

**Colusa County Water District
Water Management Plan
2008 Criteria**

**Date of first draft – May 2009
Date of final – 2009**

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Section 1: Description of the District

District Name: Colusa County Water District

Contact Name: Shelly Murphy Title: General Manager

Telephone: 530 476-2669

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A. History

1. Date district formed: May 18, 1954 Date of first Reclamation contract: May 14, 1962

Original size (acres): 27,196 / 23,841 Current year (last complete calendar year): 2008

2. Current size, population, and irrigated acres

Data Year	2008
Size (acres)	45,670
Population served	NA
Irrigated acres	29,204

*irrigated acres are those acres receiving water from CCWD. Assessed acres include acres that could be irrigated with CCWD water but are either idle or use private groundwater.

3. Water supplies received in 2008

Water Source	AF
Federal urban water (Tbl 1)	204
Federal agricultural water (Tbl 1)	23,195
State water (Tbl 1)	
Other Wholesaler (define) (Tbl 1)	
Local surface water (Tbl 1)	
Upslope drain water (Tbl 1)	
District ground water (Tbl 2)	
Banked water (Tbl 1)	
Transferred water (Tbl 6)	30,700
Recycled water (Tbl 3)	
Other (define) (Tbl 1)	
Total	54,099

4. Annual entitlement under each right and/or contract

	AF	Source	Contract #	Availability period(s)
Reclamation Urban	As needed	USBR		As needed
Reclamation Agriculture	68,164	USBR	14-06-200-304-A-LTR1	Year round – Sep15-Jun15 limited by pumping limits
Other AF/Y	(24,000) 12,000	Westside WD	Transfer agreement – 12,000 AF is actual	Any year – reduced to BOR allocation in shortage

5. Anticipated land-use changes
NONE

6. Cropping patterns (Agricultural only)

List of current crops (crops with 5% or less of total acreage) can be combined in the 'Other' category.

Original Plan (1992)		Previous Plan (1999)		Current Plan (2008)	
Crop Name	Acres	Crop Name	Acres	Crop Name	Acres
Almonds	14,943	Almonds	19,044	Almonds	22,275
Vinseed	1,395	Vinseed	1,482	Wheat	2,247
Wheat	1,663	Tomatoes	2,691	Grapes	1,248
Grapes	1,021				
Alfalfa	1,143				
Other (<5%)	1,910	Other (<5%)	5,396	Other (<5%)	3,134
Total	22,075	Total	28,615	Total	29,204

(See Planner, Chapter 2, Appendix A for list of crop names)

7. Major irrigation methods (by acreage) (Agricultural only)

Original Plan (1992)		Previous Plan (1999)		Current Plan (2008)	
Irrigation Method	Acres	Irrigation Method	Acres	Irrigation Method	Acres
Border	1,745	Border	900	Border	438
Sprinkle	11,867	Sprinkle	8,248	Sprinkle	2,986
Furrow	5,410	Furrow	7,606	Furrow	1,565
Drip	3,053	Drip	11,861	Drip	24,215
TOTAL	22,075	TOTAL	28,615	TOTAL	29,204

B. Location and Facilities

See Attachment A for points of delivery, turnouts (internal flow), and outflow (spill) points, measurement locations, conveyance system, storage facilities, operational loss recovery system, wells, and water quality monitoring locations

Water is diverted from the T-C Canal at eight locations. Five of the diversions are by pump and three are by gravity. Water from each diversion enters a pipeline distribution system.

The eight separate pipeline lateral system which comprise the irrigation distribution system of the District are numbered from north to south: 6BP, 5BP, 4G, 3BP, 2BP, 2BG, 7AP, 8G. Pumped systems are designated by the letter P. and the gravity systems designated by the letter G. The pumped systems are served by canal side pumping plants and water is delivered into the gravity systems through gates on the canal side turnouts. System 6A, 6B, 3B, 3BA, share a common turnout structure and flow meters, although the systems are operated independently. All systems include buried pipelines, farm outlets (also referred to as farm turnouts), and appurtenant facilities. The major portion of the surface water service area is located uphill from and generally west of the Tehama-Colusa Canal. Pumped systems 6B, 7A, 3B, 2B serve some lands on the downhill side of the Canal. See Map (ii) for District diversion facilities.

1. Incoming flow locations and measurement methods

Location Name	Physical Location	Type of Measurement Device	Accuracy
6BP	R.3 W.14 (SW corner)	Venturi Meter	< 5%
5BP	R.2 W.19 (SE corner)	Venturi Meter	< 5%
Turnout 4 (4G)	R.2 W 20 (center)	Venturi Meter	< 5%
3BP	R.2 W.33 (SW corner)	Venturi Meter	< 5%
2BP	T.13N.R 2W 14 (SE corner)	Venturi Meter	< 5%
2BG	T.13N.R 2W 14 (SE corner)	Venturi Meter	< 5%
7AP	T.13N.R 2W 25	Venturi Meter	< 5%
Turnout 8	T.13N.R1W 31	Venturi Meter	< 5%

The above metering devices are operated and maintained by the Tehama Colusa Canal Authority for the Bureau. The Venturi sizes range 30”– 54”. Currently, the TC is in the process of converting all to Doppler meters.

2. Current year Agricultural Conveyance System

Miles Unlined - Canal	Miles Lined - Canal	Miles Piped	Miles - Other
0	0	105	0

~~3. Current year Urban Distribution System~~

4. Storage facilities (tanks, reservoirs, regulating reservoirs)

Name	Type	Capacity (AF)	Distribution or Spill
6A	Regulating Tank	1.11	Distribution
6B	Regulating Tank	1.48	Distribution
5B	Regulating Tank	.92	Distribution
3BA	Regulating Tank	.92	Distribution
3BC	Regulating reservoir		Distribution
3CG	Regulating reservoir		Distribution
3D	Regulating Tank	.59	Distribution
2B	Regulating reservoir		Distribution
7B	Regulating reservoir		Distribution
7B	Regulating Tank	.77	Distribution

5. Outflow locations and measurement methods (Agricultural only)

Provide this information in Section 2 F.

6. Description of the agricultural spill recovery system

NONE– no spill, completely piped system

7. Agricultural delivery system operation (check all that apply)

On-demand	Scheduled	Rotation	Other (describe)
	X	X	

The District delivery system is scheduled (11am prior day notice for turn on and turnoff), with 1/3 limitation which results in some rotation type restrictions.

8. *Restrictions on water source(s)*

<i>Source</i>	<i>Restriction</i>	<i>Cause of Restriction</i>	<i>Effect on Operations</i>
<i>Red Bluff Diversion</i>	<i>Dam Gate Closure</i>	<i>Salmon spawning</i>	<i>Unreliable supply Sept15-Jun 15</i>
<i>Drought</i>	<i>Inadequate Storage</i>	<i>Lack of rainfall</i>	<i>Water rationing</i>
<i>Water Service Contract</i>	<i>Insufficient Supply</i>	<i>Inadequate storage</i>	<i>Higher water rates / rationing</i>

9. *Proposed changes or additions to facilities and operations for the next 5 years*

NONE

C. Topography and Soils

1. *Topography of the district and its impact on water operations and management*

The District lies on recent and older alluvial fan soils of the eastern slopes of the Pacific Coast Range. The topography of the District varies slightly from gently rolling (slopes less than 6%) in the west to relatively fiat (slopes of 10 ft per mile) in the easterly portion. The unlevelled greater slopes are suitable for sprinkler or drip irrigation and constitute most of the District land devoted to orchard.

2. *District soil association map (Agricultural only)*

See Attachment B, District Soils Map

3. *Agricultural limitations resulting from soil problems (Agricultural only)*

<i>Soil Problem</i>	<i>Estimated Acres</i>	<i>Effect on Water Operations and Management</i>
Salinity	NA	
High-water table	NA	
High or low infiltration rates	NA	
Other (define)	NA	

D. Climate

1. *General climate of the district service area*

The service area climate is typical of the Sacramento Valley and is generally characterized by two distinct seasons: a hot, dry summer and a cool, wet winter. Annual precipitation averages about 16 inches and occurs almost entirely between November and March. Between May and September rainfall averages about 1.5 inches with a range of 0 to 5.5 inches.

Hot, dry north winds are common during the summer with the average daily temperature of 95 F for July. The winter is generally mild with an average of 256 frost-free days per year and a range of 188 to 336 days.

	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Annual</i>
<i>Avg Precip.</i>	3.43	2.79	2.25	0.94	0.57	0.21	0.03	0.07	0.26	0.92	2.16	2.78	16.43
<i>Avg Temp.</i>	45.3	50.4	54.2	59.4	67	73.3	77.1	75.4	71.7	63.5	52.5	45.6	61.3
<i>Max. Temp.</i>	53.6	60.4	65.8	73.5	81.8	89.6	95.0	93.5	89.3	79.1	63.9	54.3	75.0
<i>Min. Temp</i>	37.1	40.4	42.5	45.2	52.2	57.1	59.2	57.3	54.0	47.9	41.1	36.9	47.6
<i>ETo (32)</i>	0.95	1.73	3.42	5.03	6.43	7.62	8.34	7.23	5.35	3.78	1.79	1.08	52.75

Weather station ID 041948 Data period: Year 1948 to Year 2005

Average wind velocity 5 mph Average annual frost-free days: 256

2. *Impact of microclimates on water management within the service area*
NONE

E. Natural and Cultural Resources

1. *Natural resource areas within the service area*

Name	Estimated Acres	Description
NONE		

2. *Description of district management of these resources in the past or present*
NA

3. *Recreational and/or cultural resources areas within the service area*

Name	Estimated Acres	Description
NONE		

F. Operating Rules and Regulations

1. *Operating rules and regulations*

See Attachment C, District Rules and Regulations (water related)

2. *Water allocation policy (Agricultural only)*

See Attachment C, Page 1, and Attachment E, Water Shortage Plan (aka Drought Emergency Plan), item 1

Summary - The District's water allocation policy as stated in item 1 of Rules and Regulations and item 1 of the Drought Emergency Plan as follows: "Each property having full water rights and eligible under Reclamation Law and District rules to receive water in a year will be allocated a quantity of water based on its assessed acres..."

3. *Official and actual lead times necessary for water orders and shut-off (Agricultural only)*

See Attachment C, Page 2

Summary - The minimum lead time necessary for water orders is stated in item 8 of the Rules and Regulations as "before 1:00 pm the day before starting an irrigation." The minimum lead time necessary for water shut-off is stated in item 8 of the Rules and Regulations as "before 1:00 pm the day prior to finishing an irrigation."

4. *Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only)*

See Attachment C, Page 2

Summary - The District's return flows policy is stated in item 10 of the Rules and Regulations as follows: "To avoid drainage problems, it shall be the responsibility of every water user to control the water to be applied to his land. Any water user who deliberately, carelessly, or otherwise wastes water on roads, adjoining land, or creeks will be informed by District personnel that he is not complying with

this rule. He will be allowed a reasonable time to correct the situation. If he makes no prompt effort of correction, his water service will be discontinued."

5. *Policies on water transfers by the district and its customers*

See Attachment E, item 4

Summary - The District's policy on water transfers within the District is stated in item 4 of the Drought Emergency Plan as follows: "Allocated water maybe distributed among properties by those individuals whose "current year" Reclamation Reform Act reporting forms show them to be in control of the lands either as owners or tenants. Allocation transfers are permitted among different property owners by completion of a form, which requires the signature of the transferor..." The District's policy on water transfers between Districts is stated in item 4 of the Drought Emergency Plan as follows: "... Transfer of water into and out of the district will be permitted."

G. Water Measurement, Pricing, and Billing

1. Agricultural Customers

- a. Number of farms (customers) 275
- b. Number of delivery points (turnouts and connections) 650
- c. Number of delivery points serving more than one farm (customer) 10
- d. Number of measured delivery points (meters and measurement devices) 650
- e. Percentage of delivered water that was measured at a delivery point 100%

f. *Delivery point measurement device table (Agricultural only)*

Measurement Type	Number	Accuracy (+/- %)	Reading Frequency (Days)	Calibration Frequency (Months)	Maintenance Frequency (Months)
<i>Orifices</i>					
<i>Propeller meter*</i>	650	+/- 6%	30	24	As necessary
<i>Weirs</i>					
<i>Flumes</i>					
<i>Venturi</i>					
<i>Metered gates</i>					
<i>Acoustic Doppler</i>					
<i>Other (define)</i>					
<i>Total</i>	650				

*All District meters are instantaneous flow rate indicating, totalizing, in pipe throughout the District and the accuracy stated is only for operation within designed and specified flow range.

2. Urban Customers

- a. Total number of connections 11
- b. Total number of metered connections 5
- c. Total number of connections not billed by quantity 6
- d. Percentage of water that was measured at delivery point 95%
- e. Percentage of delivered water that was billed by quantity 95%
- f. Measurement device table

Meter Size and Type	Number	Accuracy (+/-percentage)	Reading Frequency (Days)	Calibration Frequency (Months)	Maintenance Frequency (Months)
5/8-3/4"					
1"					
1 1/2"					
2"					
3"					
4" Propeller	5	+/- 6%	30	24	As necessary
6"					
8"					
10"					
Compound					
Turbo					
Other (define)					
Total					

The District supplies non-potable urban water under an M&I contract.

3. Agriculture and Urban Customers

- a. Current year agriculture and /or urban water charges - including rate structures and billing frequency

The Districts agricultural water charge is set annually with the rate applied by quantity and structured as a uniform rate per acre-foot of metered use to encourage water conservation. Water user billings are described in item 5 of the Rules and Regulations as follows: "Prior to April 15, the District must receive one-half of each users seasonal estimate. Prior to July 1, the balance of each estimate is due. Any balance due or credit is determined by final meter readings. No water will be delivered until installments are paid." Meter readings are done monthly with final meter reading in November/December weather permitting.

b. Annual charges collected from customers (current year data)

<i>Fixed Charges</i>			
<i>Charges (\$ unit)</i>	<i>Charge units</i>	<i>Units billed during year (acres)</i>	<i>\$ collected (\$ times units)</i>
\$8.40	\$/acre	39,918	\$335,309.52

<i>Volumetric charges</i>			
<i>Charges (\$ unit)</i>	<i>Charge units</i>	<i>Units billed during year AF</i>	<i>\$ collected (\$ times units)</i>
\$40.75	\$/AF	27,410	\$1,116,957.50
\$122.06	\$/AF (full cost)	641	\$78,240.46
\$114.15	Transferred 'in' water	25,844	\$2,950,092.60
\$63.58	\$/AF (urban)	204	\$12,970.32
	TOTAL	54,099	\$4,158,260.88

See Attachment D, District Sample Bills

c. Water-use data accounting procedures

See Attachment D, District Sample Bills

The District's water billing record management system consists of a customized computer program. A sample annual final billing which includes the meter number, beginning and ending meter readings, and water cost is shown in the appendix. Each year records are archived on media and hard copy. Water use data is therefore available to each customer for any past water use.

H. Water Shortage Allocation Policies

1. Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated

See Attachment E, Water Shortage Plan (aka Drought Emergency Plan)

The District's water allocation policy as stated in item 1 of the Drought Emergency Plan as follows: "Each property having full water rights and eligible under Reclamation Law and District rules to receive water in a year will be allocated a quantity of water based on its assessed acres. The number of acre-feet is to be determined by dividing the total water available to the District by the total assessed acreage in the District.

2. Current year policies that address wasteful use of water and enforcement methods

See Attachment C and Attachment E item 3 and item 5

The District's policy that address wasteful use of water and enforcement is stated in item 10 of the Rules and Regulations as follows: "To avoid drainage problems, it shall be the responsibility of every water user to control the water to be applied to his land. Any water user who deliberately, carelessly, or otherwise wastes water on roads, adjoining land, or creeks will be informed by District personnel that he is not complying with this rule. He will be allowed a reasonable time to correct the situation. If he makes no prompt effort of correction, his water service will be discontinued."

Section 2: Inventory of Water Resources

A. Surface Water Supply

1. *Acre-foot amounts of surface water delivered to the water purveyor by each of the purveyor's sources*

See Water Inventory Tables, Table 1

2. *Amount of water delivered to the district by each of the district sources for the last 10 years*

See Water Inventory Tables, Table 8

B. Ground Water Supply

1. *Acre-foot amounts of ground water pumped and delivered by the district*

See Water Inventory Tables, Table 2 – No groundwater is pumped or delivered by the District.

Landowners may pump groundwater and convey it through the system for their own use utilizing the Warren Act Contract.

2. *Ground water basin(s) that underlies the service area*

<i>Name</i>	<i>Size (Square Miles)</i>	<i>Usable Capacity (AF)</i>	<i>Safe Yield* (AF/Y)</i>
Sacramento Valley	5,000	22,000,000	28,000 (CCWD)

*the safe yield in CCWD service area according to Colusa County Groundwater Management Plan

3. *Map of district-operated wells and managed ground water recharge areas*

NONE

4. *Description of conjunctive use of surface and ground water*

The 2008 transfer with RD108 supplied RD108 surface water to CCWD with the expectation that part of that water percolates to groundwater and flows to the RD108 service area.

5. *Ground Water Management Plan*

Colusa County Board of Supervisors adopted a county-wide groundwater management plan in 2008.

See <http://colusagroundwater.ucdavis.edu/> for a complete copy of the plan.

6. *Ground Water Banking Plan*

NONE

C. Other Water Supplies

1. *"Other" water used as part of the water supply*

For transfers, see Table 6 below. See the Water Inventory Tables, Table 1

D. Source Water Quality Monitoring Practices

1. *Potable Water Quality (Urban only)*

All M&I deliveries are non-potable

2. *Agricultural water quality concerns:* Yes _____ No X
 (If yes, describe)

3. *Description of the agricultural water quality testing program and the role of each participant, including the district, in the program*
 All water delivered is from surface supplies delivered by the Tehama Colusa Canal Authority under BOR contract. There are no water quality issues present and any quality testing programs are monitored independently of the District.

4. *Current water quality monitoring programs for surface water by source (Agricultural only)*
 NONE – all water is from the TC and is from BOR

5. *Current water quality monitoring programs for groundwater by source (Agricultural only)*
 No CCWD groundwater. CCWD customers that utilize Warren Act provisions test the groundwater to BOR standards.

E. Water Uses within the District

1. *Agricultural*
 See Water Inventory Tables, Table 5 - Crop Water Needs

2. *Types of irrigation systems used for each crop in current year*

<i>Crop name</i>	<i>Total Acres</i>	<i>Level Basin - acres</i>	<i>Furrow - acres</i>	<i>Sprinkler - acres</i>	<i>Low Volume - acres</i>	<i>Multiple methods - acres</i>
Alfalfa	739	370		369		
almonds	22,575			1,000	21,575	
Pears	58				58	
asparagus	7				7	
Grapes	1,248				1,248	
Oats	70			70		
Olives	112				112	
Onions	226		226			
pasture	208			208		
peaches	8				8	
Prunes	107				107	
Rice	68	68				
tomatoes	798				798	
vineseed	431		215	216		
walnuts	302				302	
Wheat	2,247		1,124	1,123		
TOTAL	29,204	438	1,565	2,986	24,215	

3. Urban use by customer type in current year

<i>Customer Type</i>	<i>Number of Connections</i>	<i>AF</i>
<i>Landscape irrigation</i>	9	202
<i>Other (livestock)</i>	2	2
<i>Unaccounted for</i>		0
Total		204

4. Urban Wastewater Collection/Treatment Systems serving the service area – current year

<i>Treatment Plant</i>	<i>Treatment Level (1, 2, 3)</i>	<i>AF</i>	<i>Disposal to / uses</i>
NONE			

5. Ground water recharge/management in current year (Table 6)

<i>Recharge Area</i>	<i>Method of Recharge</i>	<i>AF</i>	<i>Method of Retrieval</i>
NONE			

6. Transfers and exchanges into or out of the service area in current year (Table 6)

<i>From Whom</i>	<i>To Whom</i>	<i>AF</i>	<i>Use</i>
GCID	CCWD	10,000	Agric.
RD108	CCWD	14,344	Agric.
Westside WD	CCWD	5,568	Agric.
Dunnigan	CCWD	34	“ “
Corning	CCWD	9	“ “
Kanawha	CCWD	124	“ “
Sutter Mutual	CCWD	1,500	“ “
CCWD	Dunnigan	644	“ “
CCWD	Westside	35	“ “
CCWD	Cortina	200	“ “

7. Trades, wheeling, wet/dry year exchanges, banking or other transactions in current year (Table 6)

<i>From Whom</i>	<i>To Whom</i>	<i>AF</i>	<i>Use</i>
NONE			

8. Other uses of water in current year

<i>Other Uses</i>	<i>AF</i>
NONE	

F. Outflow from the District (Agricultural only)

NONE - See Facilities Map, Attachment A

1. Surface and subsurface drain/outflow in current year

NONE

2. *Description of the Outflow (surface and subsurface) water quality testing program and the role of each participant in the program*

NONE

3. *Outflow (surface drainage & spill) Quality Testing Program*

NONE

4. *Provide a brief discussion of the District's involvement in Central Valley Regional Water Quality Control Board programs or requirements for remediating or monitoring any contaminants that would significantly degrade water quality in the receiving surface waters.*

CCWD and its customers have no surface or subsurface outflow. CCWD customers are members of the Colusa Basin Watershed group which does conduct runoff water quality testing.

G. Water Accounting (Inventory)

1. *Water Supplies Quantified*

- a. *Surface water supplies, imported and originating within the service area, by month (Table 1)*
- ~~b. *Ground water extracted by the district, by month (Table 2)*~~
- c. *Effective precipitation by crop (Table 5)*
- d. *Estimated annual ground water extracted by non-district parties (Table 2)*
- ~~e. *Recycled urban wastewater, by month (Table 3)*~~
- f. *Other supplies, by month (Table 1)*

2. *Water Used Quantified*

- ~~a. *Agricultural conveyance losses, including seepage, evaporation, and operational spills in canal systems (Table 4) or*~~
- ~~*Urban leaks, breaks and flushing/fire uses in piped systems (Table 4)*~~
- b. *Consumptive use by riparian vegetation or environmental use (Table 6)*
- c. *Applied irrigation water - crop ET, water used for leaching/cultural practices (e.g., frost protection, soil reclamation, etc.) (Table 5)*
- d. *Urban water use (Table 6)*
- ~~e. *Ground water recharge (Table 6)*~~
- f. *Water exchanges and transfers and out-of-district banking (Table 6)*
- g. *Estimated deep percolation within the service area (Table 6)*
- ~~h. *Flows to perched water table or saline sink (Table 7)*~~
- ~~i. *Outflow water leaving the district (Table 6)*~~
- j. *Other*

3. *Overall Water Inventory*

- a. *Table 6*

H. Assess Quantifiable Objectives:

Identify the Quantifiable Objectives that apply to the District (Planner, chapter 10) and provide a short narrative describing past, present and future plans that address the CALFED Water Use Efficiency Program goals identified for the District.

<i>QO #</i>	<i>QO Description</i>	<i>Past, Present & Future Plans</i>
113	Provide flow to improve ecosystem conditions. Sac. River below Keswick	Districts allocated water supplies are less than crop requirements (ET) resulting in deficit irrigation.
113	Provide long-term diversion flexibility to increase the water supply for beneficial use. Sac. & Del. NWR	Current approval and financing of new screened diversion facility at Redbluff will facilitate this.
113	Provide long-term diversion flexibility to increase the water supply for beneficial use. Salt affected soils.	N/A
121	Reduce group A and other pesticides to enhance and maintain beneficial use of water in Colusa Basin and Sacramento River.	No tail water resulting in no runoff leaving the District and no water quality or pesticide impacts
121	Reduce salinity to enhance and maintain beneficial use of water in Colusa Basin.	District has zero tail water with no runoff. 100% piped deliveries and most utilizing drip irrigation.

Section 3: Best Management Practices (BMPs) for Agricultural Contractors

A. Critical Agricultural BMPs

1. Measure the volume of water delivered by the district to each turnout with devices that are operated and maintained to a reasonable degree of accuracy, under most conditions, to +/- 6%

Number of turnouts that are unmeasured or do not meet the standards listed above: 10 ag / 5 M&I

Number of measurement devices installed last year: 2

Number of measurement devices installed this year: 0

Number of measurement devices to be installed next year: 3

Types of Measurement Devices Being Installed	Accuracy	Total Installed During Current Year
4" Water Specialty propeller meters (agric)	+/- 6%	0
researching size and make (M&I)	+/- 6%	0

These 15 customers will be metered 2012.

2. Designate a water conservation coordinator to develop and implement the Plan and develop progress reports

Name: Shelly Murphy Title: General Manager

Address: 840 1st Street, Arbuckle CA 95912

Telephone: (530) 476-2784 E-mail: ccwd2@frontiernet.net

3. Provide or support the availability of water management services to water users
See Attachment J, Notices of District Education Programs and Services Available to Customers.

a. On-Farm Evaluations

- 1) On farm irrigation and drainage system evaluations using a mobile lab type assessment

	Total in district	# surveyed last year	# surveyed in current year	# projected for next year	# projected 2 nd yr in future
Irrigated acres	29,204			500	1000
Number of farms	275	0	0	4	8

On farm irrigation and Drainage system evaluations using a mobile lab type assessment Irrigation efficiency studies can make growers aware of water use, and increase the efficiency of water management within the District. Mobile Labs are available "locally" through Chico State and the Tehama County Resource Conservation District. Landowners within the District have been notified via mailers and at various presentations that these are available to assess their irrigation practices and

efficiency. To date, the District is unaware of any landowners who have utilized these services. However there are 4 or 5 known landowners that have purchased computerized probe technology that has helped them determine irrigation needs and efficiency on their own farms. Furthermore, the District does perform “on-farm” evaluations via random checks by O&M staff on landowners throughout the District while traveling their daily routes. These evaluations address water usage relative to zero tail-water (waste) and making growers aware of problems that may exist.

2) Timely field and crop-specific water delivery information to the water user

The District collects and compiles water use by crop and field, which it has distributed widely since 1995. The District will continue to provide an annual review of water use in acre feet per acre for the entire District so that each water user can compare his annual use to the District wide summary to see if any improvements to his irrigation practices are needed. This information will be available at District office and on website when developed.

b. Real-time and normal irrigation scheduling and crop ET information

The District and its customers make use of the Soil Conservation Service, U C Davis Agricultural Extension Offices, the office of the Agricultural Commissioner for Colusa County, and various other informational agricultural organizations. Information needed for normal and real time irrigation scheduling such as crop ET is available to all customers within one hour from the District that maintains a computer and modem for connection to the CIMIS data network. The data made available through CIMIS, the California Irrigation Management Information System, is presently available also at the Colusa office of the Cooperative Extension of the University of California, by internet to anyone with a private computer, in the local newspaper or on radio. The State DWR is administering the CIMIS program and the area's local weather station is just north of Colusa.

c. Surface, ground, and drainage water quantity and quality data provided to water users

Surface, ground, and drainage water quantity and quality data from other monitoring programs is provided to water users on request. Sources of this information are obtained from the TCCA Water Quality Sampling Program and the Colusa County Groundwater Management Council. No significant drainage from the district that would warrant monitoring and/or reporting.

d. Agricultural water management educational programs and materials for farmers, staff, and the public

<i>Program</i>	<i>Co-Funders (If Any)</i>	<i>Yearly Targets</i>
Leslie J Nickles Trust-Field Day	University of Ca/U S Dept of Agriculture	Orchard Research
CSU Chico		Irrigation Methods
CCWD Landowner Meeting	Tehama Colusa Canal Authority	District Landowners
Blue Diamond Growers		Almond Industry

See Attachment J for samples of provided materials and notices

The District employs many methods to support educational materials for not only its staff and water users but also for the public in general.

On the larger scale the District's active membership in the Association of California Water Agencies, and Central Valley Project Water Association provides funding used for the preparation and dissemination of a great variety of educational material. The District from time to time contributes financially to the activities of the Water Education Foundation, Family Farm Alliance, Farm Water Alliance, Public Officials for Water and Environment Reform, and other activities to inform the public of water issues.

At the water user level our office is filled with posters and other material encouraging water conservation. Frequent mailings to the water users are used to circulate educational materials.

The staff of the District consists of six positions; a General Manager, Bookkeeper, Secretary, and three field operations men. The Board encourages all staff to actively participate in seminars and programs, relating to their work.

e. other

NONE

4. Pricing structure - based at least in part on quantity delivered

The Districts pricing is directly related to the yearly water rates published by the Bureau of Reclamation plus the Tehama Colusa Canal conveyance fee and the Districts overhead (O&M) expense. The latter two components are divided by the total acre feet allocated under the Districts contract equating to a per acre foot (af) charge that is then added to the Bureau fees. Under this rate setting procedure the less water delivered (allocated or transferred) the higher the rate is. For 2008, the allocated water price was set at \$40.75/af for agriculture, \$69.36/af for M&I and \$122.06/af for full cost water.

5. Evaluate and describe the need for changes in policies of the institutions (BOR, F&W, CC) to which the district is subject

The District will review pertinent policies on an ongoing basis and request revisions as needed.

6. Evaluate and improve efficiencies of district pumps

The District will investigate, with electrical contractors and telemetry contractors, opportunities to convert the pumps to operate off transducers and replace electrical panels with a PUC and converting the pumps to soft-start which improves pump efficiencies and lengthens the life expectancy of the pumps.

B. Exemptible BMPs for Agricultural Contractors

(See Planner, Chapter 2, Appendix C for examples of exemptible conditions)

1. Facilitate alternative land use

<i>Drainage Characteristic</i>	<i>Acreage</i>	<i>Potential Alternate Uses</i>
<i>High water table (<5 feet)</i>	0	NA
<i>Poor drainage</i>	0	NA
<i>Ground water Selenium concentration > 50 ppb</i>	0	NA
<i>Poor productivity</i>	0	NA

Program actions - NONE, no problem soils

2. Facilitate use of available recycled urban wastewater that otherwise would not be used beneficially, meets all health and safety criteria, and does not cause harm to crops or soils

<i>Sources of Recycled Urban Waste Water</i>	<i>AF/Y Available</i>	<i>AF/Y Currently Used in District</i>
NONE	NONE	NA

3. Facilitate the financing of capital improvements for on-farm irrigation systems

<i>Funding source Programs</i>	<i>How provide assistance</i>
Bureau Grants	District will pass along info regarding
NRCS Loan Programs – Equip program	Grants and programs via newsletters and Postings in District office.

4. Incentive pricing

<i>Structure of incentive pricing</i>	<i>Related goal</i>
None	NA

Average ET for predominant crop (almonds) is 3 – 3.2 af per acre. The District has a deficit irrigation system with 1.8 acre feet per assessed acre in 100% allocation year that forces mandatory reductions in irrigation unless a landowner wants to buy water from a neighbor. In this situation there is no value to developing an incentive pricing structure.

5. a) Line or pipe ditches and canals

NA – 100% piped

b) Construct regulatory reservoirs

Three existing regulatory reservoirs & 100% piped. Deliveries based on a 1/3 design resulting in some rotational delivery delays. District will investigate, perhaps with the assistance of CPSLO, whether additional regulatory reservoirs or other changes would reduce delivery delays.

6. Increase flexibility in water ordering by, and delivery to, water users

See Attachment K, Agricultural Water Order Form

The District's water order requirement of 24 hours notice is dictated by the Tehama-Colusa Canal operations and delivery from Red Bluff Diversion Dam. The automation of the T-C Canal has improved delivery flexibility somewhat however, due to the District's design as a 1/3 system water users must still schedule deliveries 24 hrs in advance in order not over run facilities.

7. *Construct and operate district spill and tailwater recovery systems*

No district spill or tailwater.

8. *Plan to measure outflow.*

NONE

9. *Optimize conjunctive use of surface and ground water*

The District will continue working with water agencies relative to conjunctive use feasibility studies and conjunctive use.

10. *Automate canal structures*

NA – the district is fully piped.

11. *Facilitate or promote water customer pump testing and evaluation*

See Attachment J, Notices of District Education Programs and Services Available to Customers.

District customers who operate wells or pressurized low volume systems receive electric power from PG&E. The Agricultural Pumping Efficiency Program is funded through Public Purpose Program Charges to its customers under the auspices of the California Public Utilities Commission. PG&E coordinates this program through The Center for Irrigation Technology, CSU, Fresno. The District can assist with facilitation and coordination of the program for District customers.

12. *Mapping*

<i>GIS maps</i>	<i>Estimated cost (in \$1,000s)</i>				
	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
<i>Layer 1 – Distribution system</i>		15	10		
<i>Layer 2 – Drainage system</i>					
<i>Suggested layers:</i>					
<i>Layer 3 – Ground water information</i>					
<i>Layer 4 – Soils map</i>					
<i>Layer 5 – Natural & cultural resources</i>					
<i>Layer 6 – Problem areas</i>					

CSU Chico started GIS mapping for District. To date the project has not been completed. District will either contract independently with CSUC to finish the project or work with another agency to continue moving forward.

C. Provide a 3-Year Budget for Implementing BMPs

1. *Amount actually spent during 2008.*

<i>BMP #</i>	<i>BMP Name</i>	<i>Actual Expenditure (not including staff time)</i>	<i>Staff Hours</i>
A 1	<i>Measurement</i>	\$8000	400
2	<i>Conservation staff</i>	\$1200	60
3	<i>On-farm evaluation /water delivery info</i>	\$200	420
	<i>Irrigation Scheduling</i>	\$100	5

(continued)

<i>BMP #</i>	<i>BMP Name</i>	<i>Budgeted Expenditure (not including staff time)</i>	<i>Staff Hours</i>
	Water quality	\$0	0
	Agricultural Education Program	\$400	10
4	Quantity pricing	\$0	0
5	Policy changes	\$2500	40
6	Contractor's pumps	\$30000	500
B 1	Alternative land use	\$0	0
2	Urban recycled water use	\$0	0
3	Financing of on-farm improvements	\$200	10
4	Incentive pricing	\$0	0
5	Line or pipe canals/install reservoirs	\$0	0
6	Increase delivery flexibility	\$0	280
7	District spill/tailwater recovery systems	\$0	0
8	Measure outflow	\$0	0
9	Optimize conjunctive use	\$0	25
10	Automate canal structures	\$0	0
11	Customer pump testing	\$200	10
12	Mapping	\$0	40
	<i>Total</i>	\$42,800	1800

2. Projected budget summary for 2009.

<i>BMP #</i>	<i>BMP Name</i>	<i>Budgeted Expenditure (not including staff time)</i>	<i>Staff Hours</i>
A 1	Measurement	\$8000	400
2	Conservation staff	\$1200	60
3	On-farm evaluations/water delivery info	\$400	430
	Irrigation Scheduling	\$500	80
	Water quality	\$0	0
	Agricultural Education Program	\$600	20
4	Quantity pricing	\$0	0
5	Policy changes	\$5000	150
6	Contractor's pumps	\$30000	500
B 1	Alternative land use	\$0	0
2	Urban recycled water use	\$0	0
3	Financing of on-farm improvements	\$200	10
4	Incentive pricing	\$0	0
5	Line or pipe canals/install reservoirs	\$0	0
6	Increase delivery flexibility	\$0	280
7	District spill/tailwater recovery systems	\$0	0
8	Measure outflow	\$0	0
9	Optimize conjunctive use	\$0	25
10	Automate canal structures	\$0	0
11	Customer pump testing	\$200	10
12	Mapping	\$15000	120
	<i>Total</i>	\$61,100	2085

3. Projected budget summary for 2010.

<i>BMP #</i>	<i>BMP Name</i>	<i>Budgeted Expenditure (not including staff time)</i>	<i>Staff Hours</i>
A 1	Measurement	\$8,000	400
2	Conservation staff	\$1,200	60
3	On-farm evaluations/water delivery info	\$800	440
	Irrigation Scheduling	\$200	10
	Water quality	\$0	0
	Agricultural Education Program	\$1,000	40
4	Quantity pricing	\$0	0
5	Policy changes	\$5,000	150
6	Contractor's pumps	\$30,000	500
B 1	Alternative land use	\$0	0
2	Urban recycled water use	\$0	0
3	Financing of on-farm improvements	\$200	20
4	Incentive pricing	\$0	0
5	Line or pipe canals/install reservoirs	\$0	0
6	Increase delivery flexibility	\$0	280
7	District spill/tailwater recovery systems	\$0	0
8	Measure outflow	\$0	0
9	Optimize conjunctive use	\$0	30
10	Automate canal structures	\$0	0
11	Customer pump testing	\$200	10
12	Mapping	\$10,000	60
	<i>Total</i>	<u>\$56,600</u>	<u>2000</u>

~~Section 4: Best Management Practices for Urban Contractors~~