AGRICULTURAL WATER MANAGEMENT PLAN
2015

Prepared Pursuant to Water Code Section 10826

YOLO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
34274 State Hwy. 16
Woodland, CA 95695

Adopted: February 2, 2016

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Section I: Introduction

A. Description of Previous Water Management Activities

In October 2000, the Yolo County Flood Control and Water Conservation District (District) adopted a Water Management Plan (Borcalli, 2000). The October 2000 Water Management Plan was prepared pursuant to Assembly Bill (AB) 3616 and AB 3030 as a comprehensive plan for Yolo County's surface water and groundwater resources. This Agricultural Water Management Plan (AWMP) is being prepared to update the October 2013 Water Management Plan, to comply with the requirements of SBx7-7, and to comply with Governor Brown's Executive Order B-29-15 of April 1, 2015.

The District received AB 303 grant funds to develop a groundwater management project and plan. This project is described in the July 2004 report entitled "Groundwater Monitoring Program, Data Management System, and Update of Groundwater Conditions in the Yolo County Area" (Luhdorff & Scalmanini, 2004). This 2004 report is the foundational document for the District's June 2006 Groundwater Management Plan.

As noted in the 2013 AWMP, the District developed and implemented numerous water management practices and participated in several regional planning efforts which are highlighted below:

- Installation of a Supervisory Control and Data Acquisition (SCADA) system to allow the District to remotely monitor and operate major system components. This includes the installation of automatic gates as well as auto-flow and level control devices
- Development of a systematic flow measurement program
- Development and implementation of conjunctive use programs to supplement dry year surface water supplies
- Implementation of an electronic accounting program for tracking deliveries (STORM)
- Implementation of a water quality monitoring program
- Development of a groundwater model
- Purchased land for its proposed mid-lateral reservoir
- Provided training for ditch tenders through the Irrigation Training and Research Center (ITRC) at California Polytechnic State University, San Luis Obispo (Cal Poly)
- Participation in the Local Area Land Subsidence Program
- Participation in the 2007 Yolo County Integrated Regional Water Management Plan (IRWMP)
- Participation in the 2013 Sacramento Valley Westside Group IRWMP

In addition to the activities above and since the submittal of its 2013 AWMP, the District has continued to seek opportunities for improved water management and regional planning. The following list summarizes some of these key activities:

- CASGEM Groundwater Management Plan (2012)

- Prop 84 Water Use efficiency grant (canal system modernization)
- Prop 84 Drought emergency grant (canal system modernization)
- WEAP surface and groundwater watershed model development with Stockholm Environmental Institute
- Robust Decision Support (XLRM) water management development tool
- IGSM to IWFM conversion by DWR Bay-Delta modelling office
- Development of real-time groundwater level monitoring network
- AB 303 grant funded work on canal recharge, nitrate fingerprinting, City of Davis & Woodland import effect on groundwater,
- AB 303 grant funded private well incentive program for conjunctive use
- Development of variable rate pricing structure to encourage conjunctive use
- Participation with Water Resources Association in Yolo County for Sustainable Groundwater Management Act (SGMA) planning efforts to lead to formation of a Groundwater Sustainability Agency (GSA) and development of a Groundwater Sustainability Plan (GSP)
- Sacramento Valley IRWMP coordinating committee participation
- Improvements to system flexibility (described further in EWMP No. 5)

B. Coordination Activities

1. Notification of AWMP Preparation

Agricultural Water Suppliers required to prepare an AWMP Plan pursuant to SBx7-7 must notify each city and county within which they provide water supplies that the agricultural water supplier is preparing or reviewing a plan and is considering changes or amendments to the plan. SBx7-7 does not specify how much advance notification of cities and counties is required nor does it require notification to any other agency(s). Further SBx7-7 does not require that comments from any city, county, or other agency must be solicited and considered. Table 1 identifies the entities notified by the District. A copy of the public notice of the District's intention to review, update, and consider changes to its AWMP, and to comply with SBx7-7 is presented in Appendix A.

2. Public Participation

Notice of the District's intent to update its AWMP and to comply with the provisions of SBx7-7 was published on January 20, 2016 and January 27, 2016 in the *Daily Democrat*. The notice identified that the Draft AWMP was available for public review on the District's website and at the District's office, and also identified the time and date of the hearing for public comment and intent to adopt the AWMP.

C. AWMP Adoption and Submittal

1. AWMP Adoption

The resolution adopting the AWMP is included in Appendix B.

2. AWMP Submittal

The steps followed in a submittal of the AWMP are described in *A Guidebook to Assist Agricultural Water Suppliers to Prepare a 2015 Agricultural Water Management Plan (2015 Guidebook)* and are outlined in Table 1.

3. AWMP Availability

The requirements for the availability of AWMP's are described in the 2015 Guidebook. Table 1 summarizes the District's compliance with notification and AWMP availability requirements.

Table 1: Summary of Coordination, Adoption, and Submittal Activities

Potential Interested Parties	Notified of Public Hearing and Intention to Adopt	Copy of Adopted AWMP/ Amendment Sent
Department of Water Resources	---	February 11, 2016
Yolo County	---	February 11, 2016
Any Cities within which water is supplied: The District does not supply water to any cities within its service area.	NA	NA
Water Resources Association of Yolo County	---	February 11, 2016
Urban water suppliers within which jurisdiction(s) water is supplied: The District does not supply water to any cities within its service area.	NA	NA
Any City or County Library within which jurisdiction water is supplied Woodland City Library	NA	February 11, 2016
The California State Library	NA	February 11, 2016
Local Newspaper: Daily Democrat	January 20 & 27, 2016	NA
District Website	NA	February 11, 2016

D. AWMP Implementation Schedule

The District has adopted this AWMP in accordance with the provisions of SBx7-7. As identified in this AWMP, the District continues to implement many of the efficient water management plans (EWMPs) including the water measurement and volumetric pricing EWMPs. As identified later in this plan, the District intends to develop a Water Measurement Certification Program which will be implemented over the next five years.

Section II: Description of Agricultural Water Supplier and Service Area

A. Physical Characteristics

1. Size of the Service Area

The District was established by the California State Legislature on July 1, 1951 under the provisions of General Law 9307, Statutes of 1951, Chapter 1657, as amended.

The District's General Manager is responsible for planning for the District's long-term water needs and oversees the activities carried out under the Construction, Flood Control, and Irrigation Divisions of the District. In addition to the General Manager, the District's normal work force includes 25 employees, including a dam tender and power plant operator, irrigation workers, field and equipment supervisors, water resources technicians, and office staff members. All operations and maintenance services are provided by District personnel, including water delivery, billings, accounting, construction, and facility and equipment repair and replacement.

The District, which includes approximately 216,000 acres, or nearly 40 percent of the valley lands in Yolo County, is governed by a five-member Board of Directors appointed by the County Board of Supervisors to serve four-year terms. During 2012 through 2015, an average of approximately 32,500 acres was irrigated (see Table 2). This acreage is less than the 50,000 acres typically irrigated in years with full allocations. The lower average for the 2012 – 2015 Plan Cycle is due to reduced deliveries in 2013 and 2015 and no deliveries of stored surface water supplies in 2014.

Table 2: Water Supplier History and Size

Date of Formation	**Date: July 1, 1951**
Source of Water	
Local Surface Water	X
Local Groundwater (landowner)	X
Service Area Gross Acreage	216,000
Average Irrigated Acreage (2012 – 2015)	32,491

The District has no authority or responsibility regarding land use planning. This is the responsibility of the county and cities. Accordingly, it is the responsibility of the county and cities to assess existing and proposed land uses from the standpoint of land use impacts on groundwater supplies and contamination. The District reviews proposals for changes in land use and offers comments relative to water use, flood control, and drainage to the county and cities in Lake and Yolo counties.

From time to time the District considers minor property annexations. Because of their size and the various supplies available to the District, these minor property annexations do not have a material change in the available water supply. The District's most recent annexation occurred in December 2012.

2. Location of the Service Area and Water Management Facilities

The District is located within the northern portion of Yolo County and includes the cities of Woodland, Davis, and Winters, and the towns of Capay, Esparto, Madison, and other small communities within the Capay Valley. The distribution system is comprised of approximately 160 miles of canals and laterals (see Table 3). Three dams, Cache Creek Dam, Indian Valley Dam, and the Capay Diversion Dam are managed by the District. A map showing the location of the District and major facilities is included as Figure 1.

Table 3: Water Conveyance and Delivery System

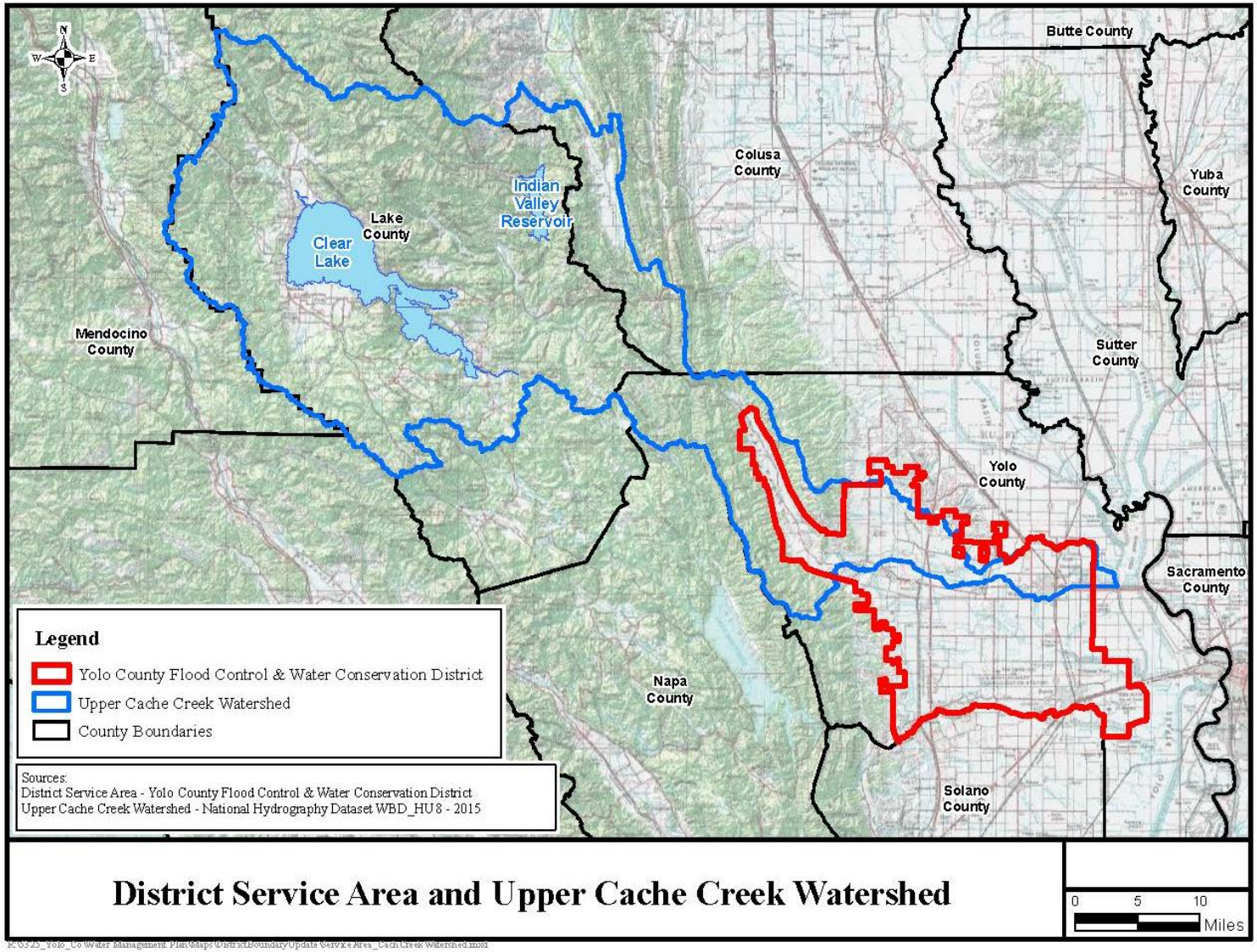
System Used	Number of Miles
Unlined Canals	150
Lined Canal	10
Pipelines	0

The District's surface water supply consists of the Clear Lake-Indian Valley and Cache Creek system within the Cache Creek watershed, which encompasses approximately 950 square miles. Virtually all precipitation in the Cache Creek watershed occurs as rainfall. The term "system" is used because it is truly the "system" that the District manages for its water users. As experienced in 1990, the District has and will continue to have years or periods where there is no surface water supply available for its water users.

The various components of the District's water supply system are described below:

Clear Lake – Clear Lake is a large shallow natural body of water with an area of approximately 44,000 acres when full, and has a maximum depth of approximately 50 feet. The water level fluctuations have been modified since the construction of Cache Creek Dam by the Yolo Water and Power Company in 1914. Since 1915 water levels in Clear Lake have been regulated by the operation of Clear Lake Dam in accordance with the "Gopcevic Decree", approved in 1920, and the "Solano Decree", approved in February 1978 and revised in 1995. Cache Creek Dam is now owned by the District. An operation schedule established in the Gopcevic Decree for filling the lake identifies lake levels to which Clear Lake is allowed to fill for different times during the winter. The Solano Decree specifies how much water is available for use by the District each month during the summer irrigation season based on the Rumsey Gage. This decree stipulates the amount and rate by which the District can withdraw water between the limits of zero and

Figure 1: District Service Area and Cache Creek Watershed



7.56 feet on the Rumsey Gage, which is located on the lake at Lakeport. Zero on the Rumsey Gage is regarded as the natural rim of the lake. The existing storage between zero and 7.56 feet on the Rumsey Gage is about 320,000 acre-feet (AF). The District's allowable withdrawal from Clear Lake is determined by the stage of Clear Lake on May 1. The maximum withdrawal is 150,000 AF. The District may not withdraw any water delivery below the Cache Creek Dam in any year the Clear Lake stage is 3.22 feet or less on the Rumsey Gage on May 1.

Clear Lake provides no carryover storage. Therefore, the District attempts to use its full allowable withdrawal each year.

Indian Valley Dam and Reservoir – In 1975, the District completed construction of the Indian Valley Dam and Reservoir project. The Indian Valley Dam and Reservoir are owned and operated by the District. The dam and reservoir are located on the North Fork Cache Creek approximately 54 miles from the Capay Diversion Dam.

When full, Indian Valley Reservoir has a surface area of 4,000 acres and a total storage capacity of 300,600 AF. Forty thousand (40,000) AF of the reservoir storage capacity is dedicated to flood control. Unlike Clear Lake, Indian Valley Reservoir provides carryover storage from one season to another.

In 1982, a hydroelectric project with a nominal capacity of 3,000 kW was retrofitted to the outlet works of the dam.

Table 4: District Reservoirs

Reservoir Name	Usable Capacity (AF)
Clear Lake	150,000
Indian Valley Reservoir	280,600

Cache Creek – Downstream of Clear Lake and Indian Valley Dam and Reservoir, the most significant streams are Long Valley Creek, a tributary to the North Fork Cache Creek, and Bear Creek. As noted previously, all precipitation in the Cache Creek watershed occurs as rainfall. Thus, runoff tapers off sharply following winter and spring rainfall.

The District owns and operates Cache Creek Dam, a conservation structure constructed on Cache Creek approximately five miles downstream of Clear Lake. In 1986, the District completed construction of a hydroelectric project with a nominal capacity of 1,750 kW. Cache Creek Dam is located approximately 49 miles upstream from the District's Capay Diversion Dam. This hydroelectric facility is currently non-operational. Investigations are being conducted to assess the feasibility of bringing this facility back on line.

The District's basic management objective regarding its water supply system is to utilize runoff in Cache Creek first. If the runoff in Cache Creek is not sufficient to meet irrigation demand, the District will

withdraw from Clear Lake in accordance with the Solano Decree. Once the District compiles its "water orders" and estimates its seasonal demand, the District will then determine the amount of water required from Indian Valley Reservoir. Releases from Indian Valley Reservoir are made to augment releases from Clear Lake on as uniform a basis as possible.

In years when inadequate water supplies are available from Clear Lake, the District will withdraw water from Indian Valley Reservoir. Water supplies from Indian Valley Reservoir are used to meet current year demand. The facility is not operated to maximize carryover storage. Although Indian Valley Reservoir was designed to provide a firm yield of approximately 55,000 AF, the District determined it was most efficient, from a water management standpoint, to operate to meet demand in a given year even though there may be no water available in subsequent years. This was the case in 1990 and again in 2014, when the District had little or no water to deliver from Clear Lake or Indian Valley Reservoir.

This operational strategy maximizes storage in the groundwater basin, which is the most efficient reservoir available to lands within the District. If Indian Valley Reservoir was operated on a firm yield basis, the frequency and magnitude of flood spills would be greater than under current operations. Water "dumped" as a flood spill is essentially lost to the system.

Operational spills that occur along the District's distribution system discharge into sloughs or drains and are recovered and reused by the District and individual landowners. In addition, individual landowners have constructed tailwater recovery systems to increase on-farm efficiency. The District has participated with the Resource Conservation District (RCD) in its Model Farm Program by providing in-kind services to assist landowners in constructing tailwater recovery systems to conserve water and minimize the amount of sediment leaving the farm. Table 5 summarizes the existence of tailwater/ operational spill recovery systems.

Table 5: Tailwater/Operational Outflow Recovery System

System	Yes/No
District Operated Tailwater/Spill Recovery	Yes
Grower Operated Tailwater/Spill Recovery	Yes

To help maintain a healthy and vibrant agricultural industry in Yolo County, the District must maintain and improve its aging water delivery system. The integrity of District structures is a public safety and economic issue as well. The District's water system of today is a descendant of the ditches dug as many as 150 years ago by Yolo County's farming pioneers who dreamed that orchards and other fresh produce might flourish on land once thought suitable only for grazing and wheat production. Though the canals, culverts, bridges, and gates of today's system are not necessarily original structures, many of them now require replacement or significant repair, and all of them need regular assessment. Two of the District's three dams are approaching the 100-year mark, and its newest is over 30 years old. The District believes that its capital improvement projects, scheduled infrastructure maintenance, and readiness for

emergency repairs are essential functions that help ensure safety and prosperity for Yolo County and its residents.

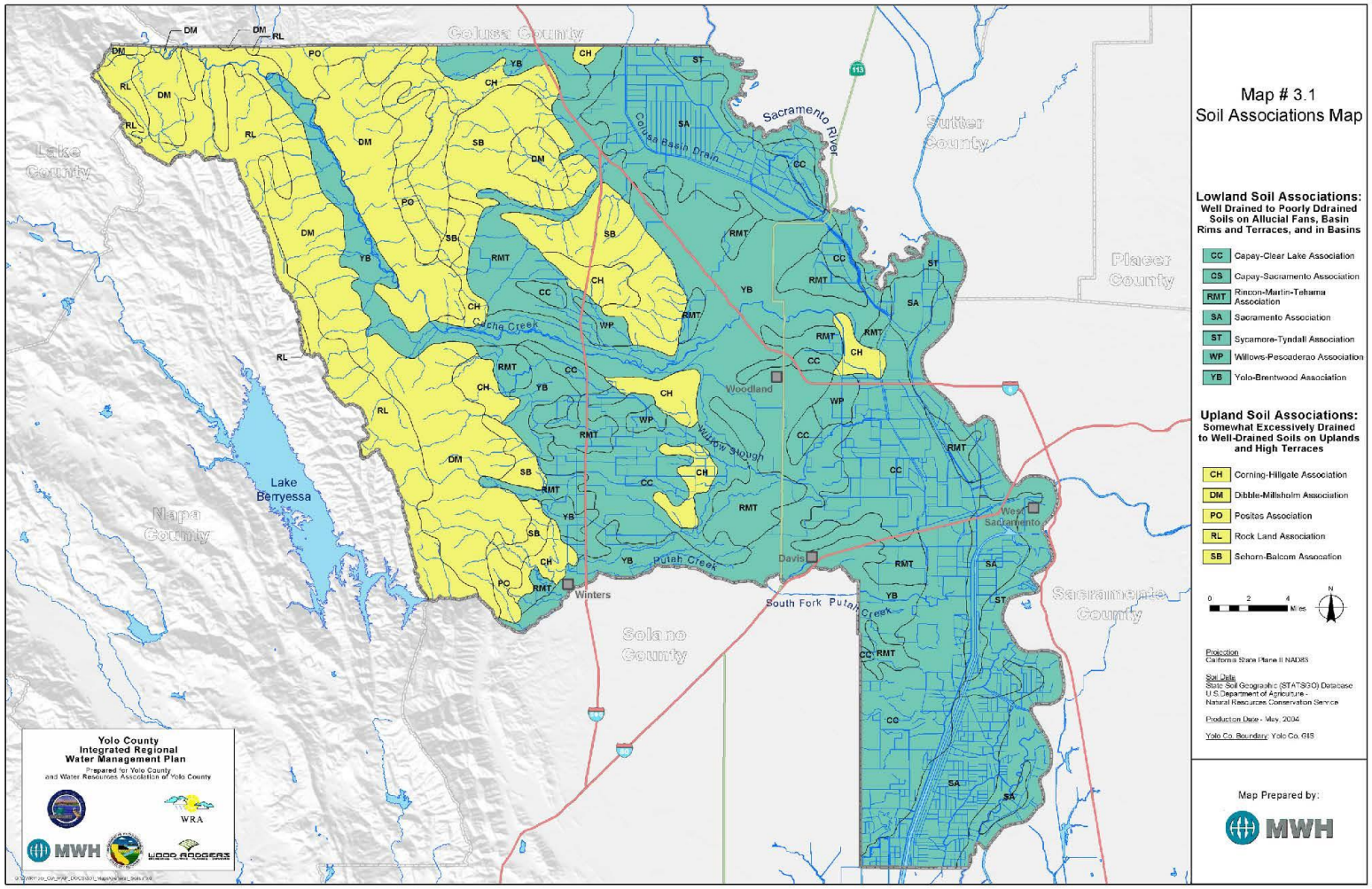
3. Terrain and Soils

A portion of the western edge of the District reaches up into the Coast Range; these lands are gently sloping towards the valley. The majority of the District is in the Sacramento Valley. The terrain in the District is nearly level, sloping gently from the Coast Range to the Sacramento Valley. The soils can generally be classified lowland associations and upland associations.

The majority of the soils within the District are classified as lowland association. These soils are well drained to poorly drained, silty loams to clays with slopes ranging from 0 to 2 percent. The remaining soils on the upland associations are well drained gravelly loams or loams, with slopes ranging from 2 to 30 percent. A map showing the geologic units in and around the District is included as Figure 2.

The water diverted into the District discharges as surface flow through Cache Creek and the Willow Slough Bypass and as sub-surface flow under Putah Creek. Water that leaves the District's system spills into sloughs or constructed drains.

Figure 2: Soils and Terrain



4. Climate

Yolo County has a Mediterranean climate characterized by warm, dry summers and cool, moist winters. The southern part of the District is cooler because of the cool air from the ocean. Marine clouds gather in the Coast Range and move eastward, thus the heaviest rainfall occurs in the Coast Range. Average annual rainfall ranges from about 24 inches near Winters to about 20 inches in Woodland and Davis. Most of the precipitation occurs in December, January, and February; with little to no precipitation in July through September. Precipitation and temperature data were obtained from the National Climatic Data Center (NCDC); the information in the tables below includes data from 1991-2014 for the Winters station located within the District. Table 6 summarizes average climatic conditions within the District.

Table 6: Summary of Climate Characteristics

Climate Characteristic	Value
Average Annual Precipitation (inches)	24.1 inches
Annual Minimum Precipitation (inches)	5.2 inches
Annual Maximum Precipitation (inches)	42.1 inches
Average Annual Minimum Temperature	38.3°F
Average Annual Maximum Temperature	96.4°F

Table 7 presents more detailed information. The Reference Evapotranspiration (ET_o) data was obtained from the California Irrigation Management Information System (CIMIS) for Esparto also located within the District.

Table 7: Detailed Climate Characteristics

Month/Time	Average Precipitation, Inches	Average Reference Evapotranspiration (Et_o), Inches	Average Minimum Temperature, °F	Average Maximum Temperature, °F
January	4.80	1.76	38.3	57.4
February	4.96	2.31	41.7	62.5
March	3.16	3.78	45.3	69.1
April	1.40	5.29	48.6	75.1
May	0.85	7.11	54.3	83.9
June	0.21	8.05	59.0	90.9
July	0.01	8.03	60.9	96.4
August	0.03	7.31	59.8	95.7
September	0.11	5.55	57.8	92.1
October	0.94	3.83	51.6	81.3
November	2.32	2.13	43.8	67.4
December	5.25	1.43	38.6	57.6
Wet Season**	22.85	20.53		
Dry Season**	1.21	36.05		

Notes:
**Wet season is typically October through April

B. Operational Characteristics

1. Operating Rules and Regulations

The Rules and Regulations, as last amended by the District's Board of Directors in March 2003, governs the distribution of water and defines the rates and charges for water service and is presented in Appendix C.

The District's water delivery system is operated as a modified demand system (see Table 8). This manner of operation is the most efficient in terms of water management. The District delivers water at the request of the farmers. Water users order water by 11:00 a.m. for delivery the following day. Thus, water is delivered when it is needed. This type of operation facilitates the most efficient use of water for irrigation.

Table 8: District Delivery System

Type	Check if Used	Percent of System Supplied
On Demand*	X	5%
Modified Demand	X	95%
Rotation	0	0
Other	0	0
* Littoral use around Clear Lake and riparian use along Cache Creek is taken On Demand		

Water that may flow past the end of a canal or lateral may be retrieved in a downstream section of the District's system or sold in a downstream slough. The same is true of tailwater from farm fields. Excess applied irrigation water that does not percolate and runs off the end of a farm field is recovered and reused. Thus, very little water of suitable quality leaves the District.

The District provides water to both agricultural and nonagricultural users. As described further in the following sections, deliveries to most customers are measured.

Applications for water service are typically due no later than March 15. The application must state the type of service requested, the number of acres of each field for which agricultural service is requested, the crop or crops to be grown, the landowner's name, the assessor's parcel number, and other information.

All orders for delivery of water for agricultural service by the District through a District canal or natural channel must be received by the District in sufficient time to allow 24 hours travel time for the water from the source to point of delivery unless the water is available as determined by the District. Orders must be received before 11:00 a.m., unless an earlier deadline is provided in a notice from the District. The 24-hour lead time for orders received after the deadline will be calculated from the following day. Orders may be made in writing, orally in person, or by telephone by the water user. Orders must include the name of applicant, the location of service by the canal designation, the flow in cubic feet per second (cfs), the crop, and the preferred date for service.

Water users served from a District canal or natural channel who wish to discontinue the service of water or reduce the head will give notice to the office of the District before 11:00 a.m. the day before such service is to be discontinued or such head reduced, unless an earlier deadline is provided in notice from the District. Where the service is to be for less than 24 hours, notice of the time of shutting off the water or reducing the head, will be given when the order for water is placed (see Table 9). With certain exceptions, if a water user uses more than 0.5 cfs for less than 24 hours on consecutive days, the water user is charged for the water spilled between irrigations.

Table 9: Lead Times

Operations	Hours
Water orders	24
Water shut-off (discontinue)	24

2. Water Delivery Measurements or Calculations

The District uses a variety of methods and devices to measure water within its system. The District uses a SCADA system to monitor storage in Clear Lake and Indian Valley Reservoir. The SCADA system is also used to monitor and control releases from the two reservoirs as well as diversions and rediversions at Capay Dam.

Deliveries to approximately 80% of the District's customers are measured using orifice gates and flow tables. Measuring devices for agricultural service are read and the readings are recorded daily. Measuring devices for most nonagricultural service are read monthly. Deliveries to the remaining customers are mostly made via customer owned pumps, and measurement is generally based on pump capacities and time of use as reported by the customer. However, propeller meters have been installed on some of the pumps and the District is in the process of installing 30 magnetic meters (see Table 10).

Table 10: Water Delivery Measurements

Measurement Device	Frequency of Calibration (Months)	Frequency of Maintenance (Months)	Estimated Level of Accuracy (%)
Orifices (meter gates)	Periodic	As needed	± 10%
Propeller Meters	Periodic	As needed	± 10%
Magnetic Meters	Periodic	As needed	± 5%
Weirs	Periodic	As needed	± 10%
Pump, Run Time	-	-	Unknown
Pump, KWH, RPM	Periodic	As needed	± 10%
Other	Periodic	As needed	± 10%

3. Water Rate Schedules and Billing

The District's Board of Directors establishes water rates from time to time based on budget requirements and board policy (see Table 11). Invoices for agricultural service providing the amount of water delivered each day are mailed monthly to each water user for each turnout. Invoices for water services other than agricultural service are mailed monthly, unless otherwise determined by the District (see Table 12 and Table 13). A copy of the July 2015 billing rate schedule is attached as Appendix D.

Table 11: Water Rate Basis

Water Charge Basis	Percent of Water Deliveries (%)	Description
Volume of Water Delivered	98%	Per acre-foot (AF); rates established for both crop and non-crop irrigation
Measured Nonagricultural Service	< 1%	Per acre-foot (AF)
Outside of Service Area	< 1%	125% of the rate applicable to similar service within the District's service area
Other Types of Service	< 1%	The Board may establish rates for other types of service from time to time

Table 12: Rate Structure

Type of Billing	Check if Used	Description
Declining		
Uniform		
Increasing Block Rate		
Other	X	Inverted tiered pricing

Table 13: Frequency of Billing

Frequency	Check if Used
Weekly	
Biweekly	
Monthly	X
Bimonthly	
Semiannually	
Annually	X

4. Water Shortage Allocation Policies and Detailed Drought Management Plan

The District exercises reasonable diligence to furnish a continuous and adequate supply of water to its water users and to avoid any shortage or interruption of delivery. When, for any reason, the District is unable to deliver the full supply of water required by its water users, such supply as can be delivered is prorated until such time as delivery of a full supply can be restored.

When it is necessary to suspend service temporarily to make necessary repairs or improvements to its water system, the District notifies the affected water users as soon as circumstances permit.

During times of water shortage and/or drought, applications for water service are due no later than February 7 unless the District extends the filing deadline to a later date. Each application must be followed by an acreage deposit, due no later than March 15, or by an earlier date if water delivery is requested by the applicant prior to March 15. The application will not be considered approvable until such deposit is received. The deposit is a guaranteed minimum water purchase for the season and a credit on the applicant's aggregated water bill if District water is available for delivery, whether or not the applicant actually takes any water.

The District apportions its available water supply among its water users as follows:

(a) The District will attempt to supply nonagricultural water service without reduction. Water not needed to supply nonagricultural water service will be apportioned as set forth below.

(b) The requirements for agricultural service on lands for which application was made not later than February 15, and the acreage deposit was received no later than March 15 will have an equal priority to the water available for agricultural water use. The Board reserves the right to require payment for all water ordered during a time of water shortage, whether used or not.

(c) No applications are accepted after the filing date unless deemed proper by the General Manager.

Applications or portions thereof may be transferred from one applicant to another, acre for acre, if accomplished not later than June 1 and only if approved by the District. Applications or portions thereof may also be canceled not later than March 15, except on parcels that have already used water.

The District does not allow wasteful use of water. Any agricultural water user who, as determined by the District, is wasting water or floods any portion of land to an unreasonable depth, or whose land has been improperly checked for the economical use of water, or allows an unnecessary amount of water to escape from any tailgate, will be refused service until the situation is remedied. The District may refuse service when it is determined the proposed use, or method of use, will require such excessive quantities of water as will constitute waste. The District aims to deliver sufficient water for nonagricultural uses. However, waste of water may cause water to be shut off until the District receives satisfactory assurances that the conditions causing such waste have been remedied.

Due to the historic drought, there were limited deliveries in 2013 and 2015 and no stored surface water was available for delivery in 2014. In addition to the actions above, the District implemented a shortened delivery season (including coordinated releases) to minimize canal losses and facilitated private groundwater pumping (wheeling) using the canal delivery system.

C. Basis for Reporting Quantities

During the current Plan Cycle (2012 – 2015), the state has gone into a period of "exceptional drought" as defined by the U.S. Drought Monitor. The water year types in the Sacramento Region went from "below normal" in 2012, to "dry" in 2013, and "critical" in 2014 and 2015. The District has elected to report water use and water supply data for 2012 – 2015 in subsequent sections of this AWMP (see Table 14). Executive Order B-29-15 requires quantification of water demand for 2013, 2014, and 2015 to the extent data is available. Data for 2015 have not been reviewed for quality control/assurance; therefore, 2015 data included in this Plan is provisional and subject to revision.

Table 14: Plan Cycle Years

	Description
Representative year(s) based upon	2012 – 2015
First month of representative year	January
Last month of representative year	December

Section III: Description of Quantity of Water Uses

A. Agriculture Water Use

Agricultural lands within the District are irrigated with surface water supplies from the District, groundwater from privately owned wells, and recirculated tailwater. Some lands are irrigated with water from a combination of these three sources of supply. In years when the District has little or no surface water available, virtually all irrigation will be with groundwater supplies from privately owned wells (see Table 15).

Table 15: Agricultural Water Use for 2012 – 2015

Source	2012	2013	2014	2015
Agricultural Water Supplier Delivered				
Surface Water	151,961 AF	123,035 AF	4,727 AF	41,823 AF
Groundwater	0	0	0	0
Other – Recaptured Tailwater	Quantity included in "Surface Water"	Quantity included in "Surface Water"	Quantity included in "Surface Water"	Quantity included in "Surface Water"
Other Water Supplies Used				
Surface Water	0	0	0	0
Private Groundwater	Quantity unknown	Quantity unknown	Quantity unknown	Quantity unknown

Approximately 50 different crops were grown within the District during the 2012 – 2015 Plan Cycle years. Crops have been grouped by crop type for the purposes of estimating crop water needs for this AWMP. Table 16 through Table 19 show the crop water needs for the major crop categories grown within the District during the Plan Cycle covered under this AWMP. The water requirements to meet crop ET (ETc), cultural practices, and leaching requirements were determined for each crop based on data from CIMIS and information developed by the ITRC, Cal Poly. Reference Evapotranspiration (ETo) is based on the average monthly ETo published by CIMIS for the stations at Davis, Woodland, and Esparto. Crop Coefficients (Kc values) were developed based ETc data for Zone 14 contained in ITRC Report 03-001 - California Crop and Soil Evapotranspiration, January 2003, assuming surface irrigation in a typical year for 2012 and 2013 and assuming surface irrigation in a dry year for 2014 and 2015. Leaching requirements are based on information contained in FAO Irrigation and Drainage Paper 29 Revision 1, 1994.

Table 16: Agricultural Crop Data for 2012

Crop Type	Total Acreage	ET crop (AF)	Cultural Practices (AF)	Leaching Requirement (AF)	Total Crop Water Needs (AF)
Field Crops	24,909	72,465	4,386	2,636	79,487
Vegetable Crops	6,703	10,502	0	526	11,028
Fruit and Nut Crops	6,184	19,864	0	811	20,675
Grapes / Wine Grapes	1,747	3,791	0	314	4,105
Seed Crops	6,003	10,425	0	601	11,026
Miscellaneous	1,390	948	0	31	979
TOTAL	**46,936**	**117,995**	**4,386**	**4,919**	**127,300**

Table 17: Agricultural Crop Data for 2013

Crop Type	Total Acreage	ET crop (AF)	Cultural Practices (AF)	Leaching Requirement (AF)	Total Crop Water Needs (AF)
Field Crops	27,367	86,921	3,051	2,702	92,674
Vegetable Crops	6,650	10,933	0	501	11,434
Fruit and Nut Crops	6,874	23,376	0	861	24,237
Grapes / Wine Grapes	2,065	4,770	0	372	5,142
Seed Crops	6,243	17,588	0	694	18,282
Miscellaneous	916	1,029	0	24	1,053
TOTAL	**50,115**	**144,617**	**3,051**	**5,154**	**152,822**

Table 18: Agricultural Crop Data for 2014

Crop Type	Total Acreage	ET crop (AF)	Cultural Practices (AF)	Leaching Requirement (AF)	Total Crop Water Needs (AF)
Field Crops	769	1,781	0	42	1,823
Vegetable Crops	659	756	0	28	784
Fruit and Nut Crops	1,079	3,122	0	97	3,219
Grapes / Wine Grapes	69	152	0	12	164
Seed Crops	172	318	0	27	345
Miscellaneous	221	638	0	4	642
TOTAL	**2,969**	**6,767**	**0**	**210**	**6,977**

Table 19: Agricultural Crop Data for 2015

Crop Type	Total Acreage	ET crop (AF)	Cultural Practices (AF)	Leaching Requirement (AF)	Total Crop Water Needs (AF)
Field Crops	11,351	36,048	208	1,070	37,326
Vegetable Crops	3,849	5,362	0	276	5,638
Fruit and Nut Crops	7,996	23,985	0	976	24,961
Grapes / Wine Grapes	2,022	4,388	0	364	4,752
Seed Crops	3,931	6,673	0	438	7,111
Miscellaneous	794	1,825	0	21	1,846
TOTAL	**29,943**	**78,281**	**208**	**3,145**	**81,634**

Table 20: Irrigated Acres

	2012	2013	2014	2015
Total Irrigated Acres	46,938	50,115	2,969	29,943

Table 21: Multiple Crop Information (acres)

Cropping System	2012	2013	2014	2015
Single-Cropped Acres	46,466	48,765	2,969	29,848
Inter-cropping Acres	0	0	0	0
Double Cropping Acres	470	1,350	0	95

B. Environmental Water Use

Cache Creek, which is used to convey water from Clear Lake and Indian Valley Reservoir to the major portion of the District's service area, was added to California's Wild and Scenic Rivers System in October, 2005. The District maintains a number of sites specifically dedicated to preservation of the natural environment in the Cache Creek watershed. These areas, in addition to Indian Valley Reservoir now provide critical habitat for area species. Numerous natural drainages and sloughs throughout the service area are used by the District as conveyance and drainage channels to provide habitat and environmental benefits. Additionally, the District has implemented a Native Vegetation Canal Bank Program which provides habitat and other environmental benefits. The water use associated with these environmental programs has not been quantified; however, the environmental uses along Cache Creek are a portion of the net inflow below the dams as described further in Table 23.

C. Recreational Water Use

Recreational water uses within the District are non-consumptive. Indian Valley Reservoir and Campground provides recreational activities including swimming, camping, fishing, and boating. The District's operation of Clear Lake provides similar recreational opportunities. The District communicates and coordinates with rafting companies and kayaking groups to facilitate their operations and activities throughout the season. This includes providing higher flows in Cache Creek at critical times.

D. Municipal and Industrial Use

The District provides water from Clear Lake for municipal and industrial (M&I) purposes to 15 water suppliers and to one water supplier from the North Fork of Cache Creek under various agreements with Lake County and various entities and individuals. Some of these entities also receive water under their own littoral rights. The deliveries by the District for M&I uses provided are summarized in Table 22.

Table 22: Municipal/Industrial Water Uses (AF)

Municipal/ Industrial Use Type	2012	2013	2014	2015
M&I – Non Ag	3,656	3,734	3,625	2,618

The cities of Davis, Woodland, and Winters, University of California (U.C.) Davis and the smaller communities of Esparto, Madison, Capay, and others in the Capay Valley are within or adjacent to the District's exterior boundaries. However, the District does not supply water directly to these municipalities. Currently, the demands of these areas are met by groundwater supplies.

E. Groundwater Recharge Use

One of the ways that the District is committed to maintaining groundwater health is through aquifer recharge. The two types of groundwater recharge the District is engaged in is direct and in-lieu recharge. Direct aquifer recharge takes place when surface water from rain, lakes, streams, and irrigation seeps back into the aquifer. The District maintains a policy of not lining its irrigation canals and ditches. During the summer months, over 160 miles of canals and ditches, and many more miles of sloughs and drainage channels, are saturated with water that percolates into the aquifer. The District estimates an average of approximately 38,200 AF of recharge annually[1]. In an un-allocated year, approximately 25% of the water released from Clear Lake and Indian Valley Reservoir goes directly to groundwater recharge, and in allocated years, the groundwater recharge can reach up to 60% of the released water. In-lieu recharge takes place when farmers use surface water from Indian Valley Reservoir and Clear Lake; consequently, they do not need to pump as much water from the aquifers. To

[1] Tim O'Halloran, personal communication 2012

the extent the pumping of groundwater by the cities of Woodland and Davis creates a pumping depression; recharge also occurs from the east Yolo Bypass area.

By maintaining groundwater levels, the aquifers continue to provide regional drought protection without the costs of constructing additional dams. Use of the groundwater basin for storage also provides the benefit of avoiding losses to evaporation. Evaporation losses are especially significant in shallow bodies of water like Clear Lake, where typically half of the water stored is lost to evaporation each year.

F. Transfer and Exchange Use

The District has not participated in any transfers or water exchanges either into or out of the District.

G. Other Water Use

Indian Valley Reservoir water releases are used to generate clean hydroelectric power.

Section IV: Description of Quantity and Quality of the Water Resources of the Agricultural Water Supplier

A. Water Supply Quantity

1. Surface Water Supply

The District's surface water supplies consist of water stored in Clear Lake under pre-1914 rights, water stored in Indian Valley Reservoir under appropriative rights issued by the State Water Resources Control Board (SWRCB), pre-1914 rights from Cache Creek and North Fork Cache Creek, and riparian rights along Cache Creek and North Fork Cache Creek.

The District owns lands along Cache Creek and the North Fork of Cache Creek that have riparian rights. These rights are used for purposes of irrigation and hydroelectric power generation.

The District has an 1855 priority right to divert the natural flow of Cache Creek and a 1912 priority right to store waters in Clear Lake to elevation 7.56 feet Rumsey Gage for later release and beneficial use. These rights allow direct diversion of natural flow from Cache Creek and for the storage of 313,000 AF in Clear Lake. The District's right provides water for municipal purposes around Clear Lake under agreements with various water suppliers and Lake County. The District may release up to 150,000 AF of stored water from Clear Lake for use within its boundaries in accordance with the provisions of the Solano Decree.

The District holds appropriative Water Right Permits 12848 and 12849 issued by the SWRCB that collectively allow for direct diversion of up to 1,000 cfs from October 1 to June 30 of the subsequent year from Cache Creek and North Fork of Cache Creek, and for storage of up to 300,600 AF in Indian Valley Reservoir during the winter for later release. Collectively, these permits allow for direct diversion and storage of up to 431,000 AF per year for irrigation, domestic, municipal, recreational, and flood control purposes. The District also holds Permit 18295 which authorizes direct diversion from North Fork Cache Creek and storage in Indian Valley Reservoir for power generation.

The District releases water under its pre-1914 rights from Clear Lake into Cache Creek. The District also releases water from the Indian Valley Reservoir into the North Fork of Cache Creek. Those waters come together and are co-mingled with the District's pre-1914 and riparian rights for diversion from Cache Creek, more than 50 miles downstream of the two storage facilities.

Table 23 identifies the total quantity of surface water released by the District from Clear Lake and Indian Valley Reservoir. Although there is some inflow to Cache Creek below the two reservoirs, the quantity of this inflow is unmeasured and typically small during the irrigation season. Therefore, for the purposes of this AWMP, the water supplies from net inflow below the dams have been estimated as noted in Table 23.

Table 23: Surface Water Supplies

Source	2012	2013	2014	2015
Stored water release combined Clear Lake and Indian Valley Reservoir releases (AF)	216,106	187,629	0	84,155
Net Inflow Below the Dams [1]	-13,657	-11,856	3,930	-7,225
TOTAL	**202,449**	**175,773**	**3,930**	**76,930**

[1] Inflow below the dams is unmeasured. Therefore, for the purposes of this AWMP Net Inflow below the Dams has been estimated as the difference between the monthly releases from Clear Lake and Indian Valley Reservoir and the District's diversions at Capay Dam Negative values indicate depletions along Cache Creek exceed accretions below the dams .

Table 24 summarizes the restrictions on the District's various water sources; Cache Creek, Clear Lake, and Indian Valley Reservoir.

Table 24: Restrictions on Water Sources

Source	Restrictions	Name of Agency Imposing Restrictions	Operational Constraints
Cache Creek	Riparian and Pre-1914 Water Rights	Prior appropriation and use	
Clear Lake	Gopcevic and Solano Decrees	Superior Court, FERC	Storage filling and withdrawal limitations
Indian Valley Reservoir	Storage and Diversion Limitations	SWRCB	Permit terms and conditions

2. Groundwater Supply

The District does not own any groundwater wells or supply groundwater to its water users, nor does the District maintain records of groundwater pumped by privately owned groundwater wells. That said, the District does have an interest in maintaining the groundwater basin underlying its boundaries and in 2006, adopted its current Groundwater Management Plan (GWMP). The basis of the GWMP was the District's established Groundwater Monitoring Program, developed by Luhdorff & Scalmanini in 2004 as described in the Groundwater Monitoring Program Report. Additionally, the District works with its landowners to maximize their groundwater well operations in a conjunctive use fashion. A copy of the GWMP is available on the District's website at http://www.ycfcwcd.org/documents/gwmp2006final.pdf.

The District is contained within the Yolo, Solano, Capay Valley, and Colusa Subbasins of the Sacramento Valley Groundwater Basin as described by DWR Bulletin 118 - Update 2003 (DWR, 2003). Table 25 summarizes the information from Bulletin 118. In accordance with the Sustainable Groundwater Management Act, the District is actively engaged in working with the Water Resources Association in

Yolo County (WRA) and the private groundwater well pumpers to form a GSA and to develop a GSP for the region. Currently, a facilitator has been hired to coordinate the public outreach and education. It is anticipated that a Yolo GSA will be formed by the end of 2016.

Table 25: Groundwater Basins

Basin Name	Code
Yolo Subbasin*	5-21.67
Solano Subbasin	5-21.66
Colusa Subbasin	5-21.52
Capay Valley Subbasin	5-21.68

*DWR Bulletin 118 (DWR, 2003)

Figure 3 provides a map of the District's service area and underlying groundwater subbasins.

Groundwater is pumped by individual landowners. There are areas within the District that surface water cannot reach; these areas pump groundwater annually as their source of water. Areas within the District that do receive surface water rely on groundwater when surface water supplies are not adequate. Because Clear Lake and Indian Valley Reservoir are not operated for carryover storage, there have been years where there is no surface water supply. This occurred in 1977, 1990, and 2014 (YCFCWCD, 2015). Because groundwater is of such importance, the District collaborates with the cities and other entities to gather information on groundwater levels and quality. This information is contained in the Water Resources Information Database (WRID) managed by the District on behalf of WRA.

The District is working on a computer simulation of the aquifer in Yolo County. Data obtained from the Groundwater Monitoring Program, among other sources has been used to create a mathematical model of the aquifer. This half million dollar ($0.5 million) project, which is funded in part by the Local Groundwater Assistance Fund through AB 303, has been used for analyzing aquifer recharge and recovery on Cache Creek, and for simulating urban issues such as population growth and water supply during a drought. The District has been actively working with and supporting the cities of Woodland and Davis in the development of a major regional surface water treatment plant. The operation of this new treatment plant will help protect and sustain the region's groundwater resource.

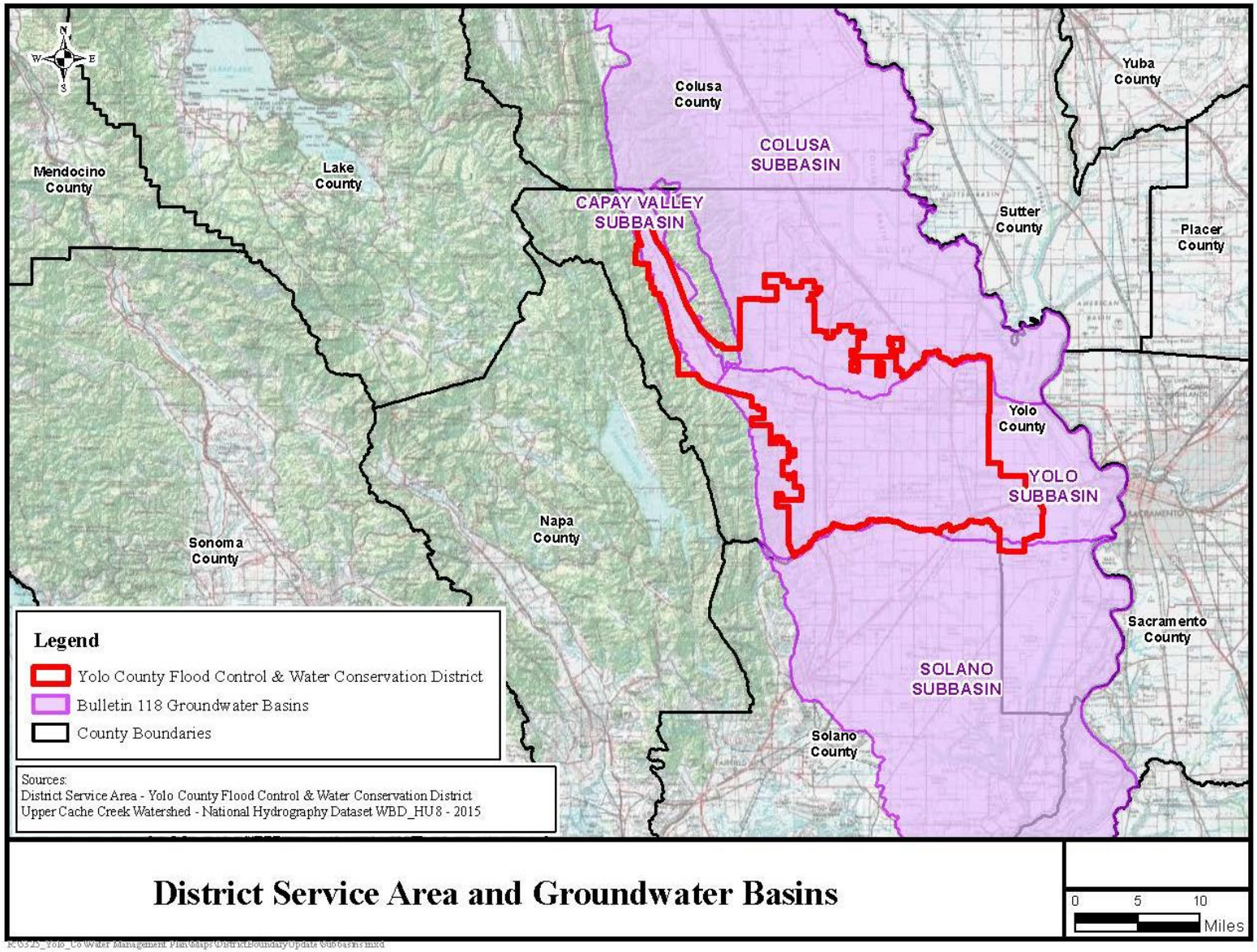
Through these programs and projects, the goal is to maintain or enhance groundwater quantity and quality. This will result in a reliable groundwater supply for beneficial uses and avoidance of adverse subsidence.

The District's Qualitative Basin Management Objectives include:

- Minimize the long-term drawdown of groundwater levels;
- Protect groundwater quality;

- Minimize changes to surface water flows and quality that directly affect groundwater levels or quality;
- Facilitate groundwater replenishment and cooperative management projects, including subsidence monitoring; and
- Work collaboratively with and understand the goals and objectives of entities engaged in groundwater management in surrounding areas.

Figure 3: Subbasin Map



3. Other Water Supplies

There are no other water supplies available to the District.

4. Drainage from District's Service Area

Essentially all water delivered by the District for irrigation is diverted or rediverted along Cache Creek in Capay Valley and at the District's Capay Diversion Dam. Operational spills occur at the District's Capay Diversion Dam and within the District's water delivery system. Operational spills that occur at Capay Dam in the summer will generally percolate to the groundwater basin before reaching Interstate 505. Operational spills that occur along the District's distribution system discharge into sloughs or drains and are recovered and reused by the District and individual landowners. The water diverted into the District discharges as surface flow through Cache Creek and the Willow Slough Bypass and as sub-surface flow under Putah Creek into Solano County.

With respect to groundwater flowing out of the District, the delivery of water by the Solano Irrigation District (SID) since the early 1960s, has served to alter groundwater gradients near Putah Creek. Prior to SID's delivery of water from the Solano Project, the groundwater gradients in the vicinity of Winters were in a south easterly direction. The delivery of water by SID relieved the overdraft that was occurring in Solano County, thereby significantly raising groundwater levels. The result was beneficial for Yolo County in that the groundwater gradients now tend to flow in a more easterly direction towards Davis.

In summary, although not quantified, the amount of surface water leaving the District is small and that which flows out via Cache Creek is high in boron. Thus, as a system, the efficiency of water use within the District is judged to be high.

B. Water Supply Quality

1. Surface Water Supply

All water delivered or made available by the District is from open reservoirs, natural channels, ditches, canals, conduits, and flumes. The District's water supply is generally considered of high quality for agricultural purposes. The District does not guarantee that water it delivers is potable or of a quality suitable for human consumption or for any other purpose.

Boron exists in the watershed and has been monitored by the District or its predecessor agencies since the 1930's. Boron is a naturally occurring element. Certain crops display boron sensitivity. Therefore, crop selection in certain areas may be affected. The dominant crops grown within the District are boron tolerant.

In addition to monitoring boron, the District has a program for monitoring various water quality parameters such as EC, turbidity, temperature, pH, dissolved oxygen, etc. The District also participates in regional water quality monitoring programs such as the Central Valley Irrigated Lands Program, Cache Creek Resource Management Plan, and Regional Board mercury monitoring.

Water quality data is contained in the District managed Water Resources Information Database (WRID) which is publicly accessible at wrid.facilitiesmap.com.

2. Groundwater Supply

Groundwater quality is variable in Yolo County. The deep aquifer (601-1,500 feet) tends to be of higher quality than the shallow aquifer (0-220 feet), while the intermediate aquifer (221-600 feet) is of intermediate quality. Electrical Conductivity (saltiness) and nitrate concentrations are increasing in both the shallow and intermediate aquifers. Boron is a problem in some areas. A complete detailed description of groundwater quality by depth zone and sub-basin is in the District's 2006 Groundwater Management Plan.

3. Other Water Supplies

There are no other water supplies available to the District.

4. Drainage from District's Service Area

Drainage leaves the District at Cache Creek, Willow Slough, and Willow Slough Bypass. During the storm season, storm water drainage from the District's service area can be large. During the irrigation season, the amount of irrigation drainage leaving the District is very small.

C. Source Water Quality Monitoring Practices

Surface Water – Responding to an increased regulatory environment, the District expanded its water testing program by adding more sampling sites and increasing the frequency and nature of data collection in its canals, test wells, and at dam sites in 2006. The District has continued to build a comprehensive database of water quality attributes such as temperature, sediments, algae, microbes, dissolved chemicals, oxygen, and more. As a member of the Sacramento Valley Water Quality Coalition, the District worked closely with the Yolo County Farm Bureau and Agricultural Commissioner.

Groundwater – The District has a groundwater quality monitoring program that samples ~30 wells periodically, when funds are available. This program started in 2004. District sampling is from the shallow aquifer (usually less than 220 feet deep). The shallow aquifer is often of low quality water; electrical conductivity (TDS), boron, nitrate, barium, aluminum, iron, manganese, hardness, and turbidity sometimes exceed recommendations for drinking or irrigation (YCFCWCD, 2006). The Groundwater Monitoring Program Report includes a table of wells in the Groundwater Quality Monitoring Network. Table 26 breaks down the District's surface and sub-surface supply and drainage water quality monitoring practices.

Table 26: Surface/Sub-Surface Supply and Drainage Water Quality Monitoring Practices

Water Source	Monitoring Location	Measurement/ Monitoring Method or Practice	Frequency
Cache Creek	8 locations	Grab samples delivered to laboratory	Monthly
Cache Creek	Capay Dam	Irrigated Lands Regulatory Program	6-8 times per year
Willow Slough	Various	Irrigated Lands Regulatory Program	6-8 times per year
Cache Creek	5 locations	Yolo County CCRMP	3-times per year
Cache Creek	Capay Dam	Continuous data logging sensors	Real time

Section V: Water Accounting and Water Supply Reliability

A. Quantifying the Water Supplies

The District's agricultural water deliveries occur during the irrigation, generally from April 1 through October 31. The following section describes and quantifies agricultural water supplies and uses during the irrigation season. Therefore, the District's deliveries for M&I purposes around Clear Lake described in Section III. D. are not included in the quantities below.

1. Agricultural Water Supplies

Table 27 through Table 30 show the March through October releases from Clear Lake and Indian Valley Reservoir for the Plan Cycle. As described previously, although there is some inflow to Cache Creek below the Clear Lake and Indian Valley Reservoir, the inflow is unmeasured and typically small during the irrigation season. For the purposes of this Plan, the Net Inflow below the Dams has been estimated as the difference between the monthly releases from Clear Lake and Indian Valley Reservoir and the District's diversions at Capay Dam. This calculation of net inflow accounts for all accretions and depletions below the reservoirs including deliveries by the District upstream of Capay Dam to lands outside the District's boundaries (see Table 32). Negative values for Net Inflow indicate depletions along Cache Creek exceeded accretions.

Table 27: 2012 Surface Water Supplies (AF)

Source	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Clear Lake Release	0	0	13,932	16,102	24,340	16,371	7,259	963	**78,967**
Indian Valley Reservoir Release	0	321	30,614	30,407	24,719	26,453	19,135	5,490	**137,139**
Net Inflow Below Dams	0	464	-5,016	-2,613	-3,968	-4,162	-268	1,906	**-13,657**
Total	**0**	**785**	**39,530**	**43,896**	**45,091**	**38,662**	**26,126**	**8,359**	**202,449**

Table 28: 2013 Surface Water Supplies (AF)

Source	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Clear Lake Release	0	1,163	13,157	21,337	22,861	16,878	9,785	0	**85,181**
Indian Valley Reservoir Release	13,681	18,135	20,285	13,817	16,311	13,380	6,829	10	**102,448**
Net Inflow Below Dams	-690	-214	-1,025	-3,250	-4,024	-2,654	-8	9	**-11,856**
Total	**12,991**	**19,084**	**32,417**	**31,904**	**35,148**	**27,604**	**16,606**	**19**	**175,773**

Table 29: 2014 Surface Water Supplies (AF)

Source	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Clear Lake Release	0	0	0	0	0	0	0	0	**0**
Indian Valley Reservoir Release	0	0	0	0	0	0	0	0	**0**
Net Inflow Below Dams	1,861	1,809	260	0	0	0	0	0	**3,930**
Total	**1,861**	**1,809**	**260**	**0**	**0**	**0**	**0**	**0**	**3,930**

Table 30: 2015 Surface Water Supplies (AF)

Source	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Clear Lake Release	303	326	9,255	5,138	6,766	6,834	1,848	216	30,686
Indian Valley Reservoir Release	0	0	18,650	18,759	13,884	1,478	634	64	53,469
Net Inflow Below Dams	3,640	1,169	-5,606	-1,372	-2,290	-601	-1,885	-280	-7,225
Total	**3,943**	**1,495**	**22,299**	**22,525**	**18,360**	**7,711**	**597**	**0**	**76,930**

2. Other Water Sources

The District does not own or operate any groundwater wells. Landowners supplement the surface water supplies from the District with groundwater from privately owned wells. As indicated by the quantities in Table 27 through Table 30, surface water supplies were limited during 2013 – 2015; therefore, the landowners pumped additional groundwater to supplement surface water supplies available from the District. The District does not collect or maintain records of quantities pumped at privately owned wells.

Table 31 summarizes the effective precipitation for lands within the District that received surface water deliveries from the District during 2012 – 2015[2]. The table includes the estimated effective precipitation calculated for the months that irrigation deliveries are typically made, March through October.

[2] Effective Precipitation is estimated as 60% of the average monthly growing season precipitation greater than 0.5 inch as recorded at the Davis, Woodland, and Esparto CIMIS stations multiplied by the non-rice and non-habitat crop acreage. Because of the nature of flooded areas, such as rice field and flooded habitat, irrigation-season precipitation increases the volume of water in the flooded basin, it typically flows through the fields; and therefore, is assumed to be unavailable to meet the crop water needs.

Table 31: Effective Precipitation (AF)

Month	2012	2013	2014	2015
March	0	1,270	112	0
April	2,126	353	178	65
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
October	361	0	0	0
TOTAL	**2,487**	**1,623**	**290**	**65**

B. Quantification of Water Uses

Table 32 shows the applied water based on the volume of surface water delivered to irrigation customers within the District's service area. The volumes shown are based on measurements used as the basis for determining customer water charges. The canal sales upstream of Capay Diversion Dam are to lands outside the District and are not included in the overall budget for in-District use. These quantities do not include water sales for M&I customers around Clear Lake.

Table 32: Canal Sales

Canal Sales (acre-feet)	2012	2013	2014	2015
Canal Sales above Capay Diversion Dam	4,355	2,968	4,144	4,316
In-District Canal Sales	147,606	120,067	583	37,507
Total Canal Sales below Reservoirs (from Table 15)	**151,961**	**123,035**	**4,727**	**41,823**

Table 33 summarizes the water uses within the District's service area. As described further in the table below, there are losses throughout the District's conveyance system to evaporation and percolation to the groundwater basin. These losses are estimated as the difference between monthly diversions at Capay Diversion Dam and monthly canal sales. As described in Section III.E., the District maintains a policy of not lining its irrigation canals and ditches to promote recharge of the groundwater basin. Groundwater recharge has been estimated to range between 25 – 60% of the water released from Clear Lake and Indian Valley Reservoir. By maintaining groundwater levels, the aquifers continue to provide regional drought protection without the costs of constructing additional dams; therefore, percolation to the groundwater basin is a benefit to the District and its customers.

Table 33: Quantify Water Use

Water Uses		2012	2013	2014	2015
Crop Water Use (from Table 16)					
1	Crop evapotranspiration	117,995	144,617	6,767	78,281
2	Leaching	4,919	5,154	210	3,145
3	Cultural practices	4,386	3,051	0	208
Conveyance System and Environmental Use					
4	Estimated percolation to groundwater and evaporation from conveyance system[1]	54,843	55,706	3,347	39,423
Municipal and Industrial					
5	M&I non-ag[2]	0	0	0	0
6	Industrial	0	0	0	0
	Subtotal	**182,143**	**208,528**	**10,324**	**121,057**

[1]Estimated percolation to groundwater and evaporation from conveyance system are estimated as the monthly quantities diverted at Capay Diversion Dam (see Table 27 through Table 30) less the quantities delivered to In-District Canal Sales (see Table 32).

[2]As identified in Section III.D., M&I use deliveries by the District occur at Clear Lake above the dam. Because these deliveries are not made from the release of water from the District's reservoirs they have not been included in this table nor are they included in the District's water budget.

As shown in Table 34 and Table 35 there is minimal water leaving the District and there are no irrecoverable losses from the District.

Table 34: Water Leaving the District

Drain Water	2012 – 2015
Surface drain water leaving the service area	Minimal
Sub-surface drain water leaving the service area	Minimal

Table 35: Water Irrecoverable Losses

	2012 – 2015
Flows to saline sink	None
Flows to perched water table	None

C. Overall Water Budget

Table 36 summarizes the District's water supplies for the Plan Cycle (2012 – 2015). As discussed above, water supplies include water released from storage in Clear Lake and Indian Valley Reservoir which are located approximately 50-miles upstream of the District's service area and estimates of inflow below the dams. Water uses are described in Section III of this Plan. The effective precipitation is based on CIMIS rainfall data for stations at Davis, Woodland, and Esparto. Effective precipitation was estimated only for the lands within the service area that received surface water from the District during the Plan Cycle.

Table 36: Quantification of Water Supplies for 2012 – 2015 Plan Cycle

	Water Supplies	2012	2013	2014	2015
1	Surface water (summary total from Table 27 through 30)	202,449	175,773	3,930	76,930
2	District groundwater	0	0	0	0
3	Effective precipitation (summary total from Table 31)	2,487	1,623	290	65
4	Water purchases	0	0	0	0
	Subtotal	**204,936**	**177,396**	**4,220**	**76,995**

Table **37** summarizes the District's water budget for the 2012 – 2015 Plan Cycle. The "Additional Percolation to Groundwater" includes percolation from farms, canals, and ditches within the District's service area and unaccounted for errors in assumptions and calculations used to estimate water demand. Due to reduced surface water supplies during 2013 – 2015, landowners pumped an undetermined quantity of groundwater from privately owned wells to supplement surface water deliveries in order to meet crop water needs. Negative values indicate insufficient surface supplies to meet crop water needs. Positive values indicate percolation to groundwater in addition to the estimated quantities shown in Table 33.

Table 37: Water Budget Summary

Water Accounting		2012	2013	2014	2015
1	Subtotal of Water Supplies (Table 36)	204,936	177,396	4,220	76,995
2	Subtotal of Water Uses (Table 33)	182,143	208,528	10,324	121,057
3	Drain Water Leaving Service Area (As shown in Table 34 and Table 35 there is minimal water leaving the District and there are no irrecoverable losses from the District. Table 34)	0	0	0	0
4	Additional Seepage to Groundwater Basin[1]	**22,793**	**-31,132**	**-6,104**	**-44,062**

[1]*Additional Percolation to Groundwater* in this table is the closure term in the mass water balance. As such, in addition to any percolation to the groundwater basin, the quantity shown includes unaccounted for drain water outflow, any errors in assumptions used in calculations or estimated uses such as crop water use (ET), effective precipitation, evaporation, groundwater recharge, etc. A positive value indicates assumed percolation to groundwater greater than groundwater pumping. A negative value indicates insufficient surface water supplies and groundwater pumping from privately owned wells.

D. Water Supply Reliability

District records show that on a long term average (post Indian Valley Reservoir construction in 1976) the District has full water supply reliability seven years out of 10. The other three years out of 10, the available water supply is allocated in varying degrees ranging from zero (0) to approximately 80% of full supply. In years of allocation, the District's water customers adapt by using a variety of methods; increased groundwater pumping, crop shifting, and land fallowing. Table 38 shows the total monthly releases by the District from Clear Lake and Indian Valley Reservoir for downstream uses for the 13-year period 2003 through 2015.

Table 38: Total Releases for Downstream Use from Clear Lake and Indian Valley Reservoir – 2003-2015 (AF)

Year	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
2003	0	3,135	27,225	46,064	43,792	32,211	21,843	10,650	184,920
2004	725	26,596	46,946	51,169	47,803	34,418	21,958	6,142	235,757
2005	0	8,387	38,727	40,291	44,457	34,989	19,750	13,981	200,582
2006	0	0	21,071	45,370	52,656	42,202	24,630	8,685	194,614
2007	10,901	33,176	46,932	52,585	48,755	42,540	27,049	7,160	269,098
2008	3,700	35,903	43,424	47,399	46,566	39,555	21,776	998	239,321
2009	54	986	6,748	22,036	25,249	5,726	1,722	0	62,521
2010	0	52	31,629	37,244	48,702	37,941	15,108	365	171,041
2011	0	5,107	33,448	33,499	46,510	37,453	19,863	3,232	179,112
2012	0	321	44,546	46,509	49,059	42,824	26,394	6,454	216,107
2013	13,681	19,298	33,442	35,154	39,172	30,258	16,614	10	187,629
2014	0	0	0	0	0	0	0	0	0
2015	303	326	27,905	23,897	20,650	8,312	2,482	280	84,155

Section VI: Climate Change

Based on a recent study by the Stockholm Environmental Institute in collaboration with U.C. Davis and the District, climate change will likely result in progressively warmer and drier conditions within the District's service area (Mehta et al., 2013)[3]. These changes are expected to result in increased demands for irrigation water. Because spring precipitation is projected to increase with climate change, the surface water supplies available from the District's reservoirs is not expected to change significantly. However, the limits on the District's storage releases, particularly from Clear Lake, mean that increased demands must be met by increased groundwater pumping, changes in cropping patterns, or a combination thereof.

The District is committed to monitoring key indicators of climate change that affect the hydrology of the Cache Creek watershed and growing conditions in the District's service area and to adapting its water management practices to respond to changes as they become evident. In addition to adaptive management, implementation of water conservation and conjunctive use management efforts, including the District's SCADA system, are intended to help the District and its customers prepare for the impacts of climate change both by increasing the efficiency of water use and by improving operational control within the District. Improving operational control enables the District to exercise adaptive management in its water deliveries.

[3] Vishal K. Mehta, Van R. Haden, Brian A. Joyce, David R. Purkey, Louise E. Jackson, 2013. Irrigation demand and supply, given projections of climate and land-use change, in Yolo County, California. Agricultural Water Management 117 (2013) 70–82

Section VII: Water Use Efficiency Information

A. EWMP Implementation and Reporting

EWMPs Implemented/Planned/Ongoing

EWMP No. 1 – Water Measurement

Diversions and releases from Clear Lake and Indian Valley Reservoir are measured by the District and the U.S. Geological Survey. Diversions and re-diversions of water from Cache Creek are measured by the District at Capay Dam and various other locations.

Field deliveries are measured by the District using various devices and methods. These measurements are used for volumetric billing of the District's customers. As identified previously in this AWMP the District believes the field or turnout delivery measurements to be within the accuracy requirements of the water measurement regulation. The District has developed a Certification Plan in accordance with the provisions of the water measurement regulation which it intends to implement over the next five years. As required by the measurement regulation, the report to be prepared to verify the accuracy of the District's field or turnout measurements will be certified by a registered engineer and will include a description of the District's water measurement best professional practices, documentation of the conversion of water measurements to volume, and a corrective action plan for devices that are found not to be within the appropriate accuracy requirement.

Due to the historic drought, there were limited deliveries in 2013 and 2015 and no surface water available in 2014. This severely impacted the Plan of Implementation that was proposed in the 2013 AWMP. However, despite the drought, the District began implementing the Plan by conducting an inventory of gravity flow measurement devices as well as beginning to install 30 magnetic meters throughout the system at non-gravity (pump) delivery sites.

A copy of the updated Water Measurement Certification Plan is attached as Appendix F. The District intends to complete implementation of the plan prior to the next Plan Cycle.

EWMP No. 2 – Volumetric Pricing (Implemented)

The District bills its customers by the volume delivered in AF. This EWMP is fully implemented.

EWMP No. 3 – On-Farm Irrigation Capital Improvements (Ongoing)

To facilitate the transition of its customers to micro/drip irrigation systems, the District is retro-fitting field turnouts with sumps and screening devices. The typical cost of these improvements is approximately $12,000 per turnout. Since 2012, nine of these new structures have been installed at the District's expense. The District intends to continue this program.

EWMP No. 4 – Incentive Pricing Structure (Implemented)

The District has developed and implemented an innovative tiered rate structure in 2007. This tiered rate structure takes into account the surface water supply availability of each hydrologic season. This rate

structure promotes conjunctive use water management by incentivizing groundwater use during times of limited surface water availability. This EWMP is fully implemented.

EWMP No. 5 – Infrastructure Improvements (Implemented/Ongoing)

The District's water delivery infrastructure was originally built over 100-years ago. The District has developed a capital improvement program to address the sustainability and modernization of its water delivery system. This capital improvement program includes both major structures (dams and reservoirs) and minor infrastructure related to its distribution system (canals, laterals, check structures, field turnouts, and bridges and crossings). Following is a list of some of the improvements made over the past 10-years:

- Capay Dam Apron Improvement Project – $4.5 million
- Canal and lateral check structures – approximately $1.2 million
- Field delivery turnouts – approximately $0.6 million
- Other – Bridges, crossings roads – approximately $0.4 million

This does not include the significant automated control improvements listed in EWMP No. 9. These infrastructure improvements are an ongoing effort by the District.

EWMP No. 6 – Order/Delivery Flexibility (Implemented/Ongoing)

The District officially has a 24-hour delivery schedule. Over the past few years, the District has been working with it water customers to accommodate more flexible deliveries. The District has supplied its ditch tenders with cell phones and direct radio connection to its SCADA system from their vehicles to accommodate delivery flexibility. This is part of an ongoing process to improve water service and efficiency within the District.

EWMP No. 7 – Supplier Spill and Tailwater Systems (Planned)

The District has purchased property for a planned mid-lateral reservoir. This reservoir will enable tailwater and spill recovery improvements. The reservoir will also allow for order delivery flexibility as described in EWMP No. 6 and will also result in reduced on-farm runoff or tailwater. Mid-lateral reservoirs will result in flexibility and efficiency improvements. The property was purchased for a cost of approximately $170,000. The cost to construct the mid-lateral reservoir is estimated to be approximately $0.5 million. Other mid-lateral reservoir sites are to be actively investigated.

EWMP No. 8 – Conjunctive Use (Implemented/Ongoing)

The District has historically encouraged conjunctive use by its customers. Most District water customers have access to private groundwater sources. This allows each customer to choose to use surface or groundwater based on availability and cost. The District uses multiple strategies to encourage conjunctive use including but not limited to the following:

- Unlined canals, by District policy, promotes groundwater recharge
- Tiered pricing rate structure to incentivize conjunctive water use
- Wheeling of private groundwater through the District's distribution system
- Banking of private groundwater by exchange with surface supply

- Pilot groundwater pumping incentive program (2007 & 2008)
- Investigation for installation of District owned wells
- Ongoing seasonal groundwater monitoring program with more than 150 volunteer well owners
- Real time monitoring of water levels in a select number of wells
- Public education campaign making groundwater monitoring database publicly available on the internet

Most of these efforts are ongoing and part of the District's comprehensive conjunctive use program.

EWMP No. 9 – Automated Canal Controls (Implemented/Ongoing)

The District has been building out its SCADA system over the past 10-years and intends to continue to build upon the existing improvements in the future. The following is a list of improvements that have been implemented and contribute to improved water delivery service and operational efficiency.

- SCADA Communication Backbone – 4.9gHz Broadband Ethernet radio system that allows for unlimited expansion
- Lateral Canal Heading Control and Monitoring
- Lateral Spill Monitoring and Reporting
- Environmental Water Quality Monitoring
- Real Time Groundwater Level Monitoring
- SCADA System Quality Control and Maintenance Program
- Main System Controls – Reservoir releases, hydroelectric monitoring, headwork diversion controls
- Main Canal Check Structure Level / Flow Control and Monitoring

To date the District has invested approximately $2.5 million in developing, implementing, and maintaining the SCADA system. The District intends to continue to build out the SCADA system and invest at a similar rate into the future.

EWMP No. 10 – Customer Pump Test/Evaluations (Implemented/Ongoing)

The District provides a flow measurement service to its customers. Pipe flow is measured with a strap-on acoustic Doppler flowmeter (GE Sensing PT-868) for well or booster pump applications. Water customers use the flow data to calibrate their own meters, gauge how much a well is delivering to the canal or a field, and create RPM vs GPM curves for diesel driven pumps. More than 75 customer service calls have been answered since 2009.

EWMP No. 11 – Water Conservation Coordinator (Implemented)

The District has named Tim O'Halloran and Max Stevenson as Co-Water Conservation Coordinators. This EWMP is fully implemented.

EWMP No. 12 – Water Management Services to Customers

The District provides access to CIMIS on its website. CIMIS data is used for irrigation scheduling. The District website provides daily updates to allocations of available water to individual customers during

allocated years, monthly water quality data, and access to the Yolo County-wide groundwater monitoring database. The ability for customers to order water online is being implemented.

On request, the District provides pumpflow (both groundwater wells and surface water booster pumps) measurement to individual customers.

When possible, the District provides flexible water delivery run times as an exception from the usual 24-hour schedule. This allows for increased on-farm irrigation efficiency.

Periodically during the year, the District convenes water customer meetings for coordination and strategic planning purposes.

EWMP No. 13 – Identify Institutional Changes (Implemented/Ongoing)

The District has implemented a number of institutional changes to improve operation flexibility and supply including but not limited to the following:

1. Development and adoption of a tiered conjunctive use water rate schedule based on available storage on April 1 of a given year. This rate schedule takes into account individual year hydrologic conditions, and encourages the appropriate use of groundwater.
2. Development and adoption of a policy to allow private individuals to wheel (convey) groundwater in the District's canal system thereby increasing the flexibility of the supply available to its users.
3. Development and adoption of an accounting system to allow customers to bank (by exchange) groundwater in the District's reservoir system.

Estimate of Water Use Efficiency Improvements

As described previously, the District has been and continues to implement numerous projects to improve the efficiency of its water operations and water use. While many of these projects have resulted in more efficient water use within the District water use saving from these improvements have not been quantified at this time. It is also important to note that the District is located in an essentially closed basin. Seepage from the District's conveyance and drainage systems as well as deep percolation from agricultural lands serves to recharge the groundwater basin. The District intends to evaluate results of the implementation of the various EWMPs described above and will provide additional information as to the estimated water use efficiency improvements in the next update of this AWMP.

B. Documentation for Non-Implemented EWMPs

As identified in Table 39, the District has determined that conditional EWMP Nos. 1, 2, and 14 are not applicable to the District or its service area. Table 40 provides the justification for the District's determination.

Table 39: Schedule to Implement EWMPs

EWMP	Implementation Schedule	Finance Plan	Budget Allotment*
Critical			
1 – Water Measurement**	Implemented 2016 – 2020		$250,000
2 – Volume-Based Pricing	Implemented		
Conditional			
1 – Alternate Land Use	Not Applicable - See Table 40		
2 – Recycled Water Use	Not Applicable - See Table 40		
3 – On-Farm Irrigation Capital Improvements	Ongoing	Annual Capital Budget	$20,000/yr
4 – Incentive Pricing Structure	Implemented	N/A	N/A
5 – Infrastructure Improvements	Ongoing	Annual Capital Budget, Grants and Loans	$900,000/yr plus grants
6 – Order/Delivery Flexibility	Ongoing	Annual Expense Budget	Variable staff time
7 – Supplier Spill and Tailwater Systems	2014-2017	Annual Capital Budget, Grants and Loans	See EWMP #5
8 – Conjunctive Use	Ongoing	Annual Expense Budget	$169,000/yr includes regional contributions from Yolo WRA
9 – Automated Canal Controls	Ongoing (SCADA, etc)	Annual Capital Budget, Grants and Loans	$1.5 million WUE grant project 2014-2016 $2.3 million Drought Emergency Grant 2015-2017
10 – Customer Pump Test/Eval.	Ongoing (flow testing)	Annual Expense Budget	$20,000 staff time/yr
11 – Water Conservation Coordinator	Implemented	Annual Expense Budget	$20,000 staff time/yr
12 – Water Management Services to Customers	Ongoing (CIMIS) STORM Water Accounting Program, GISDirect	Annual Expense Budget	$20,000 staff time/yr + $8,200/yr license fees
13 – Identify Institutional Changes	Ongoing	Annual Expense Budget	$20,000 staff time/yr
14 – Supplier Pump Improved Efficiency	Not Applicable - See Table 40		
Grand Total all EWMPs			**$10,305,000**

Notes:
*Budget allotment amounts are approximate and vary from year to year. Values included in Table 39 represent 2015 expenditures and multi-year grants awarded. The total budget covers the 5-year plan of implementation.
** Critical EWMPs 1 and 2 are considered fully implemented. The Implementation Schedule, Finance Plan, and the Budget Allotment costs refer to the Measurement Certification Program required in accordance with the Measurement Regulation.

Table 40: Non-Implemented EWMPs

		(check one or both)		
Conditional EWMP #	**Description**	**Technically Infeasible**	**Not Locally Cost-Effective**	**Justification/Documentation***
1	Alternate Land Use	X		District lands do not include drainage problem areas or crops grown on inappropriate soil types. Therefore, this EWMP is not applicable to the District.
2	Recycled Water Use	X		Recycled water not available to the District. Therefore, this EWMP is not applicable to the District.
14	Supplier Pump Improved Efficiency	X		The District does not own or operate diversion or delivery pumps. All diversions by the District are by gravity. Deliveries are by gravity or customer owned pumps. Therefore, this EWMP is not applicable to the District.

Section VIII: Supporting Documentation

The following supporting documentation is attached as Appendices:

Appendices

Appendix A:	Notice of Hearing
Appendix B:	Board Resolution Adopting AWMP
Appendix C:	Rules and Regulations
Appendix D:	2015 Rate Schedule
Appendix E:	Water Order Form
Appendix F:	Water Measurement Certification Plan (Compliance Program)
Appendix G:	Agricultural Water Management Plan Checklist

Appendix A

Notice of Hearing

The following notice of public hearing was published in the *Daily Democrat* on January 20 and January 27, 2016.

NOTICE OF PUBLIC HEARING

Notice is hereby given that the Yolo County Flood Control and Water Conservation District staff has updated the Agricultural Water Management Plan and that the Board of Directors will conduct a hearing to consider the Plan and its recommendation.

Place: Yolo County Flood Control and Water Conservation District
34274 State Highway 16
(Corner of Highway 16 and Road 94B)
Woodland, CA 95695

Date & Time: Tuesday, February 2, 2016 at 7:15 p.m.

The document is available on the District's website at www.ycfcwcd.org and at the District office, as identified above.

For further information contact Max Stevenson at (530) 662-0265.

Appendix B

Board Resolution Adopting AWMP

RESOLUTION NO. 16.01

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE YOLO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT TO ADOPT AN AGRICULTURAL WATER MANAGEMENT PLAN

WHEREAS, the Yolo County Flood Control and Water Conservation District ("District") has prepared an Agricultural Water Management Plan (Plan);

WHEREAS, the Plan was prepared pursuant to California Water Code Section 10826 and satisfies Sections 10820 – 10853;

WHEREAS, on February 2, 2016, the Board of Directors held a public hearing to adopt the Plan and for the purposes of receiving comments on adopting the plan;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Yolo County Flood Control and Water Conservation District that the Plan has been adopted.

PASSED AND ADOPTED by the Board of Directors of the Yolo County Flood Control and Water Conservation District on the day of February 2, 2016, by the following vote:

AYES:	Directors Barth, Brice, Kimball and Vink
NOES:	None
ABSTAIN:	None
ABSENT:	Director Rominger

Signed and approved by me this 2nd day of February, 2016.

Erik Vink, Vice Chair

Attest:

for Tim O'Halloran, Secretary

Appendix C

Rules and Regulations

YOLO COUNTY

FLOOD CONTROL &
WATER CONSERVATION
DISTRICT

Effective water resource management

RULES AND REGULATIONS

As Amended by the
Board of Directors

1 March 2003

TABLE OF CONTENTS

RULES AND REGULATIONS
GOVERNING DISTRIBUTION AND USE OF WATER
AND FIXING RATES AND CHARGES FOR WATER SERVICE
BY THE YOLO COUNTY FLOOD CONTROL AND
WATER CONSERVATION DISTRICT
(Adopted 3/2/93)
(As amended through 3/2002)

The Board of Directors of the Yolo County
Flood Control and Water Conservation District
do ordain as follows:

I. DEFINITIONS

The terms below will have the following respective meanings unless the context of the Rules and Regulations indicates otherwise.

Agricultural Service - the furnishing or diverting of District water for use primarily in the commercial production of agricultural crops or livestock, including incidental domestic use thereon.

Applicant - the individual or entity applying to the District for water service or structure addition.

Board - the Board of Directors of the District.

District - the Yolo County Flood Control and Water Conservation District. Unless otherwise specified, all acts or determinations by the District permitted or required by these rules and regulations will be performed or made by the General Manager of the District.

District Water - the water, which the District has the right to store, divert, deliver and/or sell for use.

Flat Rate Service - the provision of District water by unmeasured quantities.

Manager - the General Manager of the District or any person designated by the General Manager to perform the acts or to make the determinations permitted or required under these rules and regulations to be made by the General Manager.

Measured Service - the provision of District water by measured quantities.

Measuring Device - the device used for measuring water, a venturi, meter, weir, flume, meter gate, or other standard device.

Nonagricultural Service - the furnishing or diverting of District water for other than agricultural service.

Premises - the integral property or area, including improvements thereon, to which District water service is or is to be provided.

Service Area - all lands within the District's boundary as it may change from time to time and lands upstream of the Cache Creek Dam along Cache Creek and around Clear Lake, as determined by the Board from time to time.

Turnout - a structure, pump or other approved device to deliver or divert District water from a District canal or reservoir or natural channel into facilities owned or controlled by other than the District.

Water System - all dams, reservoirs, pumps, canals, channels, flumes, tunnels, measuring devices and other pertinent works, facilities and properties and right-of-ways owned, operated or used by the District for the purpose of storing, diverting or delivering District water.

Water User - those receiving water service from the District or its authorized agent.

II. MUNICIPAL WATER SERVICE

Water service for municipal use will be provided under water service contracts that specify, among other things, the maximum quantity of water to be diverted, the diversion and measurement of water, the rate to be paid, the provisions for increases in rates, the time and the method of payment, and the term of agreement.

III. APPLICATIONS

A. APPROVAL OF APPLICATIONS REQUIRED, POINT OF DELIVERY OR DIVERSION.

District water service or the addition or change of structure to allow such water service will be provided or permitted only upon District approval of written applications on forms prescribed by the District as required below. Each application will be signed by the applicant and by the owner of the property upon which service is requested if such owner is not the applicant, unless the requirement of execution by the land owner is waived by the District upon satisfactory establishment of credit under Section V.A. Each application will specify the applicant's desired point or points of delivery or diversion from the water system. In its approval of such application, the District will specify the approved point or points of delivery or diversion, and also the point of measurement for measured water service.

B. APPLICATIONS FOR AGRICULTURAL SERVICE

1. During Times of Short Supply

a. Deadline for Filing Applications.

Applications are due no later than February 7 of each year (or the first Monday following February 7, if February 7 falls on a weekend), or a later date if the District extends the filing deadline. By the due date, each applicant desiring agricultural service will have an application on file, whether hand delivered or mailed to the District office (34274 State Highway 16, Woodland, CA 95695), stating (a) the number of irrigable acres of each field for which irrigation service is desired, (b) an accurate location on an assessor's parcel map of the boundaries of the land to be irrigated, (c) the crop or crops growing or to be grown, (d) the landowner's name if different from the applicant, (e) the assessor's parcel number of the property, and (f) any other information required by the District.

b. Application Acreage Deposits.

Each application will be followed by an acreage deposit, due no later than March 15 (or the first Monday following if March 15 is on a weekend), or by an earlier date if water delivery is requested by the applicant prior to March 15. The application will not be considered approvable until such deposit is received. Such deposit is a guaranteed minimum water purchase for the season and a credit on the applicant's aggregated water bill if District water is available for delivery, whether or not the applicant actually takes any water. If the acreage deposit is less than the amount of the minimum charge as set by the Board from time to time, the applicant will pay the minimum charge. Any deposit check returned to the District for lack of sufficient funds for payment or for any reason other than bank error will be treated as if it were not received.

See the rate schedule at the end of this document. The Board may modify the rate schedule from time to time.

c. Transfers and Cancellation of Applications and Deposits.

Applications or portions thereof may be transferred from one applicant to another, acre for acre, if accomplished not later than June 1 and only if approved by the District. Applications or portions thereof may also be canceled not later than March 15, except on parcels that have already used water. Acreage deposits relating to applications that are canceled as permitted above will be credited to the applicant's water account as an independent payment rather than as a portion of the guaranteed minimum purchase for the season or will be refunded at the applicant's option. Other than as provided above, applications may not be canceled and the District will retain acreage deposits whether or not the applicant actually takes any water.

d. Late Applications.

No applications will be accepted after the filing deadline except as deemed proper by the General Manager.

e. Lands Outside the District.

Lands outside the District will be served on a surplus water basis only. In the event that those lands are unable to be serviced the acreage deposit will be returned.

2. During Times of Full Supply.

a. Deadline for Filing Applications.

Applications are due no later than March 15 of each year (or the first Monday following March 15, if March 15 falls on a weekend), or a later date if the District extends the filing deadline. By the due date, each applicant desiring agricultural service will have an application on file, whether hand delivered or mailed to the District office (34274 State Highway 16, Woodland, 95695), stating (a) whether the service desired is flat rate or measured agricultural service, (b) the number of acres of each field for which irrigation service is desired, (c) an accurate location on an assessor's parcel map of the boundaries of the land to be irrigated, (d) the crop or crops growing or to be grown, (e) the landowner's name if different from the applicant, (f) the assessor's parcel number of the property, and (g) any other information required by the District.

b. Application Acreage Deposits.

An acreage deposit will accompany each application. The application will not be considered filed until such deposit is received. Such deposit is a guaranteed minimum water purchase for the season and a credit on the applicant's aggregated water bill if District water is available for delivery, whether or not the applicant actually takes any water. If the acreage deposit is less than the amount of the minimum charge, the applicant will pay the minimum charge.

See the rate schedule at the end of this document. The Board may modify the rate schedule from time to time.

c. Transfers and Cancellation of Applications and Deposits.

Applications or portions of them may be transferred from one applicant to another, acre for acre, if accomplished not later than June 1 and if approved by the District. Applications or portions of them may be canceled not later than May 1. Acreage deposits relating to applications that are canceled as permitted above will be credited to the applicant's water account as an independent payment rather than as a portion of the guaranteed minimum purchase for the season or will be refunded at the applicant's option. Other than as provided above, applications may not be canceled and the District will retain acreage deposits whether or not the applicant actually takes any water.

d. Late Applications, Penalty.

In the event that application for water service is filed subsequent to March 15, (or the first Monday following March 15, if March 15 falls on a weekend), or a later date if the District extends the filing deadline, a penalty charge in the amount set by the Board from time to time will be paid when the application is made, and this charge will not be a credit on the water bill of the applicant. The minimum penalty will be equal to the minimum set for any application. No application filed after May 1 will be accepted unless the District determines that water will be available for the balance of the irrigation season surplus to the needs of lands covered by applications filed on or before May 1.

C. APPLICATIONS FOR AGRICULTURAL STRUCTURE ADDITIONS OR CHANGES.

Applications for agricultural structure additions or changes will not be approved, if, in District's determination, the requested addition or change will interfere with delivery of water to other Water Users or there is insufficient water or capacity in the water system to satisfy the service requested in the application. If such application is approved, the District will determine whether the work will be performed by (a) the District or under its direction, or (b) by the applicant, pursuant to plans approved by the District.

Before construction is begun by the District or under its direction, the applicant will execute a repayment contract with the District upon approval by the General Manager or the applicant will deposit the amount estimated by the District as the cost of the work and the structure. The adjustment between the estimated and actual cost payable by the applicant will be made within 90 days after completion of construction.

1. Additions Involving Canal Construction or Extension.

If the approved application is for agricultural service additions requiring canal construction or extension, the cost or any portion of it may be paid by the District if, in it's judgment, the annual ongoing use of water on the lands to be served will justify the expenditure. Applicants for such additions may be required to pay all or a specified part of the cost of such addition as a condition to approval of the application. The District may form a zone of benefit for this purpose. Persons applying for service from such additions who have not made a deposit to apply on the cost thereof may be required to pay the District their fair share of the reasonable cost of such addition before receiving service, which sum will, unless otherwise provided, be refunded by the District ratably to the participants who have previously made such deposits with the District. If the District is unable, with reasonable effort in the District’s determination, to locate the participants, the sum will default to the District.

D. APPLICATIONS FOR NONAGRICULTURAL SERVICE AND STRUCTURE ADDITIONS OR CHANGES.

1. For Service Through Existing Service Connection or Turnout.

Any applicant requesting nonagricultural service through an existing service connection or turnout where measuring devices are already installed will apply to the District for such service specifying whether flat rate or measured service is desired and will pay a turn on fee.

See the rate schedule at the end of this document. The Board may modify the rate schedule from time to time.

2. For Change in Ownership, Tenancy, or Service.

A new application must be made and a turnout fee paid in the amount set from time to time by the Board by the applicant on any change in nonagricultural service or the Water User as described in the application.

3. For Service Requiring the Installation of Additional Structures.

Any applicant requesting nonagricultural service requiring the installation of a new service connection, turnout or measuring device will apply to the District for such service.

4. For Change in Location of Service or Size of Meter.

Any Water User desiring to change the location of any nonagricultural water service or the size of any service connection or measuring device that has been installed will make application to the District for such installation.

5. Approval Dependent of Sufficient Capacity and Water.

No application for new nonagricultural service or structure addition or change will be approved if, in the District's determination, there is insufficient District water and/or insufficient capacity in the water system to satisfy the requested service, or if the requested addition or change will interfere with delivery of water to other Water Users.

6. Installation of Additional or Changed Structures.

Except as otherwise specifically approved by the Board, the applicant will be responsible for installing the additional or changed facilities under Sections III.D.3. and III.D.4. Such installation will be in accordance with plans approved by the District prior to commencement of installation. The District will not review plans for approval until the applicant has paid a fee as determined by the District to cover its cost of plan review and inspection of installation.

IV. TEMPORARY SERVICE

The District may, if no undue hardship to its Water Users will result there from, furnish temporary service, by contract, not exceeding three years, to contractors, road builders, or any purpose approved by the District under the following conditions:

(1) The applicant may be required to install or at the District's discretion pay the District in advance, the cost as estimated by the District of installation and removal of the facilities necessary to furnish the service, subject to adjustment when the actual cost becomes known.

(2) If the duration of service is to be not more than one month, the applicant may also be required to deposit a sum of money equal to the estimated bill, subject to adjustment in accordance with the actual bill due upon discontinuance of service.

(3) If the duration of service is to exceed one month, the applicant may also be required to establish his credit in the manner prescribed in Section V.

(4) Rates for temporary service will be those prescribed for measured service in Rule VI, with a minimum charge based on one-half acre-foot per day or part thereof for any day of water use for such temporary service.

V. ESTABLISHMENT AND REESTABLISHMENT OF CREDIT AND DEPOSITS

A. ESTABLISHMENT OF CREDIT.

Each applicant for service or structure addition will be required to establish credit before the applicant's application is approved. Credit is established when, in the discretion of the District, any one of the following conditions is met:

(1) The owner of the property upon which service is requested enters into a contract with the District providing that payment of the cost of the service or structure addition is secured by, and can be enforced against, such property.

(2) Applicant makes a deposit in cash (hereinafter referred to as "credit deposit") to secure payment of applicant's water bill as prescribed in Section V.C.

(3) Applicant furnishes a guarantor satisfactory to the District to secure payment of applicant's water bills.

(4) Applicant has been a Water User for a period of time satisfactory to the District and has timely paid all water bills to the satisfaction of the District.

B. REESTABLISHMENT OF CREDIT.

An applicant who within the previous 24 months had (a) water service discontinued or service refused because of nonpayment of District bills, or (b) had an unpaid balance for water service for a period of 90 days, or (c) had an unpaid balance for water service as of December 31 of the previous year, will be required to reestablish credit by depositing the amount prescribed in Section V.D. as a credit deposit, except as otherwise specifically determined by the Board.

C. DEPOSITS TO ESTABLISH CREDIT.

For all service, the amount of credit deposit is the estimated maximum monthly bill for the service desired, as determined by the District. Such credit deposit is a credit to the Water User's account for water service and to be used after depletion of the required acreage deposit.

D. DEPOSITS TO REESTABLISH CREDIT.

For all service, the amount of credit deposit to reestablish credit is twice the estimated maximum monthly bill for the service desired as determined by the District. In addition, all unpaid bills plus penalties must be paid in full to reestablish credit.

E. REFUND OF DEPOSITS TO ESTABLISH OR REESTABLISH CREDIT.

1. Agricultural Service.

At the end of the irrigation season, the District will refund the Water User's credit deposit or the balance in excess of unpaid bills for that service (in excess of the minimum charge under Sections III.B.1.b. and III.B.2.b.).

2. Nonagricultural Service.

After the Water User has, for twelve (12) consecutive months, paid bills for service on the average of fifteen (15) days after presentation, the District will refund the credit deposit.

F. DEPOSIT RECEIPTS.

A credit deposit to establish or reestablish credit for service may be applied by the District to unpaid balances where the District because of nonpayment of bills has discontinued service.

VI. RATES

The Board will set the rates from time to time for the types of District water service set forth below, whether received by gravity or pumped by the Water User. The Board of Directors of the District reserves the right to change these rates at any time and without prior notice.

See the rate schedule at the end of this document.

A. FLAT RATE AGRICULTURAL SERVICE.

Flat rate agricultural service is available for agricultural properties diverting water in the Clear Lake-Cache Creek watershed upstream from the Capay Dam and is due with the filing of the application. As an alternative to the flat rate charges, the District will charge for actual water used if the Water User can verify actual usage and indicates this payment option upon the service application. In no event shall the flat rate change be less than the Board's set a minimum charge.

Flat rate agricultural service is also available for agricultural properties of five acres or less, diverting less than three cubic feet per second from the Winters Canal upstream of the Chapman Reservoir and is due with the filing of the application. In no event shall the flat rate change be less than the Board's set a minimum charge.

To qualify for this rate, the property must place a meter on the discharge and provide the discharge information at the end of the season. The water user will be required to call in to verify adequate water is available to divert prior to diverting. Only one flat rate will be allowed per wateruser.

B. MEASURED AGRICULTURAL SERVICE.

Measured agricultural service rates will be set for crop and non-crop irrigation.

C. FLAT RATE NONAGRICULTURAL SERVICE.

Flat rate nonagricultural service is available at an annual rate per unit to (a) single-family dwelling units having premises averaging not more than one-quarter acre per unit, and (b) to premises without dwellings not more than one-quarter acre in size; provided that larger premises without dwellings may receive flat rate nonagricultural service on the basis of a per unit annual charge for each one-quarter acre or part thereof.

D. MEASURED NONAGRICULTURAL SERVICE.

Measured nonagricultural service is available at a per acre foot rate to all Water Users to whom flat rate nonagricultural service is not available or is not desired.

E. OUTSIDE OF SERVICE AREA.

The rate for service outside the service area is established to be 125% of the rate applicable to similar service within the District's service area except as provided under Section VI.F. or VI.G. The Board may change this rate and ratio from time to time.

F. KELSEY CREEK GROUNDWATER RECHARGE PROJECT, BIG VALLEY, ZONE 5 OF LAKE COUNTY.

The rate is to be established by the Board from time to time.

G. OTHER TYPES OF SERVICE.

The Board may establish rates for other types of service from time to time.

VII. ORDERS AND DELIVERY OF AGRICULTURAL SERVICE

A. PLACING START ORDERS.

All orders by a Water User for delivery by the District of water for agricultural service through a District canal or natural channel must be received by the District office in sufficient time to allow 24 hours travel time for the water from the source to point of delivery unless the water is available as determined by the District. The orders must be received before 11:00 a.m. unless an earlier deadline is provided in notice from the District, otherwise the 24 hours will be calculated from deadline time on the following day. The District may refuse to accept orders for irrigation water for a lesser amount than 1 cubic feet per second or which, in the District's opinion will constitute an unjustifiable use of water. Orders may be made in writing, or orally in person or by telephone by the Water User.

Orders will include the name of applicant, the location of service by the canal designation, the flow in cfs, the crop and the preferred date for service.

B. ROTATION OF WATER SERVICE.

Water will be taken on a canal or lateral in turn or rotation based on priority of order, except that, when agreeable to the District, Water Users on a canal or lateral may exchange turns for mutual accommodation, provided such change will not alter the system of delivery to other Water Users on the same canal or lateral.

C. LIABILITY FOR TAKING HEAD OF WATER.

Water Users will be liable for damages or loss caused by their taking a head of water without permission of the District.

VIII. NOTICE OF SHUTTING OFF AGRICULTURAL WATER

SERVICE

A. REQUIRED NOTICE.

1. General.

Water Users served from a District canal or natural channel who wish to discontinue the service of water or reduce the head will give notice to the office of the District before 11:00 a.m. the day before such service is to be discontinued or such head reduced, unless an earlier deadline is provided in notice from the District.

2. Service of Less Than 24 Hours Duration.

Where the service is to be for less than 24 hours, notice of the time of shutting off the water or reducing the head, will be given when the order for water is placed. If Water User uses more than 0.5 cfs for less than 24 hours on consecutive days, Water User will be charged for the water spilled between irrigations. An exception will be made for Water Users on the Winters Canal because the unused water will be captured in the Chapman Reservoir and available for subsequent use.

The maximum number of consecutive days allowed on an order is seven. For intermittent service lasting in excess of seven days, Water User will be required to place additional orders not to exceed seven days.

3. Failure to Give Notice.

Failure of the Water User to give required notice may cause a waste of water, in which case the water ordered for, but not diverted by the Water User may be charged to the Water User's water bill as provided in VIII-C.

B. LIABILITY FOR DAMAGE CAUSED BY TURNING BACK HEAD OF WATER.

Water Users will be liable for damages or loss caused by their turning a head of water, which was being used by them, back into the District's canal without permission of the District.

C. FAILURE TO USE AGRICULTURAL WATER.

When an agricultural service Water User fails to make use of water that the Water User has ordered and the same is ready for delivery and is not actually delivered by the District to another Water User, the Water User who placed the order will make full payment for water until it can be shut off at the source plus 18 hours or delivered to another Water User. If the District determines waste has occurred, the District may charge the Water User for water wasted at 1.5 times (150%) the regular rate.

IX. MEASUREMENT OF WATER AND RENDERING AND PAYMENT OF BILLS

A. DISTRICT ACCESS TO MEASURING DEVICE.

Each Water User will give the District access for all reasonable purposes to the measuring device that measures the amount of District water delivered to or diverted by such Water User, whether the District or the Water User owns such device.

B. MEASUREMENT OF WATER. MEASURED AGRICULTURAL SERVICE.

The measuring devices for measured agricultural service will be read and the reading recorded by the District once each day when there is no change in the rate of flow of water delivered. Additional daily readings will be made and recorded when deemed necessary by the District.

C. MEASUREMENT OF WATER. MEASURED NONAGRICULTURAL SERVICE.

The measuring device for measured nonagricultural service will be read monthly by the District, or by the Water User and the results reported immediately to the District if so agreed to by the Water User and the District, unless otherwise determined by the District.

D. TESTS OF MEASURING DEVICE ON WATER USER REQUEST.

The District will, on reasonable notice by a Water User, test any water-measuring device serving Water User's premises. No charge will be made for such a test, except where a Water User requests more than one test of a device in any year, in which case he will be required to reimburse the District the cost of the test if the test shows the District has not been overcharging the Water User. The Water User will have the right to require the District to conduct the test in his presence or in the presence of his representative.

X. BILLING AND PAYMENT

A. BILLING.

1. Agricultural Service Invoices.

Agricultural service invoices will be mailed monthly to each Water User for each turnout. Invoices will provide the amount of water delivered each day.

a. Bills for Measured Service.

Bills for measured water service will be mailed monthly, unless otherwise determined by the District.

b. Flat Rate Service.

Bills for flat rate water service for each calendar year will be mailed on or about July of such year, or at the time of approval of application if application is made after July 1.

2. Other Invoices.

Invoices other than agricultural service will be mailed monthly, unless otherwise determined by the District.

B. PAYMENT OF BILLS.

All bills will be due and payable upon receipt.

C. DELINQUENT BILLS.

Bills become delinquent 30 days after the date of the bill. All delinquent payments and penalties will bear finance charges at the rate set by the Board from time to time. All payments delinquent as of December 31 of any year will be charged a one-time penalty in the amount set from time to time by the Board. All delinquent payments, penalties and finance charges which are added to the county tax roll for collection are subject to being charged an additional penalty in an amount set from time to time by the Board so long as the total penalties assessed by the District excluding finance charges do not exceed 10%.

See the rate schedule at the end of this document. The Board may modify the rate schedule from time to time.
A Water User's service may be discontinued for nonpayment of a bill under Section XII.A.

D. DISPUTED BILLS.

Should a water user dispute the correctness of a bill rendered by the District for water, the Water User may, within 30 days after presentation of the bill on which the Water User claims an error has been made, deposit with the District the amount claimed by the District to be due and submit a written statement setting forth the reasons why the bill is disputed. On receipt of the deposit, the District will investigate the complaint and communicate its findings to the Water User. If the Water User fails to comply with this provision within 30 days after presentation of the bill, Water User's failure will constitute an acceptance of the bill as correct and warrant the District in discontinuing service without further notice if the bill becomes delinquent.

E. CHARGE FOR RETURNED CHECKS.

A fee will be charged against any Water User whose check is returned to the District for lack of sufficient funds for payment or reasons other than bank errors.

XI. ACCESS TO PREMISES SERVED BY DISTRICT WATER AND CONTROL OF WATER SYSTEM

A. ACCESS.

The District and its officers, agents, and employees will have free access at all times to and across all premises served with District water for any purpose connected with the distribution of District water or the operations of the District or its water system.

B. CONTROL.

The entire water system and all measuring devices there from, whether such measuring devices were installed or are owned by the District or the Water User, are under the exclusive control of the District General Manager and no other person, except District employees or such other persons as the General Manager may authorize, will have any right to interfere with or to operate the water system or any part thereof.

C. RESPONSIBILITY FOR WATER AFTER LEAVING WATER SYSTEM.

The District will not be responsible for the distribution of District water among Water Users from facilities outside the water system, nor will the District be responsible for water after it leaves the points of delivery or diversion from its water system to facilities owned by others. Several Water Users may unite in the construction and operation of a common distribution system, in which case the District will deliver District water at the junction of such distribution system with the canal of the District.

D. RESPONSIBILITY FOR FACILITIES NOT OWNED BY DISTRICT.

The District will not be responsible for operating, maintaining or replacing water distribution facilities not owned by the District. The installation and maintenance of a District-owned measuring device on private property or within a portion of a water distribution system not owned by the District will not create any obligation on the part of the District for operation, maintenance, or replacement of any segments of the water distribution system owned by others.

The District does not share with landowners in the cost of maintenance of natural waterways used to convey water by the District.

E. PROTECTION OF WATER SYSTEM CANALS.

All lands to be served with District water will be so prepared and Water User-owned structures and laterals so located as not to require water in the District's canals to be raised to such a level, in order to irrigate said

lands, as to endanger the canals or structures of the District or cause seepage to lands adjacent thereto. The District will determine the level to which water may be safely raised in its canal.

F. MAINTENANCE OF WATER USER-OWNED LATERALS.

At the beginning of each irrigation season and before the water will be turned therein, Water User-owned canals or laterals, including the structures thereon, must be put and thereafter kept in good repair, with vegetation removed from them so that water may flow through them with the least practicable loss. Such canals and laterals must be of sufficient capacity to carry an adequate quantity of water to economically irrigate the area under them. Failure on the part of any Water User along any canal or lateral to do the things herein required will warrant the District in refusing to turn water therein, until said ditches or canals are put in condition.

G. CONTROL OF WATER.

Under California water law, the District has control of water under its water rights, including return flows, transported in District facilities and natural watercourses, such as streams, within the boundaries of the District. No diversions of water under control of the District from District facilities or natural watercourses will be permitted unless the District has approved the manner of diversion and such diversion complies with the provisions of these rules and regulations. All persons taking delivery of District water from natural watercourses or the District's ditches or canals must take such deliveries through gates or structures approved by the District.

XII. DISCONTINUANCE OR REFUSAL OF SERVICE

A. NONPAYMENT OF BILLS.

A Water User's water may be discontinued for nonpayment of a bill for water service if the bill becomes delinquent. A Water User's service, however, will not be discontinued until the amount of any credit deposit has been fully absorbed. If an agricultural applicant in any year is delinquent in the payment of a bill for water service during a prior year, his application will be denied and service will be refused, except that the District may provide service on the condition that payment for water during such year is made in advance of delivery.

B. SERVICE DETRIMENTAL TO OTHER WATER USERS.

The District may refuse to furnish water, or reduce water service or discontinue service to any premises, where the use of water thereon is detrimental or injurious to the water service furnished to other Water Users.

C. FRAUD AND ABUSE.

The District will have the right to refuse or to discontinue water service to any premises if necessary to protect itself against fraud or abuse.

D. NONCOMPLIANCE.

The District may discontinue water service to a Water User for noncompliance with any of these rules and regulations, if the Water User fails to comply therewith within five days after receiving written notice of intention to discontinue service.

XIII. SHORTAGE OF SUPPLY AND INTERRUPTION OF DELIVERY

A. SHORTAGE AND INTERRUPTION.

The District will exercise reasonable diligence to furnish a continuous and adequate supply of water to its Water Users and to avoid any shortage or interruption of delivery **thereof**. It **cannot**, however, guarantee a full supply or complete freedom from interruption. When, for any reasons, the District is unable to deliver the full supply of water required by the Water User, such supply as can be delivered will be prorated until such time as delivery of a full supply can be restored.

B. TEMPORARY SUSPENSION FOR REPAIRS.

The District reserves the right to suspend service temporarily to make necessary repairs or improvements to its water system. In doing so, the District will notify the Water Users affected as soon as circumstances permit, and will prosecute the work with due diligence and with the least possible inconvenience to Water Users.

C. APPORTIONMENT OF SUPPLY DURING THE TIME OF SHORTAGE.

In any year the District will apportion its available water supply among its Water Users as follows:

(1) The District will attempt to supply nonagricultural water service without reduction. Water not needed to supply nonagricultural water service will be apportioned as set forth below.

(2) The requirements for agricultural service on lands for which application was made not later than February 15 (or the first Monday following February 15, if February 15 falls on a weekend), and the acreage deposit was received no later than March 15 (or the first Monday following March 15, if March 15 falls on a

weekend) will have an equal priority to the water available for agricultural water use. The Board reserves the right to require payment for all water ordered during a time of water shortage, whether used or not.

XIV. WATER WASTE

A. AGRICULTURAL WATER WASTE.

Any Water User who, in the determination of the District, is wasting water or floods any portion of Water User's land to an unreasonable depth in order to properly irrigate other portions, or whose land has been improperly checked for the economical use of water, or allows an unnecessary amount of water to escape from any tailgate, will be refused service until such conditions are remedied. The District may refuse service when in its determination the proposed use, or method of use, will require such excessive quantities of water as will constitute waste.

B. NONAGRICULTURAL WATER.

The District will endeavor to furnish sufficient water for nonagricultural uses. No Water User will waste water. Any violation of this rule may cause water to be shut off until the District receives satisfactory assurances that the conditions causing such waste have been remedied.

XV. WATER QUALITY

All District water delivered to or made available for diversion by Water Users is from open reservoirs, natural channels, ditches, canals, conduits and flumes. The District does not represent or guarantee that any District water is potable or of a quality suitable for human consumption or for any other purpose. Any Water User who uses said water or makes it available to others for human consumption will take all necessary precautions to make the water potable and will assume all risks and liabilities in connection therewith.

XVI. DAMAGE TO DISTRICT'S PROPERTIES

A. LIABILITY OF OWNER OR WATER USER.

The owner or Water User through whose lands any part of the water system passes will be liable for any damage to the system or loss of District water caused by (a) stock crossing or pasturing on the banks of a canal, (b) operating machinery of any kind across or along the banks of a canal or above a pipeline, (c) burning vegetation, (d) dumping drainage water, waste water, vegetable matter, garbage, chemical pollutants or other water materials into any other part of the water system, (e) turning a head of water, which was being used by the Water User, back into the District's canal without permission of the District or its canal tender,

or (f) any other cause within the owner's or Water User's control or for which the owner or Water User would, as owner or occupier of the lands, be legally responsible.

B. WRITTEN PERMISSION FOR OBSTRUCTIONS OR DISCHARGES.

No fences, bridges, ditches, buildings, domestic water pipes, stock watering pipes, sewer pipes or other obstructions of any kind will be placed upon, over, across or along any part of the water system, nor will there by any discharge of water or any other matter into any part of the water system, without first obtaining written permission of the District, which will state the time, the conditions or other regulations governing the same.

C. DISTRICT ROADS.

No ditch, bank, or District road will be sprinkled or flooded with water in connection with irrigation of adjacent lands.

XVII. NOTICES

A. NOTICES TO WATER USERS.

Notices from the District to a Water User normally will be given in writing either delivered to the Water User or mailed to the Water User's last known address. Where conditions warrant, and in emergencies, the District may give verbal notices by telephone or in person.

B. NOTICES FROM WATER USERS.

Except as otherwise provided in Section VII.A., notices from a Water User to the District will be given by the Water User or an authorized representative in writing and mailed postage prepaid or hand delivered to the District office, 34274 State Highway 16, Woodland, California 95695, telephone (530) 662-0265.

XVIII. ENFORCEMENT OF RULES AND REGULATIONS

The General Manager will be responsible for the enforcement of the rules and regulations. Failure of a Water User to comply with any of the rules and regulations will be sufficient cause for the termination of water service, and water service will not again be furnished to such Water User until full compliance has been made with all the requirements as herein set forth; provided, however, that the Water User will in no way be relieved of any responsibility for payment of any charges or obligations by reason of such termination of water service. In no event will any liability accrue against the District or any of its officers, agents or employees, for damage, direct or indirect, arising from such termination of water service.

XIX. ADMINISTRATION OF RULES AND REGULATIONS: NOTICE HEARING AND APPEAL

At least ten days before termination of water service as provided in Section XVIII is to be effected, a Water User will be provided written notice of such termination and advised of the opportunity and procedure to discuss the reason for termination of service with the General Manager, or other employee designated by the General Manager who will be empowered to review disputed bills, rectify errors, and settle controversies pertaining to termination of service.

In the event that the Water User disagrees with the decision of the General Manager or the General Manager's designee in administering the rules and regulations, Water User will then have the right to appeal to the Board. Such appeal must be made within five days after written notice of the General Manager's or the designee's decision. Appeals must be submitted in writing and will specifically set forth the decision being appealed and the reasons for the appeal. Appeals will be considered at the next regular meeting of the Board, but the Board may, in its discretion, consider an appeal at an earlier meeting.

Termination of water service will be stayed until the time for filing an appeal with the Board has expired. In the event that such an appeal is filed with the Board, termination of water service will be stayed until the Board has ruled on the appeal.

XX. CHANGES IN RULES AND REGULATIONS

The rules and regulations will become effective immediately and may be added to, amended or repealed at any time by the Board.

XXI. PENALTY FOR UNAUTHORIZED TAKING OF WATER

Section 592 of the California Water Code provides as follows:

"Every person who will, without authority of the owner or managing agent, and with the intent to defraud, take water from any canal, ditch, flume, reservoir, or natural waterway used for the purpose of holding or conveying water for manufacturing, agriculture, mining, irrigation, groundwater recharge, generation of power, or domestic uses, IS GUILTY OF A MISDEMEANOR. The penalty for such act will be a fine of $1,000 per day and 10 times the District's most current rates and charges for the estimated amount of water taken."

"Every person who will without like authority raise, lower, or otherwise disturb any gate or other apparatus thereof, used for the control of measurement of water or who will empty or place or cause to be emptied or placed into any such canal, ditch, flume, or reservoir, any rubbish, filth, or obstruction to the free flow of the water **IS GUILTY OF A MISDEMEANOR.**"

XXII. LEGAL ENFORCEMENT

In the event litigation results concerning the enforcement of any portion of these rules and regulations or the payment of any charges to the District, the prevailing party will be entitled to recover from the losing party any attorney's fees and other legal costs as part of its costs.

XXIII. RIGHTS IN DISTRICT WATER

No Water User receiving District water service acquires a proprietary right thereto by reason of use. No Water User acquires a right to use it for a purpose or on premises other than specified in the application and as approved by the District. The District expressly asserts and reserves the right to recapture, reuse and resell all District water after it has been originally delivered or diverted and used.

Under California water law, the District has control of water under its water rights, including return flows, transported in District facilities and natural watercourses, such as streams, within the boundaries of the District. No diversions of water under control of the District from District facilities or natural watercourses will be permitted unless the District has approved the manner of diversion and such diversion complies with the provisions of theses rules and regulations. (For example, see *Stevens* v. *Oakdale Irrigation District* (1939) 13 Cal.2d343, and Water Code Sections 7043 and 7044.)

Adopted and passed by the Board of Directors of the Yolo County Flood Control and Water Conservation District on the 4th day of March 2003.

Appendix D – Water Rates

RATE SCHEDULE **July 2015**

The Board of Directors reserves the right to change rates and charges from time to time.

SECTION	DESCRIPTION	RATE OR CHARGE	
III.B.1.b.	Acreage Deposit	$ 5.00 per acre	$30.00 Minimum Charge
III.B.2.b.	Acreage Deposit	$ 5.00 per acre	$30.00 Minimum Charge
III.B.2.d.	Late Penalty	$ 1.00 per acre	$30.00 Minimum Charge $500.00 Maximum Charge
III.D.1	Nonagricultural Service Existing Turn on Fee	$ 15.00 first time	
III.D.2	Nonagricultural-Ownership Change	$ 15.00 per change	
VI.A.	Flat Rate Agricultural Orchards Other than Orchards	$ 84.00 per acre $126.00 per acre	$30.00 Minimum Charge $30.00 Minimum Charge
VI.B.	Measured Agricultural	$ 42.00 per ac/ft	$ 5.00 Minimum Charge Per Irrigation
VI.C.	Flat Rate Nonagricultural	$ 62.80 per unit	$30.00 Minimum Charge
VI.D.	Measured Nonagricultural	$ 62.80 per ac/ft	$30.00 Minimum Charge
VI.E.	Outside of Service Area (125% Ag Rate) (125% Non-Ag Rate)	$ 52.50 per ac/ft $ 78.50 per ac/ft	$30.00 Minimum Charge $30.00 Minimum Charge
VI.F.	Kelsey Creek (47% Ag Rate)	$ 19.74 per ac/ft	
VI.G.	Others - Established on a Case by Case Basis Bottled Water Rate Recreation Highlands Reservoir	$189.00 per ac/ft $ 62.80 per ac/ft Per Contract	$30.00 Minimum Charge $30.00 Minimum Charge
X.C.	Delinquent Bills Finance Charge Minimum Charge Penalty on Dec. 31	1.5 % per month $ 2.00 per month 5 %	
X.E.	Returned Check Charge	$ 15.00	

Appendix E – Application for Water

YOLO COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

34274 State Highway 16, Woodland, CA 95695-9371
(530) 662-0265 www.ycfcwcd.org

2015 APPLICATION FOR AGRICULTURAL WATER SERVICE

This water is to be used solely for agricultural irrigation

Applicant

Home Phone

Address

Work Phone

Person(s) authorized to order water changes

Cell Phone

Email Address

Restricted Material Permit # (PUR from Ag Comm)

The undersigned hereby applies for water service on the lands described below, and agrees to use and pay in accordance with the rates, rules and regulations of the Yolo County Flood Control & Water Conservation District. A copy of the rules & regulations can be viewed on our web site or is available upon request.

Accounts are due and payable on receipt of invoice and become delinquent 30 days from the date mailed. Delinquent accounts are charged a finance charge of 1.5% per month with a 5% penalty on December 31st on all accounts delinquent on that date. Delinquent water customers will be required to re-establish credit in subsequent years.

A deposit of $5.00/Acre (or $30.00 minimum) is due by March 23rd or prior to ordering water, whichever comes first.

$5.00 x _____ (Total All Acres) = Total Deposit Due $

THIS IS A GUARANTEED MINIUMUM PURCHASE

Signature of Applicant:

Date:

Title:

	Field Name	Field Number (from PUR)	Parcel Number	Acres	Crop	Turnout / Pump ID
1						
2						
3						
4						
5						

Applicant Name:

	Field Name	Field Number (from PUR)	Parcel Number	Acres	Crop	Turnout
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	Field Name	Field Number (from PUR)	Parcel Number	Acres	Crop	Turnout
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Appendix F

Yolo County Flood Control and Water Conservation District

SBx7-7 Water Measurement Compliance Program

PURPOSE

This SBx7-7 Water Measurement Compliance Program (Program) has been developed by the Yolo County Flood Control and Water Conservation District (District) to comply with the requirements of Water Code Section 10608.48 (WC §10608.48) and the Agricultural Water Measurement Regulation, California Code of Regulations (CCR) §597. The Program is a component of the District's Agricultural Water Management Plan (AWMP). Specifically, the Program outlines how the District has or intends to address the critical Efficient Water Management Practices (EWMPs) of measurement and pricing identified in WC §10608.48.

WC §10608.48(a) states that agricultural water suppliers *"shall implement efficient water management practices pursuant to subdivisions (b) and (c)."* Subdivision (b) identifies the following two *"critical efficient water management practices:*

> *(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) Section 531.10 and to implement paragraph (2).*
>
> *(2) Adopt a pricing structure for water customers based at least in part on quantity delivered."*

CRITICAL EFFICIENT WATER MANAGEMENT PRACTICES

CCR §597, approved on July 11, 2012, defines how agriculture suppliers comply with WC §10608.48(b)(1). The District currently measures its deliveries to all customers and believes it is in compliance with the provisions of WC §10608.48(b)(1) and the measurement accuracy provisions of CCR §597.

Critical EWMP #1 - Measurement

The District currently measures and records deliveries to each customer using standardized flow measurement devices. Deliveries to approximately 80% of the District's customers are measured using orifice gates and flow tables. Measuring devices for agricultural service are read and the readings are recorded daily. Measuring devices for most nonagricultural service are read monthly. Deliveries to the remaining customers are mostly made via customer owned pumps, and measurement is generally based on pump capacities and time of use as reported by the customer although some propeller meters have been installed and the District is in the process of installing 30 magnetic meters which have been purchased. The magnetic meters will be used to measure deliveries previously measured based on pump capacity and time of use.

Table 1 below identifies the type and number of flow measurement devices along with an estimated level of accuracy. The District utilizes a volumetric pricing scheme based on these measurements as described further below. The District will continue to measure and report deliveries using the existing flow measurement devices until the measurement accuracy verification is complete. The number of deliveries measured by pump capacity and time of use will decrease as the 30 magnetic meters are installed.

Table 1: Current Water Delivery Measurements

Measurement Device	Number of Devices	Frequency of Measurement	Frequency of Maintenance	Estimated Level of Accuracy (%)
Orifice gates and flow tables	~ 562	Daily (when in use)	At time of measurement & annually	< ±12%
Pump capacity and time of use	~ 51	--	--	< ±12%
Propeller Meters	~ 52	Continuous	--	< ±12%
Magnetic Meters	30	Continuous	--	< ±5%

The District intends to comply with the certification requirements pursuant to CCR §597.4(a)(1)(A), using field-testing and analysis completed on a random and statistically representative sample of existing measurement devices as described in CCR §597.4(b)(1). The field-testing and analysis protocols will be performed according to manufacturer's recommendations or design specifications. The results will be approved by an engineer for the sample of existing measurement devices to determine if the existing measurement devices meet the accuracy standards of CCR §597.3(a) and operation and maintenance protocols meet best professional practices. Through the certification process, water measurement best professional practices will be documented or developed for collection and recording of water measurement data.

Certification methods will be developed for each type of device and installation as appropriate. Inspections and testing will be conducted by individuals trained in the use of the field testing and inspection techniques and will be documented in a report approved by an engineer. In addition to the field inspections, current operation and maintenance practices will be reviewed to assure they meet best professional practices. A summary of the operation and maintenance practices, together with any recommendations for changes, will be included in the report approved by the engineer. The initial estimate of the cost to develop and implement the certification program and to prepare the report required pursuant to CCR §597 is $250,000. This cost estimate may be revised as the certification program is developed and refined. The District intends to conduct the certification program over a five-year period.

Table 2 below provides the anticipated schedule for implementation.

Table 2: Schedule of Measurement Certification Program

Task	2016	2017	2018	2019	2020
Develop Plan	X				
Field Testing	X	X	X		
Data Analysis		X	X		
Report by Engineer			X		
Develop and Implement Corrective Actions (when necessary)				X	X

The District update to the AWMP in 2020 will include the results of the certification program, including the report approved by an engineer as required under CCR §594.4, Description of Best Professional Practices; and a Corrective Action Plan together with any necessary corrective actions including a summary of the actual costs to implement the Program.

Appendix G

Yolo County Flood Control and Water Conservation District
Agriculture Water Management Plan Checklist

AWMP* Location	Guidebook Location	Description	Water Code Section (or other, as identified)
Yes	1.4	AWMP Required?	10820, 10608.12 Executive Order B-29-15
At least 25,000 acres	1.4	At least 25,000 irrigated acres *At least 10,000 irrigated acres*	10853 Executive Order B-29-15
N/A	1.4	10,000 to 25,000 acres and funding provided	10853
2015 Update	1.4	December 31, 2015 update *July 1, 2016 2015 AWMP for agricultural water suppliers 10,000 to 25,000 irrigated acres*	10820 (a) Executive Order B-29-15
Yes	1.4	5-year cycle update	10820 (a)
No	1.4	New agricultural water supplier after December 31, 2012 - AWMP prepared and adopted within 1 year	10820 (b)
No	1.5, 5	USBR water management/conservation plan:	10828(a) Executive Order B-29-15
N/A	1.5, 5.1	Adopted and submitted to USBR within the previous four years, AND	10828(a)(1)
N/A	1.5, 5.1	The USBR has accepted the water management/conservation plan as adequate	10828(a)(2)
N/A	1.4	UWMP or participation in area wide, regional, watershed, or basin wide water management planning: does the plan meet requirements of SB X7-7 2.8 **(use checklist)**	10829
Section I.A.	3.1 A	Description of previous water management activities	10826(d)
Yes	3.1 B.1	Was each city or county within which supplier provides water supplies notified that the agricultural water supplier will be preparing or amending a plan?	10821(a)
Yes	3.2 B.2	Was the proposed plan available for public inspection prior to plan adoption?	10841
Yes	3.1 B.2	Publically-owned supplier: Prior to the hearing, was the notice of the time and place of hearing published within the jurisdiction of the publicly owned agricultural water supplier in accordance with Government Code 6066?	10841
Yes	3.1 B.2	14 days notification for public hearing	GC 6066
Yes	3.1 B.2	Two publications in newspaper within those 14 days	GC 6066
Yes	3.1 B.2	At least 5 days between publications? (not including publication date)	GC 6066

AWMP* Location	Guidebook Location	Description	Water Code Section (or other, as identified)
N/A	3.1 B.2	Privately-owned supplier: was equivalent notice within its service area and reasonably equivalent opportunity that would otherwise be afforded through a public hearing process provided?	10841
Yes	3.1 C.1	After hearing/equivalent notice, was the plan adopted as prepared or as modified during or after the hearing?	10841
Yes	3.1 C.2	Was a copy of the AWMP, amendments, or changes, submitted to the entities below, no later than 30 days after the adoption?	10843(a)
Yes	3.1 C.2	The department.	10843(b)(1)
Yes	3.1 C.2	Any city, county, or city and county within which the agricultural water supplier provides water supplies.	10843(b)(2)
Yes	3.1 C.2	Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.	10843(b)(3)
Yes	3.1 C.2	Any urban water supplier within which jurisdiction the agricultural water supplier provides water supplies.	10843(b)(4)
Yes	3.1 C.2	Any city or county library within which jurisdiction the agricultural water supplier provides water supplies.	10843(b)(5)
Yes	3.1 C.2	The California State Library.	10843(b)(6)
Yes	3.1 C.2	Any local agency formation commission serving a county within which the agricultural water supplier provides water supplies.	10843(b)(7)
	3.1 C.3	Adopted AWMP availability	10844
Yes	3.1 C.3	Was the AWMP available for public review on the agricultural water supplier's Internet Web site within 30 days of adoption?	10844(a)
N/A	3.1 C.3	If no Internet Web site, was an electronic copy of the AWMP submitted to DWR within 30 days of adoption?	10844(b)
Future Action	3.1 D.1	Implement the AWMP in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.	10842
Section II	3.2	Description of the agricultural water supplier and service area including:	10826(a)
Section II.A.1	3.2 A.1	Size of the service area.	10826(a)(1)
Section II.A.1	3.2 A.2	Location of the service area and its water management facilities.	10826(a)(2)
Section II.A.3	3.2 A.3	Terrain and soils.	10826(a)(3)
Section II.A.4	3.2 A.4	Climate.	10826(a)(4)
Section II.B.1	3.2 B.1	Operating rules and regulations.	10826(a)(5)
Section II.B.2	3.2 B.2	Water delivery measurements or calculations.	10826(a)(6)
Section II.B.3	3.2 B.3	Water rate schedules and billing.	10826(a)(7)

AWMP* Location	Guidebook Location	Description	Water Code Section (or other, as identified)
Section II.B.4	3.2 B.4	Water shortage allocation policies. *Drought Management Plan*	10826(a)(8) Executive Order B-29-15
Section III	3.3	Water uses within the service area, including all of the following:	10826(b)(5)
Section III.A	3.3 A	Agricultural.	10826(b)(5)(A)
Section III.B	3.3 B	Environmental.	10826(b)(5)(B)
Section III.C	3.3 C	Recreational.	10826(b)(5)(C)
Section III.D	3.3 D	Municipal and industrial.	10826(b)(5)(D)
Section III.E	3.3 E	Groundwater recharge.	10826(b)(5)(E)
Section III.F	3.3 F	Transfers and exchanges.	10826(b)(5)(F)
Section III.G	3.3 G	Other water uses.	10826(b)(5)(G)
Section IV	3.4 A	Description of the quantity of agricultural water supplier's supplies as:	10826(b)
Section IV.A.1	3.4 A.1	Surface water supply.	10826(b)(1)
Section IV.A.2	3.4 A.2	Groundwater supply.	10826(b)(2)
Section IV.A.3	3.4 A.3	Other water supplies.	10826(b)(3)
Section IV.A.4	3.4 A.4	Drainage from the water supplier's service area.	10826(b)(6)
Section IV.B	3.4 B	Description of the quality of agricultural waters suppliers supplies as:	10826(b)
Section IV.B.1	3.4 B.1	Surface water supply.	10826(b)(1)
Section IV.B.2.	3.4 B.2	Groundwater supply.	10826(b)(2)
Section IV.B.3	3.4 B.3	Other water supplies.	10826(b)(3)
Section IV.C	3.4 C	Source water quality monitoring practices.	10826(b)(4)
Section IV.B.4	3.4 B.4	Drainage from the water supplier's service area.	10826(b)(6)
Section V	3.5	Description of water accounting, including all of the following:	10826(b)(7)
Section V.A.	3.5 A	Quantifying the water supplier's water supplies.	10826(b)(7)(A)
Section V.B.	3.5 B	Tabulating water uses.	10826(b)(7)(B)
Section V.C.	3.5 C	Overall water budget.	10826(b)(7)(C)
Section V.D.	3.5 D	Description of water supply reliability.	10826(b)(8)
Section VI	3.6	Analysis of climate change effect on future water supplies analysis	10826(c)
Section VII	3.7	Water use efficiency information required pursuant to Section 10608.48.	10826(e)

AWMP* Location	Guidebook Location	Description	Water Code Section (or other, as identified)
Section VII.A.	3.7 A	Implement efficient water management practices (EWMPs)	10608.48(a)
Section VII.A.	3.7 A.1	Implement Critical EWMP: Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).	10608.48(b)
Section VII.A.	3.7 A.1	Implement Critical EWMP: Adopt a pricing structure for water customers based at least in part on quantity delivered.	10608.48(b)
Section VII.A.	3.7 A.2	Implement additional locally cost-effective and technically feasible EWMPs	10608.48(c)
Section VII.B.	3.7 B	If applicable, document (in the report) the determination that EWMPs are not locally cost-effective or technically feasible	10608.48(d)
Section VII.A.	3.7 A	Include a report on which EWMPs have been implemented and planned to be implemented	10608.48(d)
Section VII.A.	3.7 A	Include (in the report) an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future.	10608.48(d)
N/A	5	USBR water management/conservation plan may meet requirements for EWMPs	10608.48(f)
N/A	6 A	Lack of legal access certification (if water measuring not at farm gate or delivery point)	CCR §597.3(b)(2)(A)
N/A	6 B	Lack of technical feasibility (if water measuring not at farm gate or delivery point)	CCR §597.3(b)(1)(B), §597.3(b)(2)(B)
N/A	6 A, 6 B	Delivery apportioning methodology (if water measuring not at farm gate or delivery point)	CCR §597.3.b(2)(C),
Section VII.A. & Appendix F	6 C	Description of water measurement BPP	CCR §597.4(e)(2)
Section VII.A. & Appendix F	6 D	Conversion to measurement to volume	CCR §597.4(e)(3)
Section VII.A. & Appendix F	6 E	Existing water measurement device corrective action plan? (if applicable, including schedule, budget and finance plan)	CCR §597.4(e)(4))