.3 Distribution System Water Losses
4.4 Estimating Future Water Savings
4.5 Water Use for Lower Income Households
4.6 Climate Change

4.1 Recycled versus Potable and Raw Water Demand

Recycled water is addressed comprehensively in Chapter 6. SFWPA does not currently make use of recycled water, however the Agency is pursuing the use of recycled water at the Miners Ranch Treatment Plant. The Agency is projecting to incorporate recycled plant process water (approximately 5% of raw water demand) for customer demands in 2018.

4.2 Water Uses by Sector

CWC *10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:*

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural....

(2) The water use projections shall be in the same 5-year increments described in subdivision (a).

Since 1983, all of the Agency's domestic water service deliveries have been metered. Past water uses reported here have all been metered. Population estimates that drive the projections of water use were derived from the California Department of Finance. The Butte County Association of Governments used their data to provide projections for growth into the future. These population estimates together with the water use targets provide the basis for projected water use. Refer to the section on population for additional information.

Table 4-1, below, lists actual 2015 water demands. Water use is shown broken out by demand sector to the extent possible using available records.

Table 4-2 lists projected future water demands. Future demands (year 2020 and following) were projected as the product of the estimated population for the target year and the 2020 GPCD target from SB X7-7. Future sector demands were projected proportionally to actual sector demands experienced during 2015. Although 2015 demands were down dramatically due to the statewide conservation mandate, sector demands were reasonably proportional to those from the years preceding mandatory water use reductions. Since the imposition of mandatory conservation did not appear to skew the use of water by sector, the 2015 distribution of water use by sector was used to project future sector water use.

For both past and projected water use the Unbilled/Unmetered water use sector has been estimated to be 1.25 percent of total water supplied. This is the method recommended in the directions for the AWWA Water Audit, and it was included here to keep lost water calculations consistent in the various reports.

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type	2015 Actual (MG)		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	1,050
Multi-Family		Drinking Water	83
Commercial	Combined	Drinking Water	172
Industrial	Combined	Drinking Water	na
Institutional/Governmental			na
Landscape			na
Agricultural irrigation			na
Losses			152
		TOTAL	1,457

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description	Projected Water Use (MG)				
		2020	2025	2030	2035	2040-opt
Single Family		1,050	1,080	1,095	1,110	1,125
Multi-Family		83	85	86	87	88
Commercial	commercial and Industrial	172	177	180	182	185
	TOTAL	1,305	1,342	1,361	1,379	1,398

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water (MG) *From Tables 4-1 and 4-2*	1,305	1,305	1,342	1,361	1,379	1,398
Recycled Water Demand* *From Table 6-4*	0	0	0	0	0	0
TOTAL WATER DEMAND	1,305	1,305	1,342	1,361	1,379	1,398
**Recycled water demand fields will be blank until Table 6-4 is complete.*						

4.3 Distribution System Water Losses

CWC *10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:...*

(J) Distribution system water loss

(3)(A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

For the 2015 UWMP, urban retail water suppliers are required to quantify distribution system water losses for the most recent 12-month period available. Table 4-4 below reports the distribution system losses for calendar year 2015, calculated using the American Water Works Association Water Audit methodology. Complete results of the 2015 AWWA Water Audit are included in Appendix D.

Table 4-4 Retail: 12 Month Water Loss Audit Reporting

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	152 (MG)

** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*

Actual distribution system losses for prior years are tabulated in Table 4-A, above. Projected distribution system losses are listed in Table 4-2, above.

4.4 Estimating Future Water Savings

CWC *10631(e)(4)(A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.*

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following: (i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

Passive savings (those savings realized from plumbing codes, high efficiency appliances, etc.) were not considered when preparing the projected water uses in Table 4-2, above. The projected growth rate for the community suggests that there will be minimal water savings impact from new or future customers. Active water savings resulting from efficiencies associated with future facility upgrades will be outlined in Chapter 9 of this plan.

4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

CWC *10631.1. (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.*

California Health and Safety Code 50079.5

(a) "Lower income households" means persons and families whose income does not exceed the qualifying limits for lower income families… In the event the federal standards are discontinued, the department shall, by regulation, establish income limits for lower income households for all geographic areas of the state at 80 percent of area median income, adjusted for family size and revised annually.

California Senate Bill No. 1087 (SB 1087), Chapter 727, was passed in 2005 and amended Government Code Section 65589.7 and Water Code Section 10631.1. SB 1087 requires local governments to provide a copy of their adopted housing element to water and sewer providers. In addition, it requires water providers to grant priority for service allocations to proposed developments that include housing units for lower income families and workers. Subsequent revisions to the UWMP Act require water providers to develop water demand projections for lower income single and multi-family households.

4.6 CLIMATE CHANGE

See Section 3.3.1 for a discussion of climate change

CHAPTER 5 - BASELINES AND TARGETS

With the adoption of the Water Conservation Act of 2009, also known as SB X7-7, the state is required to reduce urban water use by 20 percent by the year 2020. Each urban retail water supplier must determine baseline per capita water use during their baseline period and also target water use for the years 2015 and 2020 in order to help the state achieve the 20 percent reduction.

SB X7-7 defines an urban retail water supplier as "a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes." (CWC 10608.12)

In this Chapter, SFWPA demonstrates compliance with its per capita water use target for the year 2015. This will also demonstrate whether or not the Agency is currently on track to achieve its 2020 target. Compliance will be verified by DWR's review of the SB X7-7 Verification Tables submitted with this plan. These tables are included with this plan in Appendix C. SB X7-7 Tables 4-B, 4-C, 4-C.1 through 4-C.4, 4-D, and 7-B through 7-E have been omitted since they are not applicable.

This chapter includes the following sections:

5.1 Wholesale Agencies
5.2 Updating Calculations from 2010 UWMP
5.3 Baseline Periods
5.4 Service Area Population
5.5 Gross Water Use
5.6 Baseline Daily per Capita Water Use
5.7 2015 and 2020 Targets
5.8 2015 Compliance Daily per Capita Water Use
5.9 Regional Alliance

5.1 Guidance For Wholesale Agencies

For purposes of identifying baselines and targets, the following definition applies:

CWC *10608.12 (r) "Urban wholesale water supplier" means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.*

CWC *10608.36 Urban wholesale water suppliers shall include in the urban water management plans… an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.*

This section is not applicable to SFWPA, as the Agency is not a wholesale supplier.

5.2 Updating Calculations From 2010 Plan

CWC *10608.20 (g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).*

Methodologies for Calculating Baseline Daily Per Capita Water Use, DWR 2016.
Methodology 3: Base Daily Per Capita Water Use

Base Daily Per Capita Water Use is defined as average gross water use, expressed in GPCD, for a continuous, multiyear period.

CWC *10608.20 The first base period is a 10-15 year continuous period, and is used to calculate baseline per capita water use.*

CWC *10608.22 The second base period is a continuous five year period, and is used to determine whether the 2020 per capita water use target meets the legislation's minimum requirements.*

2020 Water Use Target and 2015 Interim Use Target, DWR 2016.
Water Use Target Method 1

CWC *10608.20(a)(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.*

CWC *10608.20(f) When calculating per capita values, and urban retail supplier shall determine population using federal, state and local population reports and projections.*

The Agency provided domestic water service to 6,696 customer accounts in 2015 (average). Given the predominantly residential makeup of the Agency's service area, almost all customer accounts represent a household. Per the UWMP Guideline requirements, SFWPA has updated the Agency population estimates to incorporate information from the 2015 Census that was not available at the time the 2010 UWMP was prepared. It has not changed the base period or methodology upon which the District's 2020 urban water use target is based. The updated population estimates are lower than the estimates in the 2010 plan for most years.

The Agency updated the calculations for the 2020 Urban Water Use Target using 2015 census data. Water Use Target Method 1 was used in the calculations for both the 2010 and 2015 UWMPs. The resulting 2020 target is 247 GPCD.

5.3 BASELINE PERIODS

CWC *10608.20 (e) An urban retail water supplier shall include in its urban water management plan due in 2010. . . the baseline daily per capita water use…along with the bases for determining those estimates, including references to supporting data.*

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

10608.12 (b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

Under SB X7-7 urban retail water suppliers must establish two baseline periods for historical water use and population within the Agency's service area. The first of these is either a 10- or 15-year continuous period ending between 2004 and 2010. The second is a 5-year continuous period ending between 2007 and 2010.

SFWPA does not provide recycled water. Therefore, the 10-year baseline period has been applied. For the 10-year baseline period, SFWPA has selected 2008 as the end of the baseline period and 2007 for the 5-year baseline period.

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	1,717	Million Gallons
	2008 total volume of delivered recycled water	-	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range[3]	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	
[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. *[2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*			
[3] The ending year must be between December 31, 2004 and December 31, 2010.			
[4] The ending year must be between December 31, 2007 and December 31, 2010.			

5.4 SERVICE AREA POPULATION

CWC *10608.20 (e) An urban retail water supplier shall include in its urban water management plan due in 2010…the baseline per capita water use, along with the bases for determining those estimates, including references to supporting data.*

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

10644 (a)(2) The plan…shall include any standardized forms, tables or displays specified by the department.

Within SFWPA's service area boundary, the communities of Oroville, Palermo and Bangor are provided quality drinking water for domestic customers, and a dependable supply of water for agricultural users. Service area population was estimated by persons per connection and Department of Finance data. Information on how the population figures were developed is included in Section 3.4 Service Area Population and Demographics, above. Population data, past and projected, is included in Table 3-B, above. Service area population for the baseline periods is summarized in SB X7-7 Table2 and 3.

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☑	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☑	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1999	14,944
Year 2	2000	15,050
Year 3	2001	15,163
Year 4	2002	15,341
Year 5	2003	15,736
Year 6	2004	15,914
Year 7	2005	16,104
Year 8	2006	16,653
Year 9	2007	16,559
Year 10	2008	16,653
5 Year Baseline Population		
Year 1	2003	15,736
Year 2	2004	15,914
Year 3	2005	16,104
Year 4	2006	16,653
Year 5	2007	16,559
2015 Compliance Year Population		
2015		17,322

5.5 Gross Water Use

CWC *10608.12 (g) "Gross Water Use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:*

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier

(2) The net volume of water that the urban retail water supplier places into long term storage

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

California Code of Regulations Title 23 Division 2 Chapter 5.1 Article

Section 596 (a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector.

SFWPA gross water use for the 5 and 10 year baseline periods and for the 2015 compliance year is summarized in SB X7-7 Table 4. Deductions for indirect recycled water and process water do not apply in SFWPA's case.

5.6 Baseline Daily Per Capita Water Use

SFWPA's baseline daily per capita use calculations are summarized in SB X7-7 Table 5. The Agency's Interim Water Use Target for 2015 248.5 GPCD, a value set halfway between the Base Daily Per Capita Water Use and the Urban Water Use Target. The 10 year average baseline is 308 GPCD and the 5-year average baseline is 301 GPCD. 2015 compliance year actual daily per capita use was 234 GPCD.

Baseline Year		Volume Into Distribution System	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1999	1,822	0	0	(0)	1	-	1,821
Year 2	2000	1,800	0	0	(0)	1	-	1,799
Year 3	2001	1,687	0	0	(0)	1	-	1,686
Year 4	2002	1,689	0	0	(0)	1	-	1,688
Year 5	2003	1,769	0	0	(0)	1	-	1,768
Year 6	2004	1,887	0	0	(0)	1	-	1,886
Year 7	2005	1,632	0	0	(0)	1	-	1,631
Year 8	2006	1,781	0	0	(0)	1	-	1,780
Year 9	2007	1,825	0	0	(0)	1	-	1,824
Year 10	2008	1,902	0	0	(0)	1	-	1,901
Year 11	2009	1,708	0	0	(0)	1	-	1,707
Year 12	2010	1,577	0	0	(0)	1	-	1,576
Year 13	2011	1,525	0	0	(0)	1	-	1,524
Year 14	2012	1,713	0	0	(0)	1	-	1,712
Year 15	2013	1,836	0	0	(0)	1	-	1,835
10 - 15 year baseline average gross water use								**1,742**
5 Year Baseline - Gross Water Use								
Year 1	2003	1,769	0	0	(0)	1	-	1,768
Year 2	2004	1,887	0	0	(0)	1	-	1,886
Year 3	2005	1,632	0	0	(0)	1	-	1,631
Year 4	2006	1,781	0	0	(0)	1	-	1,780
Year 5	2007	1,825	0	0	(0)	1	-	1,824
5 year baseline average gross water use								**1,777**
2015 Compliance Year - Gross Water Use								
2015		1,458	0	0	(0)	1	-	**1,457**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

5.6 Baseline Daily Per Capita Water Use

SFWPA's baseline daily per capita use calculations are summarized in SB X7-7 Table 5. The Agency's Interim Water Use Target for 2015 248.5 GPCD, a value set halfway between the Base Daily Per Capita Water Use and the Urban Water Use Target. The 10 year average baseline is 308 GPCD and the 5-year average baseline is 301 GPCD. 2015 compliance year actual daily per capita use was 234 GPCD.

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	14,944	1,821	334
Year 2	2000	15,050	1,799	327
Year 3	2001	15,163	1,686	305
Year 4	2002	15,341	1,688	301
Year 5	2003	15,736	1,768	308
Year 6	2004	15,914	1,886	325
Year 7	2005	16,104	1,631	277
Year 8	2006	16,653	1,780	293
Year 9	2007	16,559	1,824	302
Year 10	2008	16,653	1,901	313
10-15 Year Average Baseline GPCD				**308**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	15,736	1,768	308
Year 2	2004	15,914	1,886	325
Year 3	2005	16,104	1,631	277
Year 4	2006	16,653	1,780	293
Year 5	2007	16,559	1,824	302
5 Year Average Baseline GPCD				**301**
2015 Compliance Year GPCD				
2015		17,322	1,482	**234**

5.7 2015 and 2020 Targets

CWC *10608.20 (e) An urban retail water supplier shall include in its urban water management plan, due in 2010, urban water use target, interim urban water use target,…along with the bases for determining those estimates, including references to supporting data (10608.20(e)).*

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan…

CWC *10608.22 Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.*

Urban retail water suppliers may select from four GPCD target methods (CWC 10608.20).

- Target Method 1: 80% of the water supplier's baseline per capita water use
- Target Method 2: Water use efficiency performance standards for indoor water use and applied landscape volume
- Target Method 3: 95% of target Hydrologic Regional Target
- Target Method 4: Savings by water sector, DWR Method 4

Regardless of target method selected, the final target cannot exceed 95 percent of the 5-year baseline period average GPCD (CWC 10608.22).

SFWPA determined its 2020 Urban Water Use Target by Target Method 1, and has selected the same method of 80% of baseline per capita water use for this plan update. Table 5-1 below summarizes SFWPA's baselines and the 2020 target daily per capita water use as well as the 2015 interim target daily per capita water use.

Table 5-1 Baselines and Targets Summary
Retail Agency or Regional Alliance Only

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*1999*	*2008*	*308*	*278*	*247*
5 Year	*2003*	*2007*	*301*		

*All values are in Gallons per Capita per Day (GPCD)

5.8 Compliance Daily per Capita Water Use (GPCD)

CWC *10608.12 (e) "Compliance daily per-capita water use" means the gross water use during the final year of the reporting period…*

10608.24 (a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

10608.20 (e) An urban retail water supplier shall include in its urban water management plan due in 2010 . . . compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

10608.24 (d)(1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use, Methodology 4
This section discusses adjustments to compliance-year GPCD because of changes in distribution area caused by mergers, annexation, and other scenarios that occur between the baseline and compliance years.

As shown in Table 5-1 above SFWPA's 2015 Interim Target daily per capita water use is 278 gallons per capita per day.

As seen in Table 5-2 below SFWPA's 2015 Compliance Year GPCD was 234 which is well within the 2015 Interim Target value of 278 GPCD. The reduction reflected in the 2015 per capita water use partially reflects statewide mandatory reduction in response to the drought. However, the Agency's GPCD has not exceeded the 2015 Interim Target value in any of the last 5 years.

Table 5-2: 2015 Compliance
Retail Agency or Regional Alliance Only

Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD Enter "0" if no adjustment is made *From Methodology 8*			2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events/Economic Adjustment/Weather Normalization	TOTAL Adjustments*	Adjusted 2015 GPCD*		
234	278	n/a	0	234	243	Yes

**All values are in Gallons per Capita per Day (GPCD)*

5.9 REGIONAL ALLIANCE

Urban retail water suppliers may report on the requirements of SB X7-7 individually or as a member of a "Regional Alliance." This section is not applicable to SFWPA since it is not part of a regional alliance.

CHAPTER 6 - SYSTEM SUPPLIES

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include a description of the agency's existing and future water supply sources for the next 20 years.

This chapter includes the following sections:

6.1 Purchased Water
6.2 Groundwater
6.3 Surface Water
6.4 Stormwater
6.5 Wastewater and Recycled Water
6.6 Desalinated Water Opportunities
6.7 Exchanges or Transfers
6.8 Future Water Projects
6.9 Summary of Existing and Planned Sources of Water
6.10 Climate Change Impacts to Supply

6.1 PURCHASED OR IMPORTED WATER

The Agency does not purchase or receive any water from a wholesale supplier.

6.2 GROUNDWATER

CWC *10631 (b) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

SFWPA does not have the need and does not anticipate a need within the planning horizon of the UWMP to develop groundwater resources. Some private wells within the Agency's sphere of influence are used by property owners for domestic and irrigation purposes.

Ground water in Butte County is governed by the County's Groundwater Management Plan[5]. Portions of the Agency service area are included in Butte County Groundwater Management Plan.

[5] http://www.buttecounty.net/waterresourceconservation/GroundwaterManagementPlan.aspx

6.3 SURFACE WATER

The Agency has an excellent water supply. South Feather Water and Power Agency's primary water supply system is the South Fork Feather River (SFFR) watershed located at the north end of the Sierra Nevada mountain range. The watershed's headwaters originate at an elevation of 7,457 feet, and is bounded by the volcanic Cascade Range to the north, the Great Basin to the east, the Sacramento Valley to the west, and higher portions of the Sierra Nevada to the south. The upper watershed is ruggedly mountainous, bisected by deep canyons in the eastern third of the watershed. The central third of the watershed is a transition zone

The combined South Fork Feather River/Slate Creek watershed is an expansive watershed within the Sierra Nevada Mountain Range, covering approximately 100,814 acres, or 158 square miles. Principal tributaries include Lost Creek, a natural tributary of the South Fork Feather River, and the upper portion of Slate Creek, a tributary of the North Fork Yuba River (which contributes to the South Fork Feather River watershed by way of a tunnel through the Gibsonville Ridge). The area of the Slate Creek sub-watershed is approximately 31,600 acres (49.4 square miles), or 31.4 percent of the total combined South Fork Feather River/Slate Creek watershed area. The area of Lost Creek sub-watershed is approximately 19,200 acres (30.0 square miles), or 19.0 percent of the total South Fork Feather River/Slate Creek watershed area.

This watershed falls within the jurisdictions of four adjacent counties: Plumas County, Butte County, Sierra County, and Yuba County. Approximately 49,580 acres of the watershed (49.2%) is located within the unincorporated boundaries of Plumas County. Approximately 28,440 acres of the watershed (28.2%) is located within the unincorporated boundaries of Butte County. Approximately 19,160 acres of the watershed (19.0 %) is located within the unincorporated boundaries of Sierra County. Approximately 3,560 acres of the watershed (3.5 %) is located within the unincorporated boundaries of Yuba County.

Lands in the region are owned or managed by a variety of governmental and private entities. The single largest land owner within the watershed is the federal government, whose United States Forest Service (USFS) manages the Plumas National Forest. Soper-Wheeler Company, Chy Corporation, and Sillar Brothers are private owners of managed forest lands within this watershed.

SFWPA is permitted to store 172,064 acre-feet of runoff from the watersheds of the South Fork of the Feather River and Slate Creek (a tributary of the North Fork of the Yuba River) in several Agency reservoirs: Little Grass Valley, Sly Creek, Lost Creek, Forbestown, Ponderosa, and Miners Ranch. The water is distributed to the hydroelectric powerhouses, to agricultural consumers, and to the water treatment plants for domestic use. SFWPA's primary water treatment plant is located at the Miners Ranch Reservoir. Completed in 1981, the treatment plant has the capacity to treat 14.5 million gallons per day (MGD).

The total average annual runoff of the SFFR excluding diversions from Slate Creek is 254,347 AF. Figure 1 below represent SFWPA's water sources and raw-water delivery schematic. SFWPA operates its system of reservoirs and hydropower plants and manages the runoff throughout the annual hydrologic cycle to best achieve its purposes and needs including power supply, irrigation and municipal water supply, and recreation. There are nine dams that either divert or store water supply for multipurpose uses. Little Grass Valley and Sly Creek Reservoirs provide 93% of the active storage capacity within the system. Lost Creek and Ponderosa Reservoirs have active storage capacity equal to approximately 6% of active storage. The combined total storage capacity of these eight impoundments is 165,016 AF, or about 65% of the SFFR's average annual runoff.

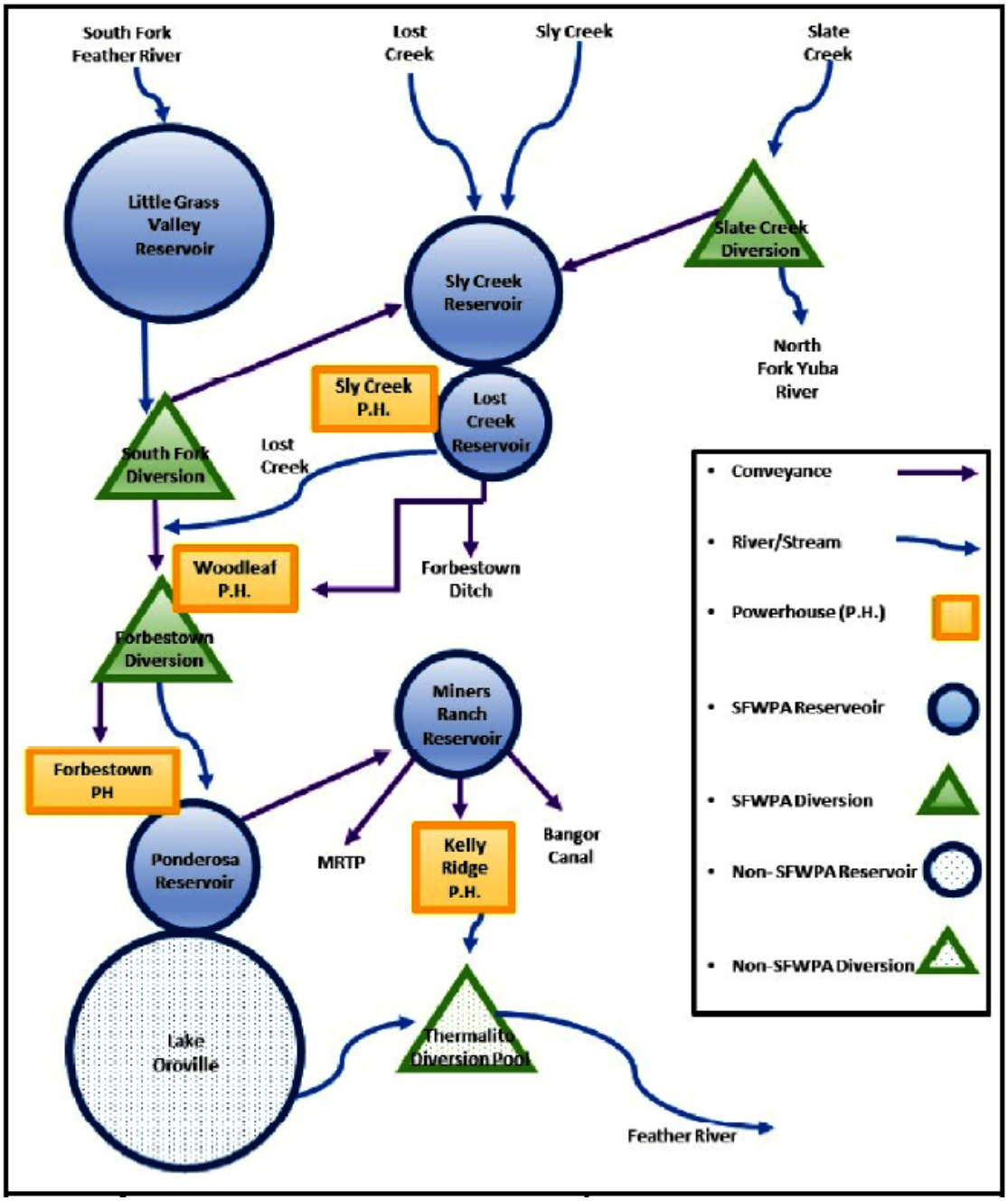


Figure 1 – Raw Water Delivery Schematic

6.4 STORMWATER

Stormwater is not projected for beneficial reuse within the service area of the Agency.

6.5 WASTEWATER AND RECYCLED WATER

The City of Oroville and Lake Oroville Area Public Utility District (LOAPUD) each operate and maintain sewage collection systems in portions of the Agency's service area. However, approximately half of the parcels receiving water service from SFWPA utilize septic systems for sewage disposal.

The sewage collection systems of the City of Oroville and LOAPUD each terminate at Sewage Commission – Oroville Region's (SCOR) treatment facility that is west of and not within the Agency's service area. SCOR's treated effluent is discharged to the Feather River below Lake Oroville. SCOR does not operate a recycled water program. Thus, recycled water is not available to the Agency for use as a water source.

6.5.1 RECYCLED WATER COORDINATION

CWC *10633 The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.*

The wastewater treatment provided in the Agency's service area is done so either by individual onsite septic systems or through the SCOR treatment facility. The collection, treatment and disposal of wastewater is the responsibility of the County of Butte and the City of Oroville respectively.

6.5.2 WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL

CWC *10633(a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*

(b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

The City of Oroville operates and maintains the sewer system consisting of gravity sewers and pumping stations to collect wastewater from residential, commercial, and industrial customers. LOAPUD owns and operates a sanitary sewer collection system serving over 8,000 acres (roughly 4,000 customers) of unincorporated area east and south of the City of Oroville. The collected wastewater is discharged to trunk sewers owned and operated by the Sewerage Commission Oroville Region (SCOR) and conveyed to the SCOR Regional Wastewater Treatment Plant. However, approximately half of the parcels receiving water service from SFWPA utilize septic systems for sewage disposal.

SCOR does not operate a recycled water program, and therefore, recycled water is not available to the Agency for use as a water source. Within SFWPA's distribution system, no water is reused for municipal purposes that has not been treated to Title 22 standards.

A summary of the Wastewater Collection and disposal of the system in the Oroville District is provided in Tables 6-2 and 6-3.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015 (AF)	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
City of Oroville	Estimated	1,129	Sewerage Commission - Oroville Region	SC - OR Regional Wastewater Treatment Plan	Yes	
LOAPUD	Estimated	877	Sewerage Commission - Oroville Region	SC - OR Regional Wastewater Treatment Plan	Yes	
Total Wastewater Collected from Service Area in 2015:		2,006				

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes (AF)			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Add additional rows as needed										
SC - OR Regional Wastewater Treament Plant	Feather River			River or creek outfall	Yes	Secondary, Disinfected - 23	2,795	2,795	0	0
						Total	**2,795**	**2,795**	0	0

6.5.3 Recycled Water System

CWC *10633 (c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*

No recycled water supply is available for the SFWPA service area.

6.5.4 Recycled Water Beneficial Use

CWC *10633(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

The recycling of wastewater offers several potential benefits to groundwater dependent areas of Butte County, however these opportunities do not exist within the SFWPA Service Area. Perhaps the greatest of these benefits is to help maintain a sustainable groundwater supply either through direct recharge, or by reducing potable supply needs by utilizing recycled water for appropriate uses (e.g., landscape, irrigation) now being served by potable water. Currently, no wastewater is recycled for direct reuse from the domestic or industrial wastewater streams in the service area of SFWPA.

Since there is no centralized sewer system for the entirety of the SFWPA service area, there is no real

opportunity for indirect potable reuse.

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

CWC *10633(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water , and the projected results of these actions in terms of acre-feet of recycled water used per year.*

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

No recycled water supply is expected to be available for the SFWPA service area within the next 20 years. This is primarily because potential customers in the City are approximately eight miles from the treatment plant, and the costs of transmission and distribution could not be justified based on anticipated water cost and the cost of effluent disposal. Therefore, the current projected recycled water supply for the City of Oroville portion of the SFWPA service area through the year 2040 is 0 acre-feet per year. The Agency has not implemented any incentive programs to encourage recycled water use because they do not hold ownership of the wastewater system. The implementation of a recycled water program here will need to involve longer-term measures and require regional participation by other agencies.

6.6 Desalinated Water Opportunities

CWC *10631(h) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

There are no opportunities for the development of desalinated water due to the geographic location of the Agency. SFWPA is located in the inland Sacramento Valley, many miles from potential sources of saline water.

6.7 Exchanges or Transfers

CWC *10631(d) Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.*

There are currently no opportunities for exchanges of water on either a short- or long-term basis. The Agency's raw-water storage reservoirs are above Lake Oroville on the South Fork of the Feather River, and there are no water storage or diversion facilities above those owned and operated by the Agency within its watershed. While the Agency can release raw water from its reservoirs into Lake Oroville for distribution via the State Water Project to downstream suppliers, there are no delivery systems by which water can be diverted to the Agency by other suppliers.

6.8 Future Water Projects

CWC *10631 (g) ...The urban water supplier shall include a detailed description of expected future projects and programs... that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

SFWPA has no current plans for new water supply projects for the Agency.

Table 6-7 Retail: Expected Future Water Supply Projects or Programs	
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.

6.9 Summary of Existing and Planned Sources of Water

CWC *10631(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision 10631(a).*

(4) [Provide a] detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Current year water supply values are included in Table 6-8, below. While 2015 was a year with severe statewide drought restrictions, the local water supply situation did not warrant any special mitigations.

Table 6-8 Retail: Water Supplies — Actual (AF)

Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Add additional rows as needed				
Supply from Storage		20,000	Raw Water	
Surface water		120,000	Raw Water	
Total		**140,000**		

Projected water supplies for years 2020 through 2040 are reported in Table 6-9, below. Surface water supply is defined as the total runoff anticipated in a normal water year.

Table 6-9 Retail: Water Supplies — Projected (AF)

Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*									
		2020		2025		2030		2035		2040 *(opt)*	
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Supply from Storage		0		0		0		0		0	
Surface water		254,347		254,347		254,347		254,347		254,347	
Total		254,347		254,347		254,347		254,347		254,347	

6.10 Climate Change Impacts to Supply

See Section 3.3.1 for a discussion of climate change.

CHAPTER 7 - WATER SUPPLY RELIABILITY

This chapter addresses the reliability of the Agency's water supplies. Assessment of water supply reliability is complex and dependent upon a number of factors, such as the number of water sources, regulatory and legal constraints, hydrological and environmental conditions, climate change, and expected growth, among others. Based on available historical information and projections of future water uses, regulatory and legal constraints, and hydrological and environmental conditions, including climate change, SFWPA has made its best determination of the future reliability of the Agency's water supplies.

This chapter includes the following sections:

7.1 Constraints on Water Sources
7.2 Reliability by Type of Year
7.3 Supply and Demand Assessment
7.4 Regional Supply Reliability

7.1 Constraints on Water Sources

CWC *10631(c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Consistency of Supply

The surface water supply available to SFWPA is projected to be capable of serving all demands under all hydrologic conditions. There are no Legal, Environmental, or Water Quality factors that result in inconsistency of supply for SFWPA water in the North Fork Feather River Watershed for the period studied in this plan.

Based on the Agency's annual watershed production of 254,347 acre-feet, its ability to store 165,016 acre-feet, and its associated consumptive water rights, SFWPA believes that its sources of developed water supply will continue to more than adequately meet the current and the foreseeable demand through 2035.

Water Quality Impacts on Reliability

The Agency enjoys a pristine watershed that provides for a high-quality raw water supply. Source water for SFWPA all comes from exceptional quality sources via the South Fork Feather River, Lost Creek (a tributary of the South Fork Feather River), and Slate Creek (a tributary of the Nork Fork Yuba River).

The Agency updated their Watershed Sanitary Survey and Vulnerability Analysis in 2002 and did not find any significant changes in the watershed that would affect water quality. SFWPA is in compliance with all applicable water quality standards.

7.2 Reliability By Type of Year

CWC *10631(c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:*

(A) An average water year. (B) A single dry water year. (C) Multiple dry water years.

Table 7-1, below, shows the water supply reliability calculations for the Agency's surface water sources. These are the supplies currently available for use by SFWPA for the given water year scenario types.

Table 7-1 Retail: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____	
		☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
Average Year	1966	254,347	100%
Single-Dry Year	1977	50,677	20%
Multiple-Dry Years 1st Year	1931	61,048	24%
Multiple-Dry Years 2nd Year	1932	203,667	80%
Multiple-Dry Years 3rd Year	1933	98,923	39%
Multiple-Dry Years 4th Year *Optional*	1934	111,696	44%
NOTES: ****** ACRE FEET			

7.3 Supply and Demand Assessment

CWC *10635 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from the state, regional or local agency population projections within the service area of the urban water supplier.*

Projected NORMAL Year Supply and Demand

Table 7-2 below provides for the assessment of the reliability for customers in normal water years. Storage levels and runoff that provides for the supply totals were calculated utilizing in house hydrography data.

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill from Table 6-9)*	254,347	254,347	254,347	254,347	254,347
Demand totals *(autofill from Table 4-3)*	4,005	4,118	4,177	4,232	4,290
Difference	250,342	250,229	250,170	250,115	250,057
NOTES: Demand totals in Million Gallons: 1305, 1342, 1361, 1379, 1398 Shown in table as AF for consistency with other numbers.					

Projected SINGLE DRY Year Supply and Demand

Table 7-3 below contains an estimate of single dry year impact on supply and demand. The demands were not reduced because supply indicates a surplus even during an estimated dry year.

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison (AF)					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	50,677	50,677	50,677	50,677	50,677
Demand totals	4,005	4118	4,177	4,232	4,290
Difference	46,672	46,559	46,500	46,445	46,387

Projected MULTIPLE DRY Years Supply and Demand

Table 7-4 below contains supply and demand estimates for a multiple dry year scenario. The first year of the three dry year period is identified by the date at the top of the column.

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	61,048	61,048	61,048	61,048	61,048
	Demand totals	4,005	4118	4,177	4,232	4,290
	Difference	57,043	56,930	56,871	56,816	56,758
Second year	Supply totals	203,667	203,667	203,667	203,667	203,667
	Demand totals	4,005	4118	4,177	4,232	4,290
	Difference	199,662	199,549	199,490	199,435	199,377
Third year	Supply totals	98,923	98,923	98,923	98,923	98,923
	Demand totals	4,005	4118	4,177	4,232	4,290
	Difference	94,918	94,805	94,746	94,691	94,633

7.4 Regional Supply Reliability

CWC *10620 (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

South Feather Water and Power Agency's source of water is surface runoff from the South Fork Feather River (SFFR) above Lake Oroville, including diversions from Slate Creek, a tributary of the North Fork Yuba River. This supply is diverted from its natural watercourse at Ponderosa Reservoir and is transported via the Agency's Miners Ranch Canal to Miners Ranch Reservoir for treatment and delivery to customers

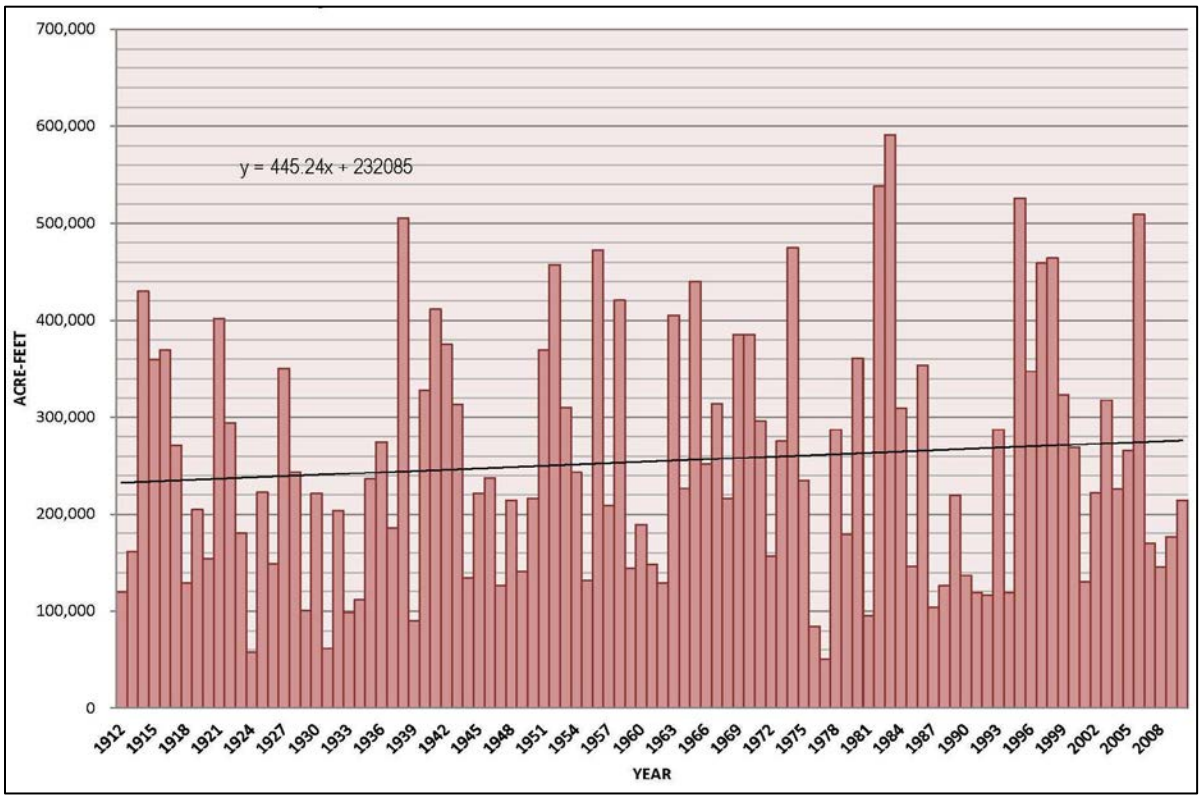


Figure 2 - Annual SFFR watershed amounts from 1912 through 2010

The data shown above in Figure 1 for ***1912 through 1918*** is USGS annual mean daily flows at Enterprise plus estimated diversions (average of measured diversions, 1928-1941) into the Forbestown Ditch for irrigation purposes by the South Feather Land and Water Company (predecessor to Oroville-Wyandotte Irrigation Agency, which was named South Feather Water and Power Agency in 2003).

Values in Figure 1 for ***1919 through 1927*** are USGS annual mean daily flows at Enterprise plus estimated diversions (average of measured diversions, 1928-1941) into the Forbestown Ditch for irrigation purposes by Oroville-Wyandotte Irrigation Agency ("OWID", which was formed in 1919 and assumed responsibility for the Forbestown Ditch and the irrigators to whom it supplied water).

Values in Figure 1 for ***1928 through 1941*** are USGS annual mean daily flows at Enterprise plus diversions into the Forbestown Ditch for irrigation purposes recorded by OWID.

Values in Figure 1 for ***1942 through 1962*** are USGS annual mean daily flows at Enterprise plus estimated diversions (average of measured diversions, 1928-1941) into the Forbestown Ditch for irrigation purposes by OWID.

Values in Figure 1 for ***1963 through 1972*** are USGS annual mean daily flows at Enterprise plus diversions into the Forbestown Ditch for irrigation purposes recorded by OWID.

The data shown in Figure 1 for ***1973 through 2010*** are actual SFWPA measurements (Kelly Ridge Powerhouse + Ponderosa Reservoir spills + consumptive use).

The median annual watershed runoff ("Average Year") is 254,347 acre-feet. The single-dry year was in 1977, with a total runoff of 50,677 acre-feet. The lowest average runoff for a consecutive multiple-year period ("multiple-dry year period") was 118,834 acre-feet for the four-year period, 1931-1934

CHAPTER 8 – WATER SHORTAGE CONTINGENCY PLANNING

This chapter describes the water shortage contingency plan for SFWPA. The water shortage contingency plan includes the stages of response to a water shortage, such as a drought, that occur over a period of time, as well as catastrophic supply interruptions which occur suddenly. The primary objective of the water shortage contingency plan is to ensure that the Agency has in place the necessary resources and management responses needed to protect health and human safety, minimize economic disruption, and preserve environmental and community assets during water supply shortages and interruptions.

This chapter includes the following sections:

8.1 STAGES OF ACTION

CWC *10632(a)(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*

Table 8-1 defines the two stages of action in SFPWA Water Supply Reliability and Shortage Contingency Plan.

Table 8-1 Retail
Stages of Water Shortage Contingency Plan

Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description*)
Add additional rows as needed		
1	Up to 25%	Moderate Shortage
2	Greater than 50%	Critical Shortage

[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*

8.2 Prohibitions on End Uses

Restrictions of water use by State of the Water Shortage Contingency Program are included in Table 8-2.

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
Add additional rows as needed			
1	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
1	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	May use hose that is fitted with a shut-off nozzle.	Yes
1	Other - Prohibit use of potable water for washing hard surfaces		Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	Exceptions made when the water is recirculated.	Yes
1	CII - Restaurants may only serve water upon request		Yes
1	CII - Lodging establishment must offer opt out of linen service		Yes
2	Other	Voluntary 25% reduction in water use by all customers.	Yes
2	Landscape - Limit landscape irrigation to specific days	Limited to every other day.	Yes
2	Landscape - Limit landscape irrigation to specific times	Limited to the hours between 6:00 pm and 10:00 am.	Yes
2	Landscape - Other landscape restriction or prohibition	Prohibits irrigation of ornamental landscapes on public street medians.	Yes
2	Landscape - Other landscape restriction or prohibition	Prohibits irrigation of outdoor landscape with potable water within 48 hours after measurable rainfall.	Yes

NOTES:
Stage 1: Board of Directors enacted conservation efforts
Stage 2: State of Emergency Drought Declaration

8.3 Penalties, Charges, Other Enforcement of Prohibitions

CWC *10632 (a)(6) Penalties or charges for excessive use, where applicable.*

CWC section 377 establishes that, from the publication of an ordinance or resolution pursuant to section 376 until the repeal of the resolution or end of the emergency, it is a misdemeanor punishable by up to 30 days in county jail and/or a fine of up to $1,000 for any person to violate a requirement of the water conservation program.

8.4 Consumption Reduction Methods

CWC *10632 (a)(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.*

Table 8-3 lists the Consumption Reduction Methods at various stages.

Table 8-3 Retail Only:
Stages of Water Shortage Contingency Plan - Consumption Reduction Methods

Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference *(optional)*
Add additional rows as needed		
1	Expand Public Information Campaign	
2	Decrease Line Flushing	

8.5 Determining Water Shortage Reductions

CWC *10632(a)(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis*

All SFWPA customers are metered. The metered demands will be used to monitor reductions that result from actions taken by the Agency when implementing the Water Supply Reliability and Shortage Contingency Plan.

8.6 Revenue and Expenditure Impacts

CWC *10632 (a)(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.*

Although it has no water supply projects or programs planned, the Agency does have plans to increase the capacity of its water treatment plant. In 2009 SFWPA hired an outside firm to prepare a pre-engineering study for expansion of Miners Ranch Treatment Plant. That study, approved by the Agency's Board of Directors, recommended improvements and expansion staged into two phases:

- **Phase 1** addresses projected system demand for a 30-year planning window and includes enhanced mixing, clarification, filtration, disinfection and residuals handling facilities and practices. The plant expansion will increase treatment (design) capacity from 14.5 to 21 million gallons per day (mgd), which corresponds to 18 mgd firm capacity with one filter out of service.
- **Phase 2** includes ultimate build-out of the plant to 29 mdg design capacity (25.4 mgd firm capacity with one filter out of service) should water demands in the system approach the plant's design capacity of 21 mgd.

8.7 RESOLUTION OR ORDINANCE

The following is a Draft Water Shortage Contingency Resolution:

DRAFT RESOLUTION OF THE BOARD OF DIRECTORS
Resolution XX-XX-XX
WATER SHORTAGE CONTINGENCY PROGRAM

WHEREAS, Article X, Section 2 of the California Constitution declares that waters of the State are to be put to beneficial use, that waste, unreasonable use, or unreasonable method of use of water be prevented, and that water be conserved for the public welfare; and,

WHEREAS, conservation of current water supplies and minimization of the effects of water supply shortages that are the result of drought are essential to the public health, safety and welfare; and,

WHEREAS, regulation of the time of certain water use, manner of certain water use, method of application of water for certain uses, installation and use of water-saving devices, provide an effective and immediately available means of conserving water; and,

WHEREAS, California Water Code sections 375, et seq., empower any public entity which supplies water at retail or wholesale to adopt and enforce a water conservation program to reduce the quantity of water used by those within its service area after holding a public hearing and making appropriate findings of necessity for the adoption of a water conservation program; and,

WHEREAS, Water Code section 375, subdivision (c) defines "public entity" to include a city, county, special district (including irrigation districts), water authority, or any other municipal public corporation or district; and,

WHEREAS, pursuant to Water Code section 376 and Government Code 6061, the South Feather Water and Power Agency ("*Agency*") must publish in a newspaper of general circulation any ordinance or resolution adopting a water conservation program within ten days after its adoption; and,

WHEREAS, Water Code section 377 establishes that, from the publication of an ordinance or resolution pursuant to section 376 until the repeal of the resolution or end of the emergency, it is a misdemeanor punishable by up to 30 days in county jail and/or a fine of up to $1,000 for any person to violate a requirement of the water conservation program; and,

WHEREAS, on March 17, 2015, the State Water Resources Control Board adopted Resolution No. 2015-0013 adopting emergency regulations for statewide urban water conservation ("Regulations"); and,

WHEREAS, the Regulations set forth prohibited activities in promotion of water conservation and require certain mandatory actions from urban water suppliers, including the Agency; and,

WHEREAS, the Agency, as mandated by the Regulations, intends to require certain water conservation measures and outdoor potable watering limitations through adoption of this water conservation program; and,

WHEREAS, on April 28, 2015, the Agency held a public hearing and made appropriate findings of necessity for the adoption of a water shortage contingency program; and,

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the South Feather Water and Power Agency as follows:

1. This resolution is effective immediately upon adoption or as otherwise established by State law and will remain in effect for so long as the Regulations are in effect, unless earlier terminated by the Board of Directors of the Agency; and,

2. Pursuant to Water Code section 376 and Government Code section 6061, the Agency shall publish in a newspaper of general circulation this resolution adopting a water conservation program within ten days after its adoption; and,

3. The following mandatory conservation measures are effective immediately and at such other times as determined by the Board of Directors:

   a. **End-User Requirements in Promotion of Water Conservation.** To promote water conservation, consistent with the Regulations, each of the following actions is prohibited:
      i. Applying potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;
      ii. Use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;
      iii. The application of potable water to driveways and sidewalks; and,
      iv. The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
      v. The application of potable water to outdoor landscaped during and within 48 hours after measureable rainfall.
      vi. The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased.
      vii. Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.
   b. **Outdoor Irrigation Restrictions.**
      i. Outdoor irrigation of ornamental landscapes or turf utilizing potable water shall be limited to every other day. This restriction does not apply to the limited use of a hand-held bucket or similar container, or to commercial nurseries and growers utilizing non-potable, raw water.
      ii. Outdoor irrigation of ornamental landscapes or turf utilizing potable water shall only be conducted between the hours of 6:00 p.m. and 10:00 a.m.
      iii. Irrigation with potable water of ornamental landscapes on public street medians is prohibited.

   c. **Voluntary 25% Reduction in Water Use by All Customers.** In addition to implementing the foregoing mandatory conservation measures, Agency customers are asked to implement measures within their households and businesses to reduce per-capita water use by 25%, consistent with Governor Brown's Executive Order B-29-15, issued on April 1, 2015, and the Governor's Proclamation No. 1-17-2014, issued on January 17, 2014, declaring a statewide drought emergency.

4. The Board of Directors of South Feather Water and Power Agency reserves the right to amend, suspend, or reestablish this water shortage contingency program by majority action of the Board at a public meeting convened in accordance with the Brown Act (Government Code §§ 54950 et seq.) and by thereafter publishing any such action on the Agency's website.

Passed and adopted by the Board of Directors of the South Feather Water and Power Agency at the regular meeting of said Board:

8.8 Catastrophic Supply Interruption

CWC *10632 (a)(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.*

The Agency has an Emergency Response Plan (ERP) in place that coordinates the overall company response to a disaster in any portion of its service area. The outlines Action Plans for multiple possible scenarios that could include power or water supply interruption.

The Agency also participated in the development of the Butte County Hazard Mitigation Plan, which includes the following sections that align with elements of the SFWPA ERP:

- Catastrophe and disaster preparedness plan
- Employee/contractor/Agencies on-call list
- Methods to communicate with the public
- Methods to prepare for water quality interruptions

8.9 Minimum Supply Next Three Years

CWC *10632. (a)(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.*

An estimate of minimum water supply for years 2016, 2017 and 2018 is shown in Table 8-4, below. This estimate was formed on the basis of the driest three consecutive years on record. The three driest years on record correspond to the first three years of the multiple dry years estimates shown in the tables at the beginning of the plan (1930 - 1933). The demands were adjusted to estimate the stages of reduction the Agency would implement in response to diminished reservoir storage levels.

Table 8-4 Retail: Minimum Supply Next Three Years (AF)

	2016	2017	2018
Available Water Supply	50,677	50,677	50,677

CHAPTER 9 - DEMAND MANAGEMENT MEASURES

This chapter provides a summary of past, as well as future, planned demand management measure (DMM) implementation within the SFWPA service area, as well as an overview of the expected water savings and projected compliance with the Water Conservation Act of 2009 (SB X7-7).

This chapter contains the following sections:

9.1 Demand Management Measures for Wholesale Agencies
9.2 Demand Management Measures for Retail Agencies
9.3 Implementation over the Past Five Years
9.4 Planned Implementation to Achieve Water Use Targets
9.5 Members of the California Urban Water Conservation Council

9.1 Demand Management Measures for Wholesale Agencies

Because SFWPA is a retail supplier, this section does not apply.

9.2 Demand Management Measures for Retail Agencies

CWC *10631(f)(A)… The narrative shall describe the water demand management measure that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.*

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.
(ii) Metering
(iii) Conservation pricing.
(iv) Public education and outreach.
(v) Programs to assess and manage distribution system real loss.
(vi) Water conservation program coordination and staffing support.
(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

Following are the descriptions of the conservation programs SFWPA operates within each of the DMM categories.

9.2.1 Water Waste Prevention Ordinance

The SFWPA Board of Directors maintains a draft Resolution declaring the Water Shortage Contingency Program. This resolution remains an effective tool that may be implemented as deemed necessary by the Board of Directors, or in conjunction with a declared State of Emergency.

9.2.2 METERING

CWC *526 (a) Notwithstanding any other provisions of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract... shall do both of the following:*

(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings... located within its service area.

527 (a) An urban water supplier that is not subject to Section 526 shall do both the following:

(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.

The Agency began requiring meters for all domestic service connections in 1983 and will continue this requirement into the future.

9.2.3 Conservation Pricing

The Agency is not considering implementing conservation pricing at this time.

9.2.4 Public Education and Outreach

The Agency began providing educational material on its website in 2005 explaining how to check for leaks within residential plumbing systems. Staff contact information is also provided regarding who residential customers should contact if they have questions about their water consumption. Agency technicians are available to investigate potential water leaks when a customer experiences a suspiciously high water bill. Agency water bills were redesigned in 2005 to show customers their monthly consumption for the last 12 monthly billings. This provides the customer with the ability to visualize their annual water use pattern and to compare the current billing period to the same period for the previous year. It is assumed that the comparative data causes customers to think and helps to motivate them about conservation.

9.2.5 Programs To Assess and Manage Distribution System Real Loss

In addition to its routine and planned system maintenance and water loss evaluation, the Agency has conducted water audits and leak detection repairs since the late 1980's. The current number of leaks per month is less than five, drastically lower than the peak number of 167 per month in the 90's.

9.2.6 Water Conservation Program Coordination and Staffing Support

The Agency is not a large organization and since 2002, the Agency Water Division Manager has coordinated the water conservation activities of the Agency. The Water Division Manager oversees the treatment plant, system maintenance, facilities maintenance, irrigation deliveries and monitoring and metering equipment, and makes this position the most logical to oversee conservation program efforts. Additionally, there are staff available from the Finance Division and Information Systems to assist with outreach efforts

9.2.7 Other Demand Management Measures

Within the next five years, the Agency is looking to complete significant efficiency upgrades at the Miners Ranch Treatment Plant.

9.3 Implementation Over the Past Five Years

CWC *10631(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

(1)(A) … a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years.

Reductions in water demand were achieved in 2015 in response to the Agency's adoption of the Water Shortage Contingency Plan drought response measures, including its public information campaigns to save water.

9.4 Planned Implementation to Achieve Water Use Targets

CWC *10631(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

(1)(A) …The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

The Agency implemented metering and water loss tracking into its operations and maintenance programs a number of years ago and has sufficient data to conduct comparative analysis and consumption statistics for further

future water efficiency planning. SFWPA will continue to require the Water Division Manager to coordinate public information programs targeting customer conservation. The Agency projects that construction of the Miner's Ranch Treatment Plant will realize system efficiencies that will surpass any customer conservation efforts.

9.5 Members of The California Urban Water Conservation Council

The Agency is not a signatory to the Memorandum of Understanding regarding Urban Water Conservation in California (MOU) and is therefore not a member of the California Urban Water Conservation Council (CUWCC)).

CHAPTER 10 - PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

This Chapter provides information on a public hearing, the adoption process for the UWMP, the adopted UWMP submittal process, plan implementation, and the process for amending the adopted UWMP.

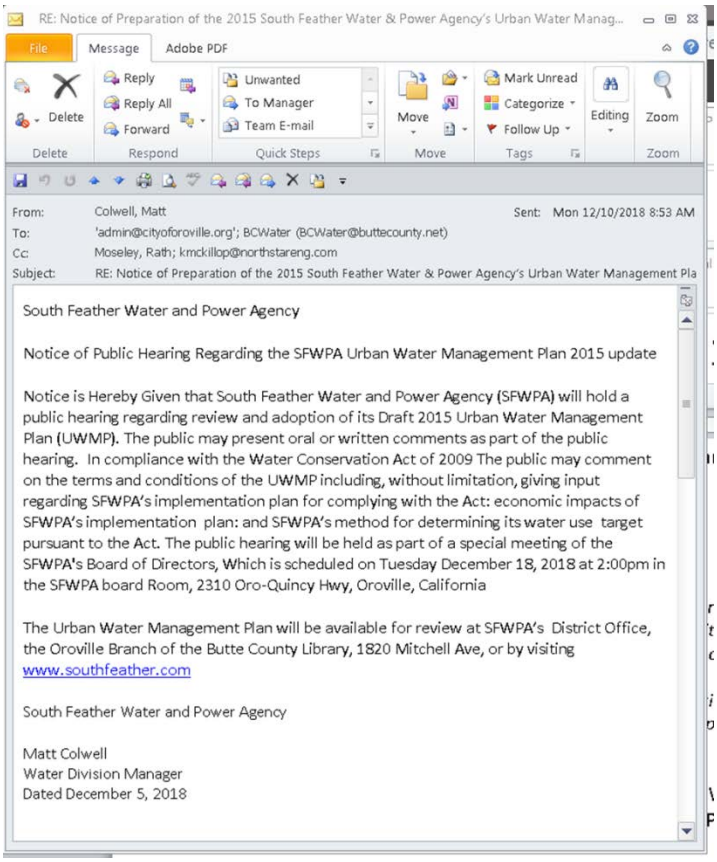
This chapter includes the following sections:

10.1 Inclusion of All 2015 Data
10.2 Notice of Public Hearing
10.3 Public Hearing and Adoption
10.4 Plan Submittal
10.5 Public Availability
10.6 Amending an Adopted UWMP

10.1 Inclusion Of All 2015 Data

This UWMP revision contains all the water use and planning data for calendar year 2015.

10.2 Notice Of Public Hearings



10.2.1 Notice To Cities and Counties

CWC *10621(b) Every urban water supplier required to prepare a plan shall… at least 60 days prior to the public hearing on the plan… notify any city or county within which the supplier provides waters supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

10642 …The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area…

On March 29, 2018 the Agency notified Butte County Water and Resource Conservation as well as City of Oroville Administration, that it was updating its UWMP.

Table 10-1 below summarizes public agency notifications.

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
City of Oroville	☑	☑
County Name	60 Day Notice	Notice of Public Hearing
Butte County	☑	☑

10.2.2 Notice To The Public

CWC *10642…Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection…Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code…*

Government Code 6066

Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day.

The UWMP was available for public inspection at the Agency Office, the local library and posted on the Agency's website for comments. Legal public notices were published in the local newspapers and posted at local facilities. A copy of the Legal Notice for the Public Hearing is attached as Appendix A

10.3 Public Hearing and Adoption

CWC *10642…Prior to adopting a plan, the urban water supplier shall hold a public hearing thereon.*

10608.26(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20 for determining its urban water use target.

The South Feather Water and Power Agency prepared this update of its Urban Water Management Plan in 2018. A public hearing for review of the Plan was held at the Agency Office on December 18, 2018 at 2:00 PM.

The updated plan was adopted by the Agency's Board of Directors December 18, 2018. Attached as Appendix B are copies of the signed Resolution of Plan Adoption. This plan includes all information necessary to

meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning Act).

10.4 Plan Submittal

CWC *10621 (d) An urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.*

10644 (a)(1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption.

10635(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

This 2015 update to the South Feather Water and Power Agency Urban Water Management Plan was submitted to the California Department of Water Resources and the California State Library on December 28, 2018. Copies of the plan were also transmitted to Butte County and the City of Oroville on that date.

10.5 Public Availability

CWC *10645 Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

This 2015 Urban Water Management Plan document is available for public viewing during normal business hours at the South Feather Water and Power Agency administrative office at 2310 Oro Quincy Highway, Oroville, California. The document is also available to the public on the Agency's internet website at www.southfeather.com.

10.6 Amending an Adopted UWMP

CWC *10621(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).*

10644(a)(1) Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

If changes to the UWMP are made after adoption of the Plan by the Agency's Board of Directors, the Agency will hold another public hearing and have the Board readopt the Plan.

The South Feather Water and Power Agency prepared this update of its Urban Water Management Plan in 2018. A public hearing for review of the Plan was held at the Agency Office on December 18, 2018 at 2:00 PM and submitted to the California Department of Water Resources, to the California State Library, the County of Butte and the City of Oroville, within 30 days after Board approval.

APPENDIX A

LEGAL NOTICE OF PUBLIC HEARING

Chico Enterprise-Record
400 E. Park Ave.
Chico, Ca 95928
530-896-7702
erlegal@chicoer.com

2123635

SOUTH FEATHER WATER & POWER AGENCY
POWER DIVISION
2310 ORO-QUINCY HWY
OROVILLE, CA 95966

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA, IN AND FOR THE COUNTY OF BUTTE

In The Matter Of
Notice of Public Hearing - SFWPA Urban Water Management Plan 2015 update

AFFIDAVIT OF PUBLICATION

STATE OF CALIFORNIA } **SS.**
COUNTY OF BUTTE

The undersigned resident of the county of Butte, State of California, says:

That I am, and at all times herein mentioned was a citizen of the United States and not a party to nor interested in the above entitled matter; that I am the principal clerk of the printer and publisher of

The Chico Enterprise-Record
The Oroville Mercury-Register

That said newspaper is one of general circulation as defined by Section 6000 Government Code of the State of California, Case No. 26796 by the Superior Court of the State of California, in and for the County of Butte; that said newspaper at all times herein mentioned was printed and published daily in the City of Chico and County of Butte; that the notice of which the annexed is a true printed copy, was published in said newspaper on the following days:

12/08/2018, 12/13/2018

Dated December 13, 2018
at Chico, California

(Signature)

Legal No. **0006266271**

South Feather Water and Power Agency

Notice of Public Hearing

Regarding the SFWPA Urban Water Management Plan 2015 update

Notice is Hereby Given that South Feather Water and Power Agency (SFWPA) will hold a public hearing regarding review and adoption of its Draft 2015 Urban Water Management Plan (UWMP). The public may present oral or written comments as part of the public hearing. In compliance with the Water Conservation Act of 2009 The public may comment on the terms and conditions of the UWMP including, without limitation, giving input regarding SFWPA's implementation plan for complying with the Act: economic impacts of SFWPA's implementation plan: and SFWPA's method for determining its water use target pursuant to the Act. The public hearing will be held as part of a special meeting of the SFWPA's Board of Directors, Which is scheduled on Tuesday December 18, 2018 at 2:00pm in the SFWPA board Room , 2310 Oro-Quincy Hwy, Oroville, California

The Urban Water Management Plan will be available for review at SFWPA's District Office, the Oroville Branch of the Butte County Library, 1820 Mitchell Ave, or by visiting www .southfeather.com

South Feather Water and Power Agency

Matt Colwell
Water Division Manager
12/08, 12/13/2018

APPENDIX B

RESOLUTION OF PLAN ADOPTION

SOUTH FEATHER WATER & POWER AGENCY

RESOLUTION OF THE BOARD OF DIRECTORS

Resolution 2018-12

ADOPTION OF THE 2015 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan (UWMP), the primary objective of which is to plan for the conservation and efficient use of water; and,

WHEREAS, the California Legislature enacted the Water Conservation Bill of 2009 which requires urban water suppliers to report in their UWMPs their base daily per capita water use, urban water use target, and compliance daily per capita water use; and,

WHEREAS, South Feather Water and Power Agency is an urban supplier of water providing water to more than 3,000 customers; and,

WHEREAS, the UWMP must be periodically reviewed and updated at least once every five years, and the Agency shall make any amendments or changes to its UWMP which are indicated in the review; and,

WHEREAS, the UWMP must be adopted after public review and hearing, and filed with the California Department of Water Resources within thirty days of adoption; and,

WHEREAS, the Agency has therefore, prepared and made available for public review a draft Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held by the Agency on December 18, 2018.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the South Feather Water and Power Agency that the 2015 Urban Water Management Plan is hereby adopted.

BE IT FURTHER RESOLVED that the General Manager is authorized and directed to file the 2015 Urban Water Management Plan within 30 days to the California Department of Water Resources.

PASSED AND ADOPTED by the Board of Directors of the South Feather Water and Power Agency at the regular monthly meeting of said Board on the 18th day of December 2018 by the following vote:

AYES: Edwards, Hickman, Wulbern, Moreland, Starr.

NOES: None.

ABSTAINED: None.

ABSENT: None.

Tod Hickman, President

(seal)

Rath T. Moseley, Secretary

APPENDIX C

SB X7-7 VERIFICATION FORM

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Million Gallons
**The unit of measure must be consistent with Table 2-3*

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	1,717	Million Gallons
	2008 total volume of delivered recycled water	-	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range[3]	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.

[2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

[3] The ending year must be between December 31, 2004 and December 31, 2010.

[4] The ending year must be between December 31, 2007 and December 31, 2010.

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1999	14,944
Year 2	2000	15,050
Year 3	2001	15,163
Year 4	2002	15,341
Year 5	2003	15,736
Year 6	2004	15,914
Year 7	2005	16,104
Year 8	2006	16,653
Year 9	2007	16,559
Year 10	2008	16,653
5 Year Baseline Population		
Year 1	2003	15,736
Year 2	2004	15,914
Year 3	2005	16,104
Year 4	2006	16,653
Year 5	2007	16,559
2015 Compliance Year Population		
2015		17,322

SB X7-7 Table 4: Annual Gross Water Use *								
Baseline Year		Volume Into Distribution System	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1999	1,822	0	0	(0)	1	-	1,821
Year 2	2000	1,800	0	0	(0)	1	-	1,799
Year 3	2001	1,687	0	0	(0)	1	-	1,686
Year 4	2002	1,689	0	0	(0)	1	-	1,688
Year 5	2003	1,769	0	0	(0)	1	-	1,768
Year 6	2004	1,887	0	0	(0)	1	-	1,886
Year 7	2005	1,632	0	0	(0)	1	-	1,631
Year 8	2006	1,781	0	0	(0)	1	-	1,780
Year 9	2007	1,825	0	0	(0)	1	-	1,824
Year 10	2008	1,902	0	0	(0)	1	-	1,901
Year 11	2009	1,708	0	0	(0)	1	-	1,707
Year 12	2010	1,577	0	0	(0)	1	-	1,576
Year 13	2011	1,525	0	0	(0)	1	-	1,524
Year 14	2012	1,713	0	0	(0)	1	-	1,712
Year 15	2013	1,836	0	0	(0)	1	-	1,835
10 - 15 year baseline average gross water use								**1,742**
5 Year Baseline - Gross Water Use								
Year 1	2003	1,769	0	0	(0)	1	-	1,768
Year 2	2004	1,887	0	0	(0)	1	-	1,886
Year 3	2005	1,632	0	0	(0)	1	-	1,631
Year 4	2006	1,781	0	0	(0)	1	-	1,780
Year 5	2007	1,825	0	0	(0)	1	-	1,824
5 year baseline average gross water use								**1,777**
2015 Compliance Year - Gross Water Use								
2015		1,483	0	0	(0)	1	-	**1,482**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	South Fork Feather River
This water source is:	
☑	The supplier's own water source
☐	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment ** Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	1,820	2	1,822
Year 2	2000	1,798	2	1,800
Year 3	2001	1,685	2	1,687
Year 4	2002	1,687	2	1,689
Year 5	2003	1,767	2	1,769
Year 6	2004	1,885	2	1,887
Year 7	2005	1,630	2	1,632
Year 8	2006	1,779	2	1,781
Year 9	2007	1,823	2	1,825
Year 10	2008	1,900	2	1,902
Year 11	2009	1,706	2	1,708
Year 12	2010	1,575	2	1,577
Year 13	2011	1,523	2	1,525
Year 14	2012	1,711	2	1,713
Year 15	2013	1,834	2	1,836
5 Year Baseline - Water into Distribution System				
Year 1	2003	1,767	2	1,769
Year 2	2004	1,885	2	1,887
Year 3	2005	1,630	2	1,632
Year 4	2006	1,779	2	1,781
Year 5	2007	1,823	2	1,825
2015 Compliance Year - Water into Distribution System				
2015		1,481	2	1,483

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	14,944	1,821	334
Year 2	2000	15,050	1,799	327
Year 3	2001	15,163	1,686	305
Year 4	2002	15,341	1,688	301
Year 5	2003	15,736	1,768	308
Year 6	2004	15,914	1,886	325
Year 7	2005	16,104	1,631	277
Year 8	2006	16,653	1,780	293
Year 9	2007	16,559	1,824	302
Year 10	2008	16,653	1,901	313
10-15 Year Average Baseline GPCD				**308**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	15,736	1,768	308
Year 2	2004	15,914	1,886	325
Year 3	2005	16,104	1,631	277
Year 4	2006	16,653	1,780	293
Year 5	2007	16,559	1,824	302
5 Year Average Baseline GPCD				**301**
2015 Compliance Year GPCD				
2015		17,322	1,482	**234**

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	308
5 Year Baseline GPCD	301
2015 Compliance Year GPCD	234

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☑	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	**2020 Target GPCD**
308	**247**

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☑	100%	Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☐		South Coast	149	142
☐		Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**167**

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
301	286	247	**247**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD.

[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
247	308	**278**

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)* Enter "0" if Adjustment Not Used: Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
234	278	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	-	234	234	**YES**

APPENDIX D

2015 AWWA WATER AUDIT RESULTS

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: South Feather Water and Power Agency (0410006)
Reporting Year: 2015 | 1/2015 - 12/2015

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

WATER SUPPLIED

	Grading	Value		Master Meter and Supply Error Adjustments Pcnt:	Value:	
Volume from own sources:	10	1,481.000	MG/Yr			MG/Yr
Water imported:	10		MG/Yr			MG/Yr
Water exported:	10		MG/Yr			MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 1,481.000 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

	Grading	Value		Pcnt:	Value:	
Billed metered:	10	1,307.000	MG/Yr			
Billed unmetered:	10		MG/Yr			
Unbilled metered:	10	3.000	MG/Yr			
Unbilled unmetered:		18.513	MG/Yr	1.25%		MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 1,328.513 MG/Yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption) 152.488 MG/Yr

Apparent Losses

	Grading	Value		Pcnt:	Value:	
Unauthorized consumption:		3.703	MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	10	0.000	MG/Yr			MG/Yr
Systematic data handling errors:		3.268	MG/Yr	0.25%		MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 6.970 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 145.518 MG/Yr

WATER LOSSES: 152.488 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 174.000 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

	Grading	Value	
Length of mains:	10	200.0	miles
Number of active AND inactive service connections:	10	7,000	
Service connection density:		35	conn./mile main
Are customer meters typically located at the curbstop or property line?		Yes	
Average length of customer service line:			(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	10	90.0	psi

COST DATA

	Grading	Value		
Total annual cost of operating water system:	10	$8,000,000	$/Year	
Customer retail unit cost (applied to Apparent Losses):	10	$0.42	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	10		$/Million gallons	☑ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 94 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Unauthorized consumption
2: Systematic data handling errors
3: Unbilled unmetered

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: South Feather Water and Power Agency (0410006)
Reporting Year: 2015 1/2015 - 12/2015

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 94 out of 100 ***

System Attributes:

	Apparent Losses:	6.970	MG/Yr
+	Real Losses:	145.518	MG/Yr
=	Water Losses:	152.488	MG/Yr

? Unavoidable Annual Real Losses (UARL):	70.04	MG/Yr
Annual cost of Apparent Losses:	$3,913	
Annual cost of Real Losses:		Valued at Customer Retail Unit Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	11.7%	
	Non-revenue water as percent by cost of operating system:	1.2%	Real Losses valued at Customer Retail Unit Cost
Operational Efficiency:	Apparent Losses per service connection per day:	2.73	gallons/connection/day
	Real Losses per service connection per day:	56.95	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.63	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL):	145.52	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.08	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline