United States Bureau of Reclamation

Five–Year Water Management Plan

2016 Update

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2016 Update

Prepared for El Dorado Irrigation District

Prepared by Tully & Young, Inc.

Tully & Young
Comprehensive Water Planning

Final

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Attachments

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Section 1: Description of the District

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This Five-Year Water Management Plan (Plan) has been prepared for water used pursuant to Central Valley Project (CVP) Water Service Contract No. 14-06-200- 1357A-LTR1, Warren Act Contract No. 06-WC-20-3317, and Warren Act Contract No. 06-WC-20-3315 (Contract water) for Municipal and Industrial purposes (Contract Service Area). A map of the Contract Service Area is provided in Appendix A. Although the Contract Service Area and CVO Consolidated Place of Use extends into Cameron Park, due to current infrastructure restrictions water supplied through these contracts serve the El Dorado Hills supply area as shown on the District-wide Service Area Map in Appendix B. Values in this report represent only areas which receive Contract water unless otherwise noted.

A. History

The El Dorado Irrigation District (District) was organized in 1925 under the Irrigation District Law. The District provides water to more than 109,000 people for municipal, industrial, and irrigation uses, as well as, wastewater collection and treatment, and recycled water services to meet the growing needs of our customers. As such, the District is one of the few California districts that provide a full complement of water-related services. The Board of Directors is comprised of five members elected by the citizens in five geographical divisions within the District service area.

1. Date District formed and original size

District formed – October 5, 1925
Date of first Reclamation contract – 1953
Original size – 31,560 acres
Current Year – 2017

2. Size, population, and irrigated acres

District-wide
Size – 220 square miles
Population served – 109,000 persons
Irrigated acres – ~4,100 acres

Contract Service Area
Size – 35 square miles
Population served – 62,000 persons
Irrigated acres – ~30 acres

3. Water supplies received - 2016

Water Source	Total District-wide (Acre-feet)	CVP and Warren Act Contract (Acre-feet)
Federal urban water – CVP Contract	5,704	5704
Federal agricultural water	0	
Local Surface Water – Project 184	5,511	
Local surface water – Jenkinson Lake	18,668	
Local Surface Water – Warren Act Contract	252	252
Groundwater	0	
Banked water	0	
Transferred water	0	
Recycled water*	2,815	
Total	**32,950**	**5,956**

Source: Section 5, Tables 1 and 3 and 2016 Diversion Report
*Recycled Source: 2016 Water Resources and Service Reliability Report,

4. Annual entitlement under each right and/or contract

Source	Acre-feet per year	Contract/Right	Restrictions
Folsom Reservoir	7,550	CVP Water Service Contract No. 14-06-200-1357A-LTR1	Shortage Policy cutback
Project 184	15,080	EID owned Pre-1914	40 cfs delivery rate
Jenkinson Lake	33,400	EID owned L11835 & L11836	23,000 ac-ft/yr (operated as a two-year supply)
Permit 21112	17,000	Warren Act Contract No. 06-WC-20-3317	none
Ditches/Weber Reservoir	4,560	Warren Act Contract No. 06-WC-20-3315	3,000 ac-ft during dry years

Source: 2015 Urban Water Management Plan
Note: Table provides a listing of all water sources District-wide

5. Anticipated land use changes

El Dorado County governs land use policies and changes under its adopted General
Plan and the District has no governing authority or influence.

6. Cropping patterns

N/A EID does not operate an agricultural water delivery system within the Contract Service Area.

7. List major irrigation methods

N/A EID does not operate an agricultural water delivery system within the Contract Service Area.

B. Location and Facilities

1. Incoming measurements methods and locations

Location Name	Physical Location	Type of Measurement Device	Accuracy
Folsom Reservoir	El Dorado Hills WTP	Meter	±3%
Slab Creek	In-stream	Pressure Transducer	±8%
Weber Creek	In-stream	Pressure Transducer	±8%
Hangtown Creek	In-stream	Pressure Transducer	±8%
Weber Dam	In-stream	Pressure Transducer	± 8%

2. Agricultural conveyance system

EID does not operate an independent Agricultural Water system within the Contract Service Area. All water delivered for agricultural purposes is delivered through the Urban Distribution System described below and all services within the Contract Service Area are served with potable water.

3. Urban Distribution System

There are 336 miles of potable water mains in the Contract Service Area, which consist of steel, asbestos cement or PVC material.

Source: EID GIS/Drafting Services Section

4. Storage facilities

In the potable water system, where Contract water is served, the District operates 1 water treatment plant, 11 storage tanks, and 3 pumping stations.
Tanks:[1]

-Monte Vista – 0.125 MG
-Ridgeview – 1 MG
-Valley View 835 – 2 MG
-Valley View 960 – 0.835 MG
-Oak Ridge 1 – 3 MG
-Oak Ridge 2 – 5 MG
-Bass Lake 1 – 4.1 MG
-Bass Lake 2 – 4.1 MG
-Salmon Falls – 2 MG
-Highland View – 0.32 MG
-Promontory – 3.3 MG

5. Agricultural spill recovery system

The 20 Agricultural customers within the Contract Service Area are served through the potable water system. As such, there is no spill recovery system.

6. Agricultural delivery system operation

As the agricultural deliveries within the Contract Service Area are from the potable system, there is no independent Agricultural delivery system. The operation of all water supplies delivered for agricultural purposes within the Contract Service Area are handled by the potable system staff.

[1] Note that there are a total of 15 tanks in the contract service area but only 11 of them can currently be served with Contract Water.

7. Restrictions on the contractor's water sources

Source	Restriction	Cause of Restriction	Effect on Operations
Folsom Reservoir	Drought/dry year	USBR CVP M&I Water Shortage Policy	Reduces annual contract volume
Various ditches	Seasonal diversions	Water rights season of use	No effect – planned for

Note: CVP and Warren Act Contract water only

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

The District anticipates the following District-wide changes to facilities over the next five years:

- Waterline replacements
- Pressure reducing station and pump station replacement including Folsom Lake Raw Water Pump Station with Temperature Control Device (Reclamation Cooperative Agreement R14AC00061)
- Lining/piping of open channel earthen ditches including Main Ditch Piping Project (Reclamation WaterSMART Cooperative Agreement R16AP00125)
- Reservoir dam safety program improvements
- Storage tank replacements and removals

No changes to operations are anticipated over the next five years.

C. Topography and Soils

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

The District-wide service area is generally bounded by Sacramento County to the west and the Pollock Pines area to the east and ranges from 500 to more than 4,000 feet in elevation. For the area served by Contract water, elevations range from 500 to 1,600 feet in elevation. Although Contract water and the CVP Consolidated Place of Use extends into Cameron Park (EID Zones 1, 2, and portions of 4), due to current infrastructure restrictions water supplied through these contracts serves only the El Dorado Hills supply area (Zone 2) as shown on the District Service Area Map in Appendix B.

The District is primarily located in two major watersheds, the South Fork American River in the north and the North Fork of the Cosumnes River in the south, and is hydrologically split by the Placerville Ridge and Highway 50 between these two drainage watersheds. Although the rivers drain east to west, the minor streams trend northwest toward the American River and southwest toward the Cosumnes River. The ridges generally trend in a west to east

direction.

2. District's soils associations

Within the Contract Service Area, the lower foothills range from 500 feet along the El Dorado/Sacramento County line to the 1,600 foot elevation at Cameron Park. Beyond the contract service area, the water system reaches above 4,000ft. These vast changes in elevation necessitate varied water system operation. Contract water supplied in the west from Folsom Reservoir is currently pumped from the 400-foot elevation to currently as high as the 1,150-foot elevation.

Two main physiographic regions occur in the District: 1) The lower and middle foothill, and 2) The mountainous uplands. The Contract Service Area, which is located in the lower and middle foothill region, is characterized by rolling hills with rock outcroppings common. This region is composed of five soil associations, all having well drained loams weathered from slates, schist, igneous rock, and granite. This area makes up approximately one half of the District, with Auburn/Argonaut Soil association making up half of it.

3. Limitations resulting from soil problem

In the early periods of the district, the Contract Service Area had little agricultural activity owing to the difficulty in getting water supplies and the rolling hills being more difficult to cultivate than the near by areas of level land adjacent to the American River. Agricultural production became possible as water system improvements were made to deliver water but the rocky soil prevented large-scale operations from being attempted. Future agricultural production in the Contract Service Area are possible with engineered rootstocks on grapes being well suited to the rocky soil however property values and land use designations by the County will limit expansion of Agricultural users within the Contract Service Area.

D. Climate

1. General climate of the district service area

The District is located in a region of sunshine in the summer, moderate to heavy precipitation in the winter, and wide temperature ranges. Strong flows of marine air in the winter from the Pacific Ocean result in heavy precipitation. Precipitation in the summer is generally limited to a few scattered thunderstorms during July. A California Irrigation Management Information System (CIMIS) was installed slightly east of the Contract Service Area in September 2011. Average annual data since 2011 is provided below. Annual average precipitation is approximately 30 inches, with an average monthly precipitation during winter months of about five inches. Temperatures within the Contract Service Area range from hot in the summer to cold in the winter,

with average monthly temperatures of 89°F in July to 54°F in December. The highest temperatures recorded range from 107°F to 114°F.

Evapotranspiration (ETo) records indicate average values ranging from 1.56 inches in January to 8.90 inches in July. Low humidity usually occurs in the summer months, from May through October. The combination of hot and dry weather results in high water demands during the summer months. Annual total precipitation is about 30 inches.

2013-2016 Month*	Total Precipitation (in.)	Average Air Temperature (ºF)	Average Maximum Temperature (ºF)	Average Minimum Temperature (ºF)	Total ETo (in.)
January	2.37	48.7	58.5	40.9	1.77
February	4.00	50.9	61.1	42.2	2.47
March	4.05	54.3	64.2	45.3	3.75
April	2.32	57.4	68.2	46.8	5.23
May	0.68	62.2	73.6	51.2	6.44
June	0.24	72.9	85.6	59.9	7.99
July	0.02	77.1	89.5	64.5	8.49
August	0.01	75.2	87.5	63.1	7.63
September	0.17	70.8	83.0	59.4	5.61
October	3.03	63.0	74.3	53.5	3.82
November	3.00	52.2	62.4	44.3	2.03
December	5.31	45.9	54.6	38.7	1.33
Annual Totals/Average	**25.17**	**60.9**	**77.9**	**50.8**	**56.53**

Source: CIMIS data for station No. 228, Diamond Springs, CA

2. Impact of microclimates on water management within the district

Because the Contract Service Area ranges from the 500 to 1,600 foot elevation, water demands vary but the variance does not cause any water delivery issues.

E. Natural and Cultural Resources

1. Natural resources area within the District

EID does not serve water to any natural resources areas and has no current involvement in the operation of any natural resource areas. EID was an active member of the initial Gabbro Soil Preserve establishment and continues to provide funds for the purchase of parcels from willing sellers and also contributes funds annually to pay one-quarter share of the salary for the preserve manager position staff by a Bureau of Land Management employee.

Name	Estimated Acres	Description
Gabbro Soil Preserve	726	Gabbro Plant Preserve – Land dedicated to the protection of endemic species

2. Management of these resources in the past or present by the District

This District does not provide water to or manage the natural resources within the Contract Service Area.

3. Recreational and/or cultural resources areas

The following table lists the recreational sites within the District service area that are managed by the District.

Name	Estimated Acres	Description
Sly Park Recreation Area	1,100	Fishing, boating, camping, day-use
Forebay Reservoir	35	Fishing, day-use

Note: Areas reported are District-wide and are not within the Contract Service Area

The District also manages recreation sites at Silver Lake in Amador County and Caples Lake in Alpine County that are not within the District Service Area or the Contract Service Area.

There are no cultural resource areas managed by the District in the District Contract Service Area.

F. Operating Rules and Regulations

1. Operating rules and regulations

Board Policy 5000 series and associated Administrative Regulations pertaining to water supply are provided in Appendix C. A copy of all District Board Policies and Administrative Regulations can be found at www.eid.org.

2. Agricultural water allocation policy

N/A EID does not operate an agricultural water delivery system within the Contract Service Area.

3. Official and actual lead times necessary for water orders and shut-off

N/A EID does not operate an agricultural water delivery system within the Contract Service Area.

4. Policies regarding surface and subsurface drainage from farms

N/A EID does not operate an agricultural water delivery system within the Contract Service Area.

5. Policies on water transfers by the contractor and its customers

N/A To date, EID has not transferred any Contract water and does not have any formal policies in place. EID has engaged in transfers of EID owned rights, but all transfers have been temporary in nature and each contract was negotiated and approved by the EID Board and other agencies as necessary.

G. Water Measurement, Pricing, and Billing

1. Agricultural Customers

Source: 2016 Water Resources and Service Reliability Report

District-wide

a. Total number of Ag connections – 909[2]

b. Total number of metered Ag connections – 909

c. Number of connections not billed by quantity - 0

d. Percentage of water that was measured at delivery point – 100%

e. Percentage of water that was billed by quantity – 100%

[2] Includes all Ag Metered, Ditches, and Small Farm Irrigation services

Contract Service Area (information provided for El Dorado Hills Supply Area – Zone 2)

a. Total number of Ag connections – 20[3]

b. Total number of metered Ag connections – 20

c. Number of connections not billed by quantity - 0

d. Percentage of water that was measured at delivery point – 100%

e. Percentage of water that was billed by quantity – 100%

2. Urban Customers

Source: 2016 Water Resources and Service Reliability Report

District-wide

a. Total number of connections – 45,578

b. Total number of metered connections – 45,578

c. Number of connections not billed by quantity - 0

d. Percentage of water that was measured at delivery point – 100%

e. Percentage of water that was billed by quantity – 100%

Contract Service Area (information provided for El Dorado Hills Supply Area – Zone 2)

a. Total number of connections – 12,198

b. Total number of metered connections – 12,198

c. Number of connections not billed by quantity - 0

d. Percentage of water that was measured at delivery point – 100%

e. Percentage of water that was billed by quantity – 100%

f. Measurement device table

[3] Includes all Ag Metered, Ditches, and Small Farm Irrigation services in Zone 2

Meter Size/Style	Number Of Meters	Meter Accuracy	Reading Frequency	Calibration and Maintenance Frequency
5/8 " Displacement	3,959	98.5 to101.5%	Bi-Monthly	Replace at failure or when upgraded to radio read
¾ " Displacement	35,977	98.5-101.5%	Bi-Monthly	Repair/replace at failure or upgrade to radio read
1 " Displacement	2,352	98.5-101.5%	Bi-Monthly	Repair/replace at failure or upgrade to radio read
1½ " Displacement	487	98.5-101.5%	Bi-Monthly	Repair/replace at failure or upgrade to radio read
1½ " Turbine	91	98.5-101.5%	Bi-Monthly	Test every 5-10 years
2 " Displacement	252	98.5-101.5%	Bi-Monthly	Repair/replace at failure or upgrade to radio read
2 " Turbine and Compound	339	98.5-101.5%	Bi-Monthly	Test every 5-10 years
3 " Turbine	25	98.5-101.5%	Bi-Monthly	Test every 5-10 years
3 " Compound	46	98.5-101.5%	Bi-Monthly	Test every 5-10 years
4 " Turbine	10	98.5-101.5%	Bi-Monthly	Test every 5-10 years
4 " Compound	57	98.5-101.5%	Bi-Monthly	Test every 5-10 years
6 " Turbine	12	98.5-101.5%	Bi-Monthly	Test every 5-10 years
6 " Compound	18	98.5-101.5%	Bi-Monthly	Test every 5-10 years
8 " Turbine	3	98-102%	Bi-Monthly	Test every 5-10 years
10 " Turbine	1	98.5-101.5%	Bi-Monthly	Test every 5-10 years
14" Turbine	1	98.5-101.5%	Bi-Monthly	Test every 5-10 years
TOTAL	**43,630**			

Note: Meter accuracy per AWWA Standards
Note: Data for meter counts are for the entire system. EID does not track active meter counts by Contract Service Area.

3. Agriculture and Urban Customers

a. Current year agriculture and/or urban water charges

Current year water charges are provided in Appendix D.
M&I Rates: Basic charge with increasing tiered rate on quantity

b. Annual charges collected from single-family residential customers

The following tables provide the average annual water charges for a single-family residential and landscape account. Information is provided for the El Dorado Hills supply area only based on data from 2015.

Single-Family Residential Account Base Charge			
Charges ($/customer)	**Charge units (customers)**	**Units billed during year (6 bi-monthly)**	**$ collected**
$57.34	10,734	64,406	$3,692,830

Single-Family Residential Account Volumetric Charges			
Charges (per Tier)	**Charge units ($/CF)**	**Units billed during year**	**$ collected**
Tier 1	$0.01345	41,581,526	$1,307,739
Tier 2	$0.01623	56,475,641	$916,600
Tier 3	$0.01904	47,676,891	$907,768

Source: Customer Services Report of Single Family Residential rate accounts, September 7, 2017

Landscape Account Base Charge			
Charges ($/customer)	**Charge units (customers)**	**Units billed during year (6 bi-monthly)**	**$ collected ($ times units)**
$120.31	207	1,242	$149,424

Landscape Account Volumetric Charges			
Charges	**Charge units ($/CF)**	**Units billed during year (CF)**	**$ collected ($ times units)**
All Use	$0.01601	13,096,346	$209,674

Source: Customer Services Report of Recreational Turf rate accounts, Septtember 7, 2017

c. Water-use data accounting procedures

Water meter use data is recorded on automated meter reading systems or electronic recorders that download information directly into the District computer database. Customer bills are then generated and include usage and charges for the last bi-monthly period. Customers can request a printout that shows water usage for the past two years. The District keeps historic water use records that are stored electronically. Water bill examples for a residential and commercial service are provided as Appendix E.

H. Water Shortage Allocation Policies

1. Current year water shortage policies

The actions required to respond to both near-term and long-term changing water supply conditions are outlined in the District's *Drought Preparedness Plan*, adopted by the Board of Directors on February 11, 2008, and *Drought Action Plan,* developed by District staff in March 2009 and updated in May 2014. Drought stages are defined by associating water supply conditions and demand reduction goals. Drought stage definitions are summarized below including the percent of water supply reduction anticipated for each stage and the corresponding percent of targeted demand reduction.

- Water supply normal and unrestricted - Drought Stage 0
  Stage Zero is in effect at all times unless another subsequent stage is declared and reflects periods when normal water supplies and normal distribution capacity are available. A prohibition of water waste will be in effect during both normal and restricted water supply conditions.
- Water supply slightly restricted - Drought Stage 1
  The objective of Stage 1 is to initiate public awareness of predicted water Shortage conditions, and encourage voluntary water conservation to decrease normal demand up to 15%.
- Water supply moderately restricted - Drought Stage 2
  The objective of Stage 2 is to increase public understanding of worsening water supply conditions, encourage voluntary water conservation measures, and then if necessary enforce mandatory conservation measures in order to decrease normal demand up to 30%.
- Water supply severely restricted - Drought Stage 3
  The objective of Stage 3 is to enforce extensive mandatory restrictions on water use, and/or implement water rationing to decrease normal demand up to 50% to ensure that water use is limited to health and safety purposes.
- Water supply extremely restricted - Drought Stage 4

The objective of Stage 4 is to enforce extensive mandatory restrictions on water use, and implement water rationing to decrease normal demand beyond 50% to ensure that water use is limited to health and safety purposes.

- Declared water shortage emergencies
  The General Manager may also declare a water shortage emergency due to an existing condition or when there is a high probability that a condition will be realized in the near future. Such conditions may include an unexpected disruption of supply, storage, or distribution system facilities.

Drought indicators and associated trigger levels function to declare a drought early enough to maximize saved water, but not so early that a false drought declaration is issued. Indicators and associated drought stage triggers coordinate with drought stage demand reductions to avoid water supply shortfalls.

The District uses the Supply Remaining Index (SRI) to determine drought stages. A
key component of the SRI drought trigger plan is a measure of the number of days supply remaining (DSR). The DSR is a tool that predicts when the utility needs to reduce water demand. When the DSR is low, there is a limited amount of water Supply left and drought restrictions should be imposed to stretch the supplies longer. The DSR indicator incorporates expected future supply and demand, and calculates the DSR for each month. The DSR indicator is a function of:

- Current storage in Jenkinson Lake, Echo Lake, Lake Aloha, Silver Lake, and Caples Lake,
- Worst case expected supplies – conservatively based on the minimum monthly hydrology in the historical record, and
- Normal projected demand by month.

District staff also takes action to determine annual water availability and commitments. Administrative Regulation 1041 is provided in Appendix G and describes those actions.

2. Current year policies that address wasteful use of water

The District prohibits any use that constitutes waste under Administrative Regulation for all District-supplied raw, potable, and recycled water. The objective is to encourage reasonable use of water supplies by prohibiting all intentional or unintentional water waste, including the use of wasteful equipment or techniques, when a reasonable solution or alternative is available.

I. Evaluate Policies of Regulatory Agencies Affecting the Contractor and Identify Policies that Inhibit Good Water Management

Implementation of the 2015 USBR Water Shortage Policy for CVP Municipal & Industrial contractors affects the District's water management. The District primarily serves the western portion of its service area from Folsom Reservoir and the CVP Water Service Contract is a significant source of water to meet District demands in this area. Although the District has secured two Warren Act Contracts to divert non-CVP District-owned supplies from Folsom Reservoir, the District remains subject to the volatility of CVP allocations as implemented by the February 2017 Water Shortage Policy Guidelines and Procedures and has limited capacity to serve this portion of its service area with alternative supplies. Acquisition and strategic management on additional non-CVP supplies with help guard against this volatility and increase overall reliability of the District's water supply portfolio.

Over the past several years the State Water Resources Control Board (SWRCB) has enacted or proposed several policies regarding water use and reporting that inhibit good water management. During the last drought the SWRCB curtailed many rights across the state, which significantly affected the ability of the District to meet its customers' needs in certain areas where alternative rights and/or previously stored water was not available. In association with this drought the state also enacted permanent annual reporting of pre-1914 rights, monthly reporting of water diverted (unless suspended), and standardized mandatory conservation independent of storage conditions. Each of these actions resulted in burdensome administrative reporting requirements with no apparent benefit to water management. Mandatory conservation, however, had much farther reaching effects to the District's ability to manage its water supplies. The District was forced to limit water available to its customers despite the fact that it maintained adequate supplies to meet anticipated demand with limited voluntary conservation measures and irrigation day restrictions as outlined in the District Drought Preparedness and Drought Action Plans. This broad brushed approach to all water rights holders failed to account for any potential benefit to supplies and the environment and resulted in water wasted the following winter that would have otherwise been put to beneficial use. The District has advocated for a more individualized analysis of a water supplier's available water supply during times of prolonged drought, in order to determine if the water supplier has reliable water supplies that can support existing water demand. This approach ensures that agencies such as the District can continue to serve their customers because the District has appropriately planned for drought and secured and managed water supplies.

More recently, SWRCB has been working to update the Bay-Delta Water Quality Control Plan (Plan), and is currently evaluating potential instream flow requirements which would require a specified unimpaired outflow condition that may conflict with water rights seniority law for the northern Sacramento/San Joaquin Delta and its tributaries. This action could result in significant impacts to the District's water rights

portfolio, which contains some of the most senior rights within the state of California. The unimpaired flow approach could significantly reduce the quantity of water available for municipal, industrial, and agricultural use, with potentially little to no measurable benefit to fish and wildlife. The District, in coordination with other water purveyors in the watershed, has been working to develop and propose to the SWRCB a science-based approach to implement an alternative means to accomplishing the goals of the Plan without significantly impacting the District's ability to meet the current and future anticipated needs of its customers.

Section 2: Inventory of Water Resources

A. Surface Water Supply

1. Acre foot amounts of surface water delivered to the District by each source

See Table 1 and 8 in Attachment 1.

B. Groundwater Supply

1. Acre foot amounts of groundwater pumped and delivered by the District

N/A The District currently does not use groundwater as a supply source. Groundwater in the service area occurs in fractured hard rock and is unreliable as a source.

2. Groundwater basin that underlies the district

N/A There is no Bulletin 118 defined groundwater basin or subbasin under the District. Groundwater in the service area occurs in fractured hard rock and is unreliable as a source.

3. Contractor operated wells and managed groundwater recharge areas

N/A The District does not operate or manage any wells or groundwater recharge areas.

4. If there is conjunctive use of surface and groundwater, describe it

N/A The District does not participate in a conjunctive use of surface and groundwater.

5. For managed groundwater basins, attach a copy of the management plan

N/A The District does not use water from a managed or adjudicated groundwater basin.

6. For participation in groundwater banking, attach a description of the banking plan

N/A The District does not participate in groundwater banking.

C. Other Water Supplies

The District distributes recycled water for golf course, street median, school, playground, soccer field, park, commercial, and residential landscape irrigation and construction (dust control, soil compaction and general construction use). The District recycled water system consists of supply from the El Dorado Hills and Deer Creek wastewater treatment plants (EDHWWTP and DCWWTP), an interconnected network of transmission and distribution pipelines, pump stations, storage tanks, pressure reducing stations, and appurtenant facilities located within the communities of El Dorado Hills and Cameron Park that are within the Contract Service Area.

D. Source Water Quality Monitoring Practices

1. Potable water quality

In 2016 the District exceeded the primary maximum contaminant level for total of five haloacetic acids (HAA5) in the Contract Service Area, which is a byproduct of drinking water disinfection. The 2016 Annual Customer Water Quality Report describes surface water quality testing results and is attached in Appendix F.

2. Agricultural water quality concerns

N/A EID does not operate an agricultural water delivery system within the Contract Service Area.

3. Description of the water quality testing program and the role of each participant in the program

The District complies with all current federal Safe Drinking Water Act monitoring requirements. The District also complies with applicable state requirements listed in Titles 17 and 22 California Code of Regulations and related statutes in the Health & Safety Code and Water Code.

4. Current water quality monitoring programs

The District maintains an approved water quality monitoring program on file with the California State Water Resources Control Board, Division of Drinking Water.

E. Water Uses within the Contract Water Service Area

1. Agricultural

Agricultural water needs within the Contract Service Area are limited to a small number of customers who must regularly apply for Ag water service off of the potable system. Annual use within the federal water service area varies depending on the number of customers maintaining their Ag service rates. See Table 5 in Attachment 1.

2. Types of irrigation systems used for each crop

There are no crop reports broken down by area for El Dorado County. The agricultural lands within the federal water service area consist of a small number of rural residential lots with sufficient space to produce agricultural products. Irrigation to these parcels consists of drip and spray irrigation.

3. Urban- 2015

The data provided in the table below is for the El Dorado Hills Supply Area which is within the Contract Service Area and receives Contract Supply in addition to two Warren Act contract associated with EID-owned rights and permits. The total use in ac-ft exceeds the amount of Contract water delivered because other sources of water are also supplied to the Contract Service Area and further breakdown by water source is not available.

Customer Type	Number of Connections	Use in AF
Single Family	10,287	6,000
Multifamily	1,430	254
Commercial	670	1,454
Industrial	0	0
Institutional	0	0
Landscape Irrigation	36	363
Recycled	4,302	2,349
Other Uses	n/a	282
Real & Apparent Losses	n/a	1,189
Total	**16,725**	**11,891**

Notes: Real and Apparent Losses does not include Recycled losses. The commercial category includes commercial, industrial, institutional, and school accounts.
Source: EID 2016 Consumption Report for El Dorado Hills Supply Area (Zone 2)

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

The District has five wastewater service areas. The three largest service areas of El Dorado Hills, Deer Creek, and Motherlode are served by a series of lift stations, forcemains, and gravity mains that convey sewage to either the El Dorado Hills Wastewater Treatment Plant (EDHWWTP) or Deer Creek Wastewater Treatment Plant (DCWWTP). Sewage from both the Deer Creek and Motherlode Service Areas flow to the DCWWTP, whereas sewage from the El Dorado Hills Supply Area flows to the EDHWWTP. Together, these two wastewater treatment plants serve a population of nearly 60,000 people. Sewage collected within the Contract Service Area is treated at either the DC or EDH WWTP.

Treatment Plant	Treatment Level	2016 AF	Disposal to/uses
El Dorado Hills	3	2,894	Carson Creek/recycled water
Deer Creek	3	2,594	Deer Creek/recycled water
	Total	**5,488**	
Total discharged to ocean and/or saline sink			0

Source: Values from Operations Department September 26, 2017

5. Groundwater management plan/banking program

The District does not operate any groundwater recharge, management, or banking systems.

6. Transfers, exchanges, rescheduling, purchases, or sales into or out of the district

The District does not transfer or exchange Contract water into or out of the Contract Service Area. The District has conducted water transfers with District-owned rights, but no CVP water was transferred.

7. Wheeling or other transactions into or out of the district

The District does not transfer or exchange Contract water into or out of the service area. The District does maintain interties with the City of Folsom for emergency purposes but these interties have never been put to use. If these interties were used then the water would be Contract water.

8. Other uses of water

Within the Contract Service Area, there are no other uses of water other than for consumptive purposes. District-wide, the District makes non-consumptive use of water to generate hydroelectricity at the Project 184 El Dorado Powerhouse, and to provide instream flows for wildlife and habitat enhancement as required by water rights conditions, agreements, and regulatory permits. Water stored in and released from Caples Lake, Lake Aloha, Echo Lake, and Silver Lake is used to meet instream flow requirements below those reservoirs' dams, generate hydroelectric power, and meet bypass flows in the South Fork American River. Water releases from Clear Creek, Jenkinson Lake, and Weber Reservoir provide wildlife and habitat enhancement.

F. Outflows from the District (Ag only)

N/A EID does not operate an agricultural water delivery system within the Contract Service Area.

G. Water Accounting

1. Quantify contractors' water supplies

See Table 1 of Attachment 1 for Surface Water Supply.
See Table 2 of Attachment 1 for Groundwater Supply.
See Table 3 of Attachment 1 for Total Water Supply.

2. Quantify water used

See Table 4 of Attachment 1 for Distribution System Losses.

3. Overall water inventory

See Table 6 of Attachment 1 for District Water Inventory.

Section 3: BMPs for Agricultural Contractors

N/A EID does not operate an agricultural water delivery system within the Contract Service Area and does not have an agricultural water contract.

Section 4: BMPs for Urban Contractors

A. Urban BMPs

BMP and water efficiency implementation 5-year budget

BMP	2015 Actual	2016 Projected	2017 Projected	2018 Projected	2019 Projected	2020 Projected
BMP 1 – Foundational Conservation Coordinator Water Waste Prohibition Wholesale Agency Assistance Water Loss Control	$871,860	$870,000	$870,000	$870,000	$870,000	$870,000
BMP 2 – Education Public Outreach School Education	$232,000	$232,000	$232,000	$232,000	$232,000	$232,000
***BMP 3 – Residential** Indoor Water Surveys Outdoor Water Surveys Plumbing Retrofits High-Efficiency Clothes Washers WaterSense Specification Toilets						
***BMP 4 – Commercial, Industrial, Institutional (CII)** Water Conservation Measures and Incentives						
***BMP 5 – Landscape** ETo Water Budgets Technical Assistance Landscape Water Surveys Irrigation Equipment Incentives						
Total	$1,103,860	$1,102,000	$1,102,000	$1,102,000	$1,102,000	$1,102,000

* Note: This information is based on available information from CUWCC reporting documents. Many changes have occurred in the CUWCC reporting platform, reporting options, and compliance requirements since the last Federal Water Management Plan in 2010. First, EID has switched to a GPCD based compliance option rather than programmatic method. Second, reporting requirements have been reduced since 2013 meaning that less detailed information is tracked. And finally, the CUWCC has been reorganized and is now the California Water Efficiency Partnership.

The following table provides a listing of all current actions with the schedule/monitoring. Examples of water conservation flyers and educational programs are provided in Appendix H.

BMP	Schedule/Monitoring	Description of Proposed Action
Foundational		
Conservation Coordinator	Ongoing position	EID has funded and employed one full-time position to support water conservation coordinator duties.
Water Waste Prohibition	Ongoing - prohibition is year-round; enforcement is conducted during normal business hours	EID's Administrative Regulation 1041 - Water Waste Prohibition, was adopted on February 26, 2008 and is in effect at all times to prohibit water waste.
Wholesale Agency Assistance	Ongoing assistance	EID provides water efficiency assistance to City of Placerville customers through a 1999 wholesale agreement between the agencies.
Water Loss Control	Ongoing implementation	EID completed a comprehensive and system-wide water audit through participation in an AWWA Research Foundation study that was completed in 2005. Several recommendations for water loss control were contained in the final report, and EID continues to implement these improvements as staff time and funding permits.
Metering with Commodity	Ongoing metering and bi-monthly bill	EID is 100% metered, and provides its customers with bi-monthly water bills, based on actual meter reads, in order to assist the customer in managing their water usage.

BMP	Schedule/Monitoring	Description of Proposed Action
Conservation Pricing	Ongoing implementation	EID has adopted tiered water rates for many years in order to encourage its customers to conserve water, and the current rate structure is compliant with this BMP.
Education		
Public Information Programs	Ongoing - with plan adoption each fiscal year; water efficiency information available 24/7 at www.eid.org	Implementation of this BMP is met through EID's membership in the Sacramento Regional Water Authority's Water Efficiency Program. Refer to Appendix I for the RWA Water Efficiency Program Fiscal Year 2012 Category 1 Business Plan for more detailed information. EID also offers water efficiency and leak detection information on its website.
School Education Programs	Ongoing - with plan adoption each fiscal year; literature and teaching aides available during normal business hours	Implementation of this BMP is met through EID's membership in the Sacramento Regional Water Authority's Water Efficiency Program. Refer to the attached *Fiscal Year 2012 Category 1 Business Plan* adopted by RWA members for more detailed information. EID also offers water efficiency literature and teaching aides to educators and youth leaders through a school education page on its website.
Residential		
Assistance Program	Ongoing - assistance provided during normal business hours	EID provides onsite leak detection assistance for the customer, along with the distribution of complimentary plumbing retrofits, as needed.

BMP	Schedule/Monitoring	Description of Proposed Action
Landscape Water Survey Program	Ongoing - with surveys provided during normal business hours	EID provides onsite landscape water surveys, including inspection of the customer's irrigation system for leaks and recommendations for water efficiency improvements.
High-Energy Clothes Washers	Ongoing – program is self funded and changes yearly depending on budget	EID now complies with the BMPs through the GPCD method. Rebate programs ended in 2010 and are periodically self funded by EID as funds allow.
WaterSense Specification Toilets	Ongoing – program is self funded and changes yearly depending on budget	EID now complies with the BMPs through the GPCD method. Rebate programs ended in 2010 and are periodically self funded by EID as funds allow.

BMP	Schedule/Monitoring	Description of Proposed Action
High Bill Contact with Single- and Multi-Family Customers	Ongoing - during normal business hours	Utility billing staff have daily contact with single- and multi-family customers regarding their high water bills, offering ways to reduce water usage, leak detection assistance if warranted or a complimentary water survey. (See below - Notifying Customer of Leaks for additional activity).
Educate Residential Customers about the Behavioral Aspects of Water Conservation	Ongoing - during normal lobby business hours; several times per year at events; and bi-monthly in newsletters	Multiple publications are offered to EID customers in the headquarters lobby and at booths during local events. In addition to publications, tools that address behavioral changes include indoor/outdoor self-checklists, and slide rulers/wheels showing ways to save water. A four page bi-monthly newsletter that contains water efficiency tips and information is mailed to all customers with their water bill.
Notify Residential Customers of Leaks on the Customer's Side of the Meter	Ongoing - all customer meters read bi-monthly; auditing during normal business hours	During bi-monthly readings, EID meter technicians check the meter reading for abnormal usage or a continuously turning leak detection needle. If either are noted, they contact the customer with a knock on the door and/or a door tag, notifying them that there is a possible water leak on their side of the water meter. Utility billing staff also audits meter reads for abnormally high water usage after each billing cycle, ordering a meter re-read and a meter leak detection check if warranted. The customer is notified automatically by mail if there is a possible water leak. Current meter technically utilized by EID does not allow for more frequent meter reading which is required for more advanced leak detection software.

BMP	Schedule/Monitoring	Description of Proposed Action
Provide Bill or Surcharge Refunds for Customers to Repair Leaks on Customer's Side of the Meter	Ongoing - but limited to one adjustment every five years per account	EID's Administrative Regulation 9051.3 allows for an adjustment to an account if excessive delivery is the result of water leakage that occurs from underground or unexposed pipes beyond the discharge flange of the water meter. EID must receive the request for credit in writing within 60 days from the bill date of the bill that reflects the leakage. An adjustment is made only after the leak has been repaired and it is reasonable to predict that the leak or loss will not occur again. The customer must submit repair receipts for verification that the leak has been repaired.
Provide Unique Water Savings Fixtures that are not in the BMP list above	Annual - displayed during winter months (landscape focus during irrigation season)	EID has provided a demonstration model in the headquarters lobby of a hot water re-circulating device to educate our customers of this unique water savings fixture for their homes.
Install Residential Water Use Monitors	Ongoing - monitoring through bi-monthly billing; leak detection information available 24/7 at www.eid.org	Customers are encouraged to monitor their water usage through their metered, bi-monthly water bills; and also by checking their meter using the leak detection needle. Leak detection instructions are available on the EID website and through customer contact during normal business hours.

BMP	Schedule/Monitoring	Description of Proposed Action
Implement an Automatic Meter Reading Program for Residential Customers	Ongoing - for new meter installations; dependent upon future funding availability for retrofits.	Approximately half of EID's existing meters have AMR capability. An AMR retrofit program was funded for a number of years; however, due to budget constraints, there is currently no retrofit program. All new meters are installed with AMR capability.
Other Residential Programs not Listed	Ongoing – program is self funded and changes yearly depending on budget	EID offers financial incentives to residential customers for the upgrade of landscape irrigation systems, and the conversion of automatic controllers to weather-based irrigation controllers. Rebate programs ended in 2010 and are periodically self funded by EID as funds allow.

Commercial, Institutional, and Industrial (CII)

BMP	Schedule/Monitoring	Description of Proposed Action
Water Audits - Interior and Exterior	Ongoing - program is self funded and changes yearly depending on budget	EID offers interior and exterior water audits to all CII customers, but is currently focusing efforts on comprehensive audits for institutional customers such as schools and community service districts. Upon completion of the interior audits, complimentary plumbing retrofit supplies are provided, along with financial incentives to replace high-flush volume toilets and urinals. Upon completion of the exterior audits, EID offers financial incentives for the upgrade of irrigation systems, and the conversion of automatic controllers to weather-based irrigation controllers.
Pool and Water Feature Recycling	Ongoing - prohibition is year-round; enforcement is conducted during normal business hours	EID's Administrative Regulation 1041, Water Waste Prohibition, requires recirculation devices in ponds, waterways, decorative basins or swimming pools. Discharging of backwash water is also limited to a reasonable frequency necessary to maintain the clarity and cleanliness of the water.
Sub-metering	Ongoing - for customer funded submeter installations	EID offers CII customers with a mixed use meter the opportunity to install a landscape submeter in order to better manage their irrigation demands. For eligible sites that have a minimum of 5,000 square feet of irrigated area, there are also financial incentives available for the submeter assembly and the conversion of a standard irrigation controller to a weather-based irrigation controller.

BMP	Schedule/Monitoring	Description of Proposed Action
High Efficiency Showerheads	Ongoing - offered during water surveys; available in lobby during normal business hours	EID offers CII customers complimentary low-flow showerheads to replace older high-flow models.
Faucet Flow Restrictions	Ongoing - offered during water surveys; available in lobby during normal business hours	EID offers CII customers complimentary low-flow faucet aerators to replace older high-flow aerators.
Pre-rinse Spray Values of 1.2 gpm or less	Ongoing - offered during water surveys; available in lobby during normal business hours	EID offers CII customers complimentary low-flow pre-rinse spray nozzles to replace older high-flow models.
Other Measures Chosen by Agency	Ongoing – offered as funds allow	EID offers financial incentives to CII customers for the upgrade of landscape irrigation systems, and the conversion of automatic controllers to weather-based irrigation controllers.
Landscape		
Monitor and Report on Landscape Water Use	Ongoing – program is self funded and changes yearly depending on budget	EID completed water budgets for large landscape customers with Prop 84 funding. EID provides onsite landscape water surveys, including inspection of the customer's irrigation system for leaks and recommendations for water efficiency improvements.

BMP	Schedule/Monitoring	Description of Proposed Action
Provide Incentives	Ongoing – program is self funded and changes yearly depending on budget	EID offers financial incentives to dedicated landscape customers for the upgrade of landscape irrigation systems, and the conversion of automatic controllers to weather-based irrigation controllers.
Participate in Local and Regional Planning and Regulatory Activities	Ongoing participation	EID is a member of: the Sacramento Regional Water Authority (RWA); RWA's Water Efficiency Program Advisory Committee (RWEPAC); the American River Basin IRWMP; the Cosumnes, American, Bear, and Yuba (CABY) Rivers IRWMP; the California Urban Water Conservation Council (CUWCC); the Association of California Water Agencies (ACWA); and the Mountain Counties Water Resources Association (MCWRA).

Year of Data	2016	Enter data year here

Table 1

Surface Water Supply

2016 Month	Federal Urban Water (acre-feet)	Federal Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (Warren Act Contract) (acre-feet)	Transfers into District (acre-feet)	Other Water (define) (acre-feet)	Total (acre-feet)
Method							
January	0	0	0	149	0	0	149
February	0	0	0	103	0	0	103
March	191	0	0	0	0	0	191
April	293	0	0	0	0	0	293
May	504	0	0	0	0	0	504
June	839	0	0	0	0	0	839
July	1173	0	0	0	0	0	1,173
August	1071	0	0	0	0	0	1,071
September	801	0	0	0	0	0	801
October	436	0	0	0	0	0	436
November	228	0	0	0	0	0	228
December	168	0	0	0	0	0	168
TOTAL	5,704	0	0	252	0	0	5,956

NOTE: In 2016 the El Dorado Hills Water Treatment Plant was offline for about 12 days of February for scheduled maintenance. During this time all demands within the Contract Water Service area were met through supplies provided from other sources. As such the value for February of 103AF, which is the basis for estimated Inside Use in Table 6, is artificially low.

Table 2

Ground Water Supply

2016 Month	District Groundwater (acre-feet)	Private Urban Groundwater *(acre-feet)
Method		
January	0	0
February	0	0
March	0	0
April	0	0
May	0	0
June	0	0
July	0	0
August	0	0
September	0	0
October	0	0
November	0	0
December	0	0
TOTAL	0	0

*normally estimated

Table 3

Total Water Supply

2016 Month	Surface Water Total (acre-feet)	District Groundwater (acre-feet)	Recycled M&I Wastewater (acre-feet)	Total District Water Supply (acre-feet)
Method				
January	149	0	42	191
February	103	0	45	148
March	191	0	48	239
April	293	0	143	436
May	504	0	271	775
June	839	0	460	1,299
July	1,173	0	565	1,738
August	1,071	0	535	1,606
September	801	0	400	1,201
October	436	0	200	636
November	228	0	61	289
December	168	0	45	213
TOTAL	5,956	0	2,815	8,771

NOTE: Recycled Water listed is total volume sold, which includes approximately 571AF supplementation of potable water to the Recycled Water System to meet demands in 2016. Not all reycled water is delivered to El Dorado Hills Supply Area (Zone 2).

Table 4

Urban Distribution System

2016 Area or Line	Length (feet)	Leaks (acre-feet)	Breaks (acre-feet)	Flushing/Fire (acre-feet)	Total (acre-feet)
El Dorado Hills Supply Area	1,774,080	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
TOTAL	1,774,080	0	0	0	0

NOTE: The value for Leaks is only available for the entire system. As such, no assumption of leaks or flushing has been derived for the El Dorado Hills Service Area.

~~*Table 5*~~

Table 6

2016 District Water Inventory

Water Supply	Table 3		8,771
Environmental Consumptive Use		minus	0
Groundwater Recharge	(Perc ponds & recharge wells)	minus	0
Transfers out of District		minus	0
Flushing / Fire	Table 4b	minus	0
Distribution System Leaks & Breaks	Table 4b	minus	0
Water Available for sale to customers			8,771
Actual Water Sales 2016	From District Records		7,517
Inside Use	Feb urban use x 12		1,236
Landscape / Outside Use	(calculated)		6,281
Unaccounted for Water	(calculated)		1,254

NOTE: In 2016 the El Dorado Hills Water Treatment Plant was offline for about 12 days of February for scheduled maintenance. During this time all demands within the Contract Water Service area were met through supplies provided from other sources. As such the value for February of 103AF, which is the basis for estimated Inside Use in Table 6, is artificially low.

~~*Table 7*~~

Table 8

Annual Water Quantities Delivered Under Each Right or Contract

Year	Federal Urban Water (acre-feet)	Federal Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (Warren Act Contract) (acre-feet)	Transfers into District (acre-feet)	Other Water (define) (acre-feet)	Total (acre-feet)
2007	6,559	0	0	2,572	0	0	9,131
2008	3,747	0	0	3,135	0	0	6,882
2009	4,568	0	0	2,124	0	0	6,692
2010	5,554	0	0	856	0	0	6,410
2011	1,225	0	0	4,560	0	0	5,785
2012	5,932	0	0	1,044	0	0	6,976
2013	2,406	0	0	3,294	0	0	5,700
2014	2,912	0	0	2,291	0	0	5,203
2015	327	0	0	5,340	0	0	5,667
2016	5,704	0	0	252	0	0	5,956
Total	38,934	0	0	25,468	0	0	64,402
Average	3,893	0	0	2,547	0	0	6,440

Appendix

Appendix A – Contract Service Area Map

Appendix B – EID Service Area Map

Appendix C – Board Policy 5000

Appendix D – 2015 Water Rates

Appendix E – Sample Water Bill

Appendix F – 2016 Water Quality Report

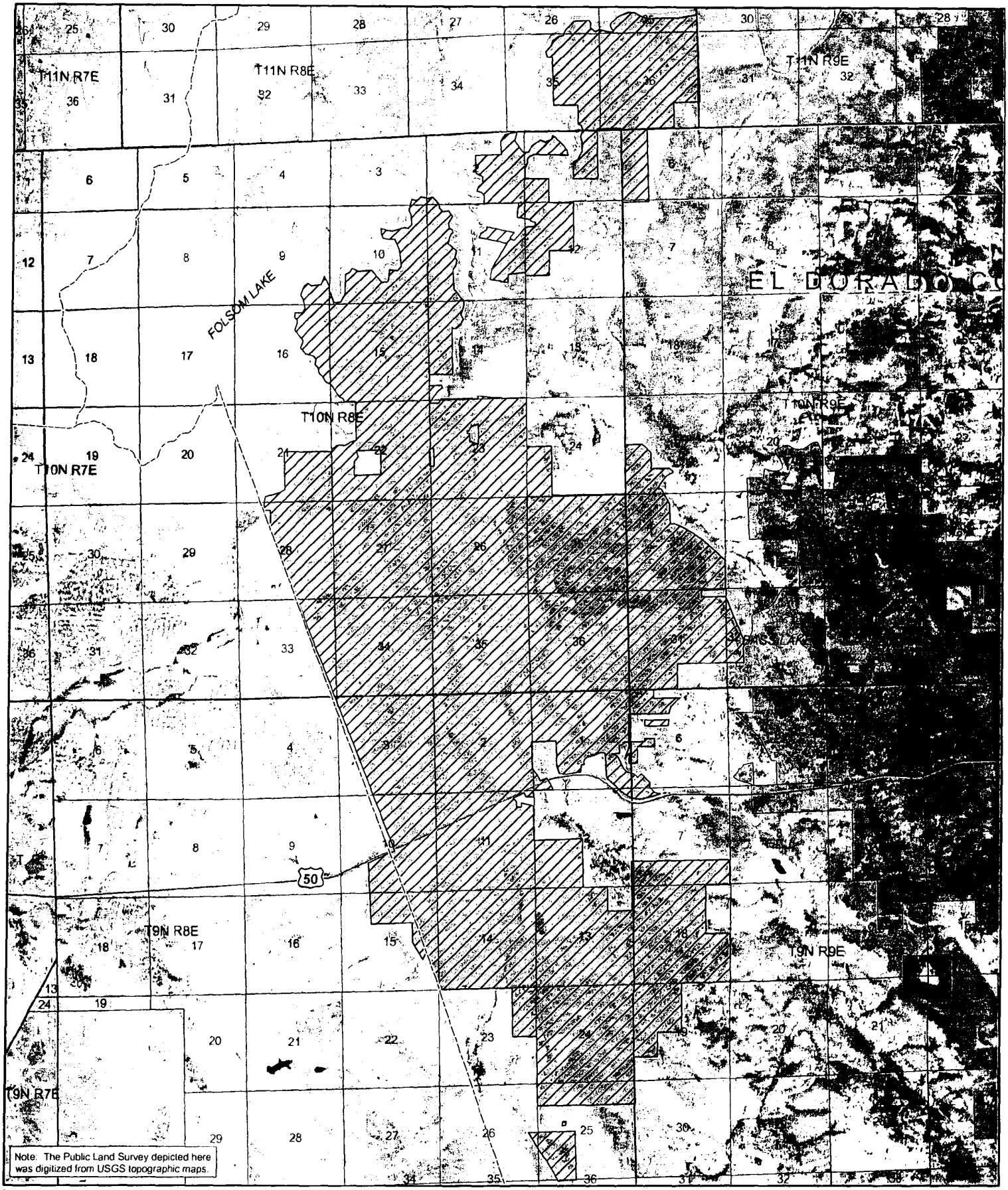
Appendix G – Administrative Regulation 1041

Appendix H – Educational Materials

Appendix I – Fiscal Year 2012 Category 1 Business Plan

Appendix J – 2015 CUWCC Filing

Appendix A – Contract Service Area Map



Contractor's CVP Service Area

District Boundary

El Dorado I.D. - Folsom Service Area

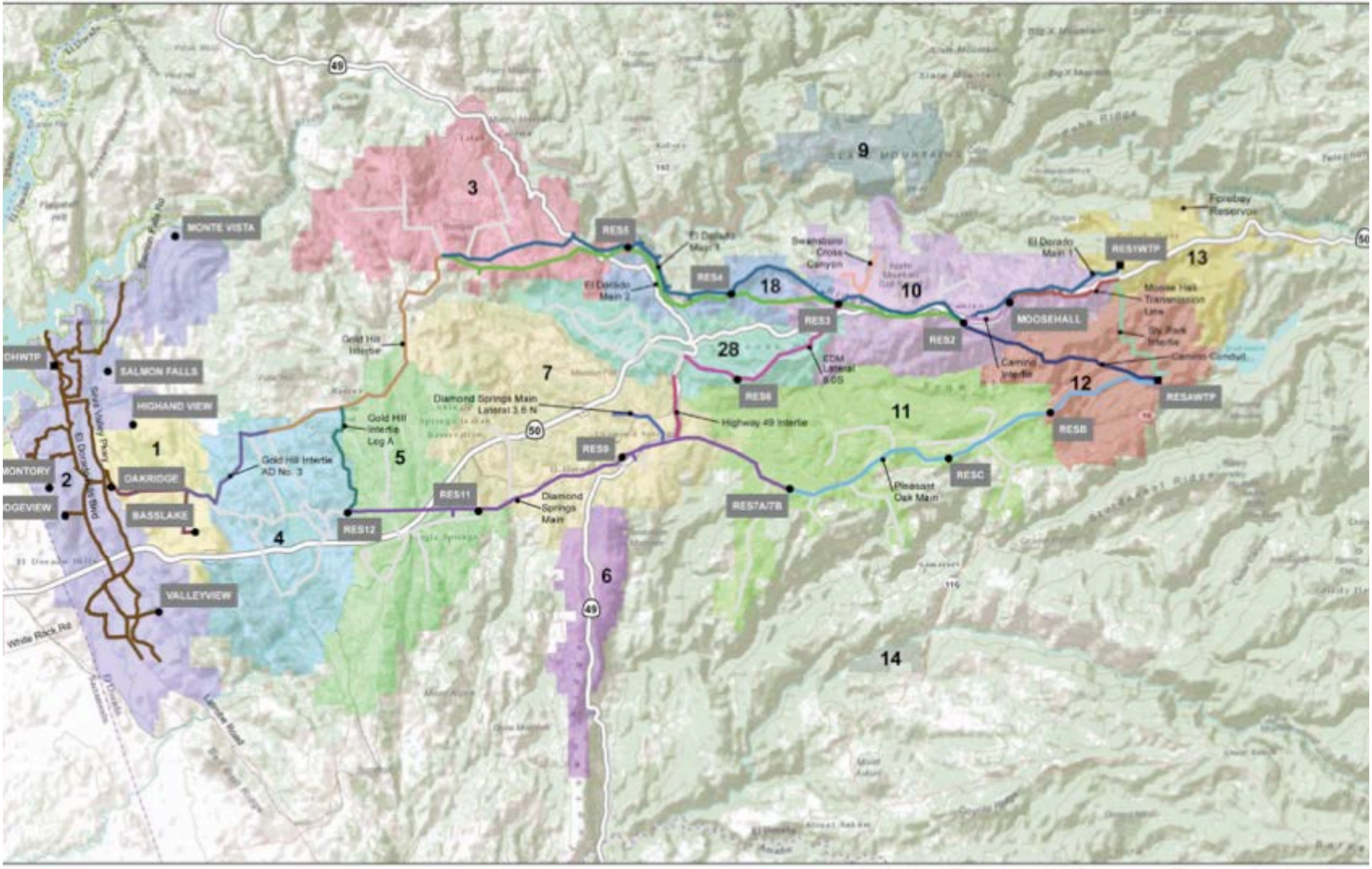
Contract No. 14-06-200-1357A-LTR-1

Exhibit A

Date: October 27, 2004, Revised 6/13/05, 2/3/06

353-202-1

Appendix B – EID Service Area Map


MONTE VISTA
SALMON FALLS
HIGHAND VIEW
OAKRIDGE
BASSLAKE
VALLEYVIEW
Gold Hill Interbe
Gold Hill Interbe Leg A
Gold Hill Interbe AD No. 3
Diamond Springs Main Lateral 3.6 N
Highway 49 Interbe
Diamond Springs Main
El Dorado Main 1
El Dorado Main 2
Swansboro Cross Canyon
EDM Lateral 9.0S
Caming Interbe
Forebay Reservoir
Moose Hall Transmission Line
Sly Park Interbe
Camino Conduit
Pleasant Oak Main
RES1
RES1A
RES1WTP
RES2
RES3
RES4
RES5
RES6
RES7A/7B
RES8
RES9
RES11
RES12
RESAWTP
RESC
MOOSEHALL
1
2
3
4
5
6
7
9
10
11
12
13
14
18
28
49
50
White Rock Rd

Appendix C – Board Policy 5000

El Dorado Irrigation District

Board Policies (BP)
and
Administrative Regulations (AR)
Updated on July 14, 2017

TABLE OF CONTENTS

El Dorado Irrigation District

BP 5000 WATER SUPPLY

BP 5010 Water Supply Management

Adopted: August 28, 2006
Supersedes: Regulation No. 1 – adopted March 24, 1982, amended April 21, 2003
Regulation No. 2 – adopted July 24, 1989, amended August 6, 2001
Regulation No. 3 – adopted October 25, 1993
Regulation No. 7 – adopted December 14, 1988, amended October 21, 2002
Regulation No. 10 – adopted September 30, 1981, amended February 7, 2000
Regulation No. 11 –adopted June 17, 1984

The Board is committed to provide a water supply based on the principles of reliability, high quality, and affordability in a cost-effective manner with accountability to the public. It is the General Manager's responsibility to ensure that the tenets of this policy are carried out in an open, transparent manner through sound planning, to assure preparedness under varying conditions, and effective management.

It is the policy of the Board that the District will not issue any new water meters if the *Water Resources and Service Reliability Report* indicates that there is insufficient water supply. When warranted by the findings of the report, the General Manager will bring the possibility of restrictions on meter issuance to the Board's attention. Any such restrictions will be established pursuant to Water Code Section 350 et. Seq. of the California Water Code.

AR 5010 Water Availability and Commitments

Approved: December 12, 2006

AR 5010.1 Annual reporting

The District will maintain adequate water supply and demand records to ensure accurate monitoring and reporting. The General Manager will ensure that an updated *Water Resources and Service Reliability Report* is prepared annually for review by the Board of Directors. The report will include the current system firm yield of the overall District, along with the water supply and infrastructure capacity, potential demands, existing commitments, and meter availability for each water service area of the District as defined in the report.

AR 5010.2 Shortages

The *Water Resources and Service Reliability Report* will use a system firm yield method to determine that sufficient water supply exists to meet potential demands. Under this methodology, approximately 95% of the time sufficient water supply is available to meet normal water demands, but during the remaining 5% of the time water shortages may occur. Such shortages may result in the implementation of voluntary or mandatory conservation measures.

AR 5010.3 New meter restrictions

Should findings in the *Water Resources and Service Reliability Report* warrant restrictions on the issuance of new water meters, the General Manager will bring the situation to the attention of the Board of Directors. During emergency conditions when supplies are restricted or limited, the General Manager may also bring to the Board's attention possible restrictions on water meter availability.

AR 5011 Water Supply Management Conditions

Approved: December 12, 2006
Revised: July 25, 2008
Revised: April 7, 2015

The District recognizes that variations in weather patterns can cause watersheds to yield different quantities of water supply in any given year. In some years, dry weather or drought conditions may occur which result in varying degrees of water shortage. The District also recognizes that future climate change may impact the intensity and duration of future droughts.

The actions required to respond to both near- and long-term changing water supply conditions are outlined in the District's *Drought Action Plan*, regularly updated by the Board of Directors and available on the District's website. The following water supply management conditions, and corresponding drought stages, describe the incremental steps needed to manage increasing levels of water shortage.

AR 5011.1 Water supply normal and unrestricted Drought Stage Zero – Ongoing water conservation

Stage Zero is in effect at all times unless another subsequent stage is declared. Stage Zero reflects periods when normal water supplies and normal distribution capacity are available, and the District anticipates the ability to meet the unrestricted demands of its customers. A prohibition of water waste will be in effect during both normal and restricted water supply conditions.

AR 5011.2 Water supply slightly restricted Drought Stage 1 – Voluntary reductions in use

The objective of Stage 1 is to initiate public awareness of predicted water shortage conditions, and encourage voluntary water conservation to decrease normal demand up to the amounts stated in the *Drought Action Plan*.

AR 5011.3 Water supply moderately restricted
Drought Stage 2 – Voluntary and mandatory reductions

The objective of Stage 2 is to increase public understanding of worsening water supply conditions, encourage voluntary water conservation measures, and then if necessary, enforce mandatory conservation measures in order to decrease normal demand up to the amount stated in the *Drought Action Plan*.

AR 5011.4 Water supply severely restricted
Drought Stage 3 – Mandatory restrictions

The objective of Stage 3 is to enforce extensive mandatory restrictions on water use, and implement water rationing to decrease normal demand up to the amount stated in the *Drought Action Plan* to ensure that water use is limited to health and safety purposes.

AR 5011.5 Declared water shortage emergencies

The General Manager may also declare a water shortage emergency due to an existing condition or when there is a high probability that a condition will be realized in the near future. Such conditions may include an unexpected disruption of supply, storage, or distribution system facilities.

AR 5012 District Infrastructure and Facilities

Approved: December 12, 2006
Revised: May 25, 2010

AR 5012.1 Connections to District infrastructure

Connections to the District's infrastructure shall be made only by District employees or under the direct supervision of District employees. No connection to District infrastructure shall be made without prior approval.

AR 5012.2 Responsibility for infrastructure maintenance

The District's ownership of and responsibility for the operation and maintenance of facilities will end at the discharge side of the meter, or discharge conduit. In circumstances where the customer owns a testable check valve assembly, the annual testing and maintenance of internal components are conducted by the District. The District will be responsible to operate, maintain, and replace District water mains, flumes, ditches, and other facilities of the District's total supply, transmission, and distribution system. The District's water supply system shall be under the exclusive control and management of duly appointed District personnel, and no one shall have any right to operate, maintain or replace any of the District's water facilities, or interfere with the District system in any manner.

For service through private waterlines or community group systems, measuring devices placed within these systems shall be at the sole discretion of the District. Any such placement, however, does not create an obligation on the part of the District for the operation, maintenance, or replacement of the private waterlines or group system.

AR 5013 Water Service Interruptions or Restrictions

Approved: December 12, 2006
Revised: July 25, 2008
December 20, 2012

Water service interruptions or restrictions may occur during water supply conditions, especially Drought Stages 2 and 3, and water shortage emergencies as declared by the General Manager. The District may, with prior notification, temporarily remove or lock off meters or otherwise interrupt water service to classifications not assigned for human consumption.

Irrigation and agricultural services provided by the District may be subject to an interruption or restriction under these conditions. Temporary Water Use program services provided by the District may also be subject to removal, lock-off, restriction, or discontinuance.

The District may also restrict water availability for Temporary Water Use in certain locations due to constraints in the distribution system.

AR 5013.1 Violations

The District reserves the right to interrupt or restrict, without prior notice, any irrigation or agricultural service, construction, or Temporary Water Use that is found to violate the restrictions imposed by a water shortage condition.

AR 5013.2 Service interruptions due to planned or unplanned maintenance

The District reserves the right at any and all times to shut off water delivery or reduce pressure for the purpose of maintenance or making repairs and alterations to the water system. Whenever possible, advance notice of interruption of service will be given to all affected water users.

AR 5014 Fire Suppression

Approved: December 12, 2006
Revised: December 18, 2012
Revised: August 20, 2013
Revised: February 19, 2015

A fire suppression system may consist of a private interior fire sprinkler system or public fire hydrants. The fire protection agency having jurisdiction over the property will set the fire suppression requirements. The District will provide water for fire hydrants and other fire suppression facilities, but does not warrant or guarantee any range of pressures or rates of flow. The District will not be liable for water pressure or damage in any manner that arises from the availability of water or water pressure at any hydrant or facility used for fire suppression.

The District will provide water at no cost to fire protection agencies for the purpose of fire suppression activities. These activities are limited to equipment maintenance and testing, training, and the filling of fire suppression equipment. All other domestic uses of water, including but not limited to washing of tools, driveways and vehicles, and irrigation uses as well as interior uses at fire stations and any associated training facilities, will be supplied in accordance with District regulations and procedures and must be metered and paid for by the fire protection agency.

AR 5014.1 Fire hydrants

Public fire hydrants for parcels located inside District boundaries will be installed and connected to District mains when requested by the fire protection agency having jurisdiction or when required as a condition of a building permit or subdivision of land. The cost of the fire hydrant assembly and all other appurtenances, including installation, will be paid for by the holder of the building permit or the developer of the project. The District will review, approve, and inspect all public fire hydrant installations.

All public fire hydrants will be owned, operated, tested for functionality, flow tested and maintained by the District from the water main up to and including the hydrant. All fire hydrants may be inspected, tested for functionality, and externally maintained by the fire protection agency.

No person, other than authorized EID or fire protection agency personnel, shall open or draw water from any fire hydrant connected to the District's distribution system without prior specific authorization from the District. Refer to AR 9073 for authorized temporary water use.

The removal or relocation of any public fire hydrant must be approved by the District in advance, and any removal or relocation will be made at the expense of the person or entity requesting the change.

AR 5014.2 Commercial fire suppression services

The property owner will be responsible for the expense of installing a commercial fire suppression system and appropriate backflow prevention device as required by the District.

Water provided to a fire suppression sprinkler system will not be used for any purpose other than extinguishing a fire or testing of the fire protection system.

AR 5014.3 Residential fire suppression services

A residential fire sprinkler system may be served by the residential water meter except if a separate service line and water meter is needed to provide the required fire flow.

AR 5015 Ground Water Supply

Approved: December 12, 2006

Because of the unreliable nature of underground water sources in most of El Dorado County, ground water will not be relied on to augment firm yield supply or as a sole source of water for domestic, irrigation, or fire-fighting purposes. Any consideration of direct ground water augmentation to the existing water system will be evaluated on the basis of short- and long-term reliability, quality, and economics. More than one professional, expert opinion regarding adequacy will be required. The costs of necessary tests, expert opinions, and District staff time will be borne by the applicant.

BP 5020 Cross-Connection Control and Backflow Prevention

Adopted: August 28, 2006
Supersedes: Regulation No. 10 – Prevention of Contamination by Backflow and Cross Connections, Adopted September 30, 1981, Amended February 7, 2000

The District will establish and maintain a cross-connection control program according to the California Code of Regulations - Title 17, Section 7583-7605, or their successors.

AR 5021 Cross-Connection Control and Backflow Prevention

Approved: September 16, 2009

In accordance with BP 5020, the District protects its public water system at the service connection against any actual or potential cross-connection between the public water system and any source or system containing used water, industrial fluid, gas or other substance that is not, or cannot be, approved as safe, wholesome and potable for human consumption. Such protection is enforced through California Code of Regulations Title 17 Section 7584, which requires the District to comply with all applicable state and federal laws required by the Safe Drinking Water Act of 1974, as they are now constituted, or as they may hereafter be amended or recodified, and implemented through the District's "Cross-Connection Control and Prevention of Backflow Program."

A copy of the current "Cross-Connection Control and Prevention of Backflow Program" is available upon request from the Environmental Division.

BP 5030 Water Conservation

Adopted: August 28, 2006
Supersedes: Regulation No. 21 – Conservation, Adopted June 10, 1981

It is Board policy to take reasonable and prudent measures to conserve all water and to adopt and implement water-use efficiency programs that will benefit its customers.

BP 5040 Drought Preparedness and Climate Variability

Adopted: August 28, 2006
Supersedes: Regulation No. 2 – Water Supply Reliability, Adopted July 24, 1989, Amended August 6, 2001

The Board supports the adoption and implementation of a drought preparedness plan to ensure a proactive response to the impacts of drought conditions. Included in the planning effort is consideration of climate variability.

BP 5050 Watershed Management

Adopted: August 28, 2006
Supersedes:

It is Board policy to adopt and support watershed management strategies that will maximize water supply reliability and water quality.

Appendix D – 2015 Water Rates

EL DORADO IRRIGATION DISTRICT
BI-MONTHLY RATE SCHEDULE

Adopted: November 12, 2013
Effective:June 1, 2015

BASE CHARGES		COMMODITY CHARGES PER CUBIC FOOT (cf)	
WATER RATES		**WATER RATES**	
Single Family Residential		**Single Family Residential**	
5/8" and 3/4" meters	$55.37	0 - 1,800 cf	$0.01345
1"	$81.09	1,801 - 4,500 cf	$0.01623
1 1/2"	$139.92	Above 4,500 cf	$0.01904
1 1/2"T	$165.65		
2"	$213.43		
2"T	$213.43		
3"	$430.91		
3"T	$448.72		
4"	$632.53		
4"T	$790.61		
6"	$1,253.67		
6"T	$1,735.40		
8"T	$2,972.84		
10"T	$4,708.24		
12"T	$6,194.66		
Single Family Dual Plumbed Residential [1]	$33.32		
Multi-Family Residential and Commercial/Landscape		**Multi-Family Residential and Commercial/Landscape**	
5/8" and 3/4" meters	$58.23	All usage	$0.01601
1"	$85.96		
1 1/2"	$149.38		
1 1/2"T	$177.12		
2"	$228.65		
2"T	$228.65		
3"	$442.66		
3"T	$482.29		
4"	$680.44		
4"T	$850.86		
6"	$1,338.32		
6"T	$1,601.41		
8"T	$3,189.11		
10"T	$5,050.75		
12"T	$6,625.14		
Recreational Turf		**Recreational Turf**	
5/8" and 3/4" meters	$52.49	All usage	$0.01601
1"	$76.21		
1 1/2"	$130.44		
1 1/2"T	$154.17		
2"	$198.23		
2"T	$198.23		
3"	$381.26		
3"T	$415.15		
4"	$584.62		
4"T	$730.36		
6"	$1,147.25		
6"T	$1,601.41		
8"T	$2,730.05		
10"T	$4,323.72		
12"T	$5,668.60		
Agricultural Irrigation (with residence) and Small		**Agricultural Irrigation (with residence) and Small**	
5/8" and 3/4" meters	$55.37	0 - 1,800 cf	$0.01345
1"	$69.39	Above 1,800 cf	$0.00112
1 1/2"	$82.09		
1 1/2"T	$87.64		
2"	$97.98		
2"T	$97.98		
3"	$140.84		
3"T	$148.77		
4"	$188.46		
4"T	$222.60		
6"	$320.24		
6"T	$426.62		
8"T	$690.95		
10"T	$1,094.31		
12"T	$1,379.22		

2015

EL DORADO IRRIGATION DISTRICT
BI-MONTHLY RATE SCHEDULE

Adopted: November 12, 2013
Effective:June 1, 2015

BASE CHARGES		COMMODITY CHARGES PER CUBIC FOOT (cf)	
WATER RATES		**WATER RATES**	
Agricultural Irrigation (without residence) and Raw metered		**Agricultural Irrigation (without residence) and Raw metered**	
5/8" and 3/4" meters	$15.79	All usage	$0.00112
1"	$21.36		
1 1/2"	$34.05		
1 1/2"T	$39.61		
2"	$49.93		
2"T	$49.93		
3"	$92.80		
3"T	$100.74		
4"	$140.42		
4"T	$174.55		
6"	$272.20		
6"T	$378.58		
8"T	$642.93		
10"T	$1,018.23		
12"T	$1,331.18		
RAW WATER RATES		**RAW WATER RATES**	
Metered Landscape Irrigation [2]		Raw Water - seasonal continuous flow	
Raw Water Year Round- 1/2" flow	$72.50	All usage	$0.00112
Raw Water Year Round- 1" flow	$145.02		
Raw Water Year Round- 2" flow	$290.02		
Raw Water Year Round- 4" flow	$580.04		
Raw Water Year Round- >4" flow (per inch of flow)	$145.02		
WASTEWATER RATES		**WASTEWATER RATES**	
Residential flat rate District average [3]	$134.00	**Single Family Residential**	
Single Family Residential	$71.95	All usage	$0.03878
Multi Family Residential (per unit)	$35.34	**Multi-Family Residential**	
Commercial - (all categories)	$76.91	All usage	$0.03041
Commercial without water service (per unit)	$119.81	**Commercial/Industrial**	
		Commercial - Low	$0.04458
Schools, per student and staff (billed annually)	$11.80	Commercial - Medium/Low	$0.06423
		Commercial - Medium	$0.09578
		Commercial - Medium/High	$0.14898
		Commercial - High	$0.32453
RECYCLED WATER RATES		**RECYCLED WATER RATES**	
Single Family Dual Plumbed Residential [4]	$22.05	**Single Family Dual Plumbed Residential**	
		0 - 3,000 cf (rate is 50% of potable water tier 1)	$0.00636
Commercial Landscape/Recreational Turf		3,001 - 4,500 cf (rate is 70% of potable water tier 2)	$0.01075
5/8" and 3/4"	$29.79	Above 4,500 cf (rate is 90% of potable water tier 3)	$0.01619
1"	$43.26		
1 1/2"	$74.04	**Commercial Landscape (all meter sizes)**	
1 1/2"T	$87.51	All usage	$0.00875
2"	$112.51		
2"T	$112.51	**Recreational Turf**	
3"	$216.38	All usage	$0.01034
3"T	$235.63		
4"	$331.81		
4"T	$414.53		
6"	$651.14		
6"T	$908.91		
8"T	$1,549.50		
10"T	$2,454.01		
12"T	$3,217.32		

FOOTNOTES:

[1] Single Family Dual Plumbed Residential services pay both a potable and a recycled base charge. Refer to both rate schedules for applicable base charges.

[2] For base charges refer to the agricultural irrigation (without residence) and raw metered base charges

[3] Effective 6/1/2015, the Residential flat rate Distircit average consumption was recalculated. This reduced average consumption from 1800cf to 1600cf.

[4] Single Family Dual Plumbed Residential services pay both a potable and a recycled base charge. Refer to both rate schedules for applicable base charges.

LEGEND:

1 cubic foot = 7.48 gallons

1 miners inch = 11.22 gallons per minute (gpm)

1 miners inch day = 16,156.80 gallons or 2,160 cubic feet

Services outside of the District are billed at 1.5 times the adopted rate

Appendix E – Sample Water Bill

1

EL DORADO IRRIGATION DISTRICT
2890 MOSQUITO ROAD
PLACERVILLE, CALIFORNIA 95667

ADDRESS SERVICE REQUESTED

AUTO5-DIGIT 95762 19 PS5 65817RB09-A-1
4834 1 AV 0.340

JOHN SMITH
1234 ANY STREET
ANY CITY, CA 12345

UTILITY ACCOUNT INFORMATION

2

Account Number	123456-001
Statement Date	06/08/11
Service Address	1234 ANY STREET
Cycle	C1
Last Bill Amount	132.70
Payments	-132.70
Adjustments	0.00
Balance Forward	0.00
Due Date	**06/29/11**
Total Due	**$166.29**

3 **MAIN PHONE & EMERGENCIES:** 530-622-4513
BILLING PHONE: 530-642-4000 & 916-965-0930

4

Service Period		Days	Meter Number	Meter Size	Current Reading	Previous Reading	Usage (in CF)
04/01/11	05/31/11	60	65701456	0.75	91100	86900	4200
04/01/11	05/31/11	60	65330056	0.75	22500	21900	600

Service	Description	Consumption	Units	Rate	Charge	Total
	RECYCLED WATER CHARGE		4200			$34.90
	Tier 1	4200		0.008310	34.90	
TOTAL RECYCLE						**$34.90**

5

Service	Description	Consumption	Units	Rate	Charge	Total
	RESIDENTIAL WATER CHARGE		600			$33.74
	Basic Water Charge				25.89	
	Tier 1	600		0.013090	7.85	
	PHASE III-LINE/COVER		1		3.25	$3.25
TOTAL WATER						**$36.99**

Service	Description	Consumption	Units	Rate	Charge	Total
	SEWER CHARGE		589			$94.40
	Basic Sewer Charge				77.33	
	Tier 1	589		0.028980	17.07	
TOTAL SEWER						**$94.40**

Total Current Charges	**$166.29**
Balance Forward	**$0.00**
Total Due	**$166.29**
Estimated Average Cost Per Day	**$2.77**

6 Online bill pay now available. Visit our website at www.eid.org to have e-statements, view your bills, make one time payments, or set up recurring payments. Should you have any questions please call our Billing Department at (530) 642-4000.

EIR0121TV50078

KEEP THIS PORTION FOR YOUR RECORDS - SEE REVERSE FOR CONSUMPTION HISTORY
RETURN THIS PORTION WITH YOUR PAYMENT

7

PAYMENT COUPON

PLEASE RETURN THIS PORTION ALONG WITH YOUR PAYMENT

MAKE YOUR CHECK PAYABLE TO: **EL DORADO IRRIGATION DISTRICT**

Cycle: C1

Service Address: 1234 ANY STREET

Billing Address

JOHN SMITH
1234 ANY STREET
ANY CITY, CA 12345

UTILITY ACCOUNT INFORMATION

Account Number	123456-001
Statement Date	06/08/11
Due Date	**06/29/11**
Total Due	**$166.29**

☐ Please check this box and fill out the reverse side of this form if your contact information has changed or if you would like to provide your e-mail address to receive important District news.

EL DORADO IRRIGATION DISTRICT
2890 MOSQUITO ROAD
PLACERVILLE CA 95667

8

QUESTIONS ABOUT YOUR BILL

If you have questions about your bill, please call our service representatives at 530-642-4000 or visit www.eid.org and click on customer services.

TERMS OF PAYMENT

All charges are due by the due date on the other side of this bill. Past due accounts are subject to a late payment charge of $10.00, which will be reflected on a subsequent bill.

The Due Date on the bill applies to current charges only.

NON-PAYMENT OF BILL

The District reserves the right to disconnect any water, sewer, or recycled water system customer for non-payment of a bill.

If your service is disconnected because of non-payment, you will have to pay the past due amount and a reconnection fee to regain service.

RETURNED CHECK CHARGE

A fee will be charged for any returned check, and the returned check must be redeemed in cash or by money order within two working days.

ACCESS TO FACILITIES

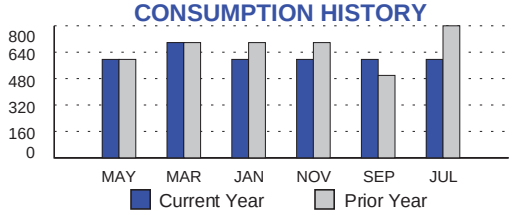
When you apply and receive service, you license the District and its authorized employees and agents to enter your property at reasonable times to read, inspect, check, repair, maintain, or replace District meters, backflow prevention devices, and other facilities.

The meters need to be accessible at all times. If meters cannot be read because of obstructions, customers will be asked to correct the problem. If the condition persists, service will be subject to disconnection and a reconnection fee to regain service.

WATER CONVERSION FACTORS

Your meter reads in cubic feet.
1 cubic foot = CF
100 cubic feet = CCF
1 cubic foot = 7.48 gallons of water
1 acre-foot = 43,560 cubic feet of water
1 acre-foot = 325,829 gallons of water
One acre-foot of water = an acre of land covered by water one foot deep.

CONSUMPTION HISTORY



9

10

Would you like to receive important District news and information by e-mail?

Please provide your email address: _____

Your e-mail address will never be shared with third parties and you may unsubscribe at any time.

Please make any changes or corrections to your billing address or phone numbers below:

Name: _____

Phone Numbers: Home _____ Work _____ Mobile _____

Billing Address: _____

City: _____ State: _____ Zip: _____

1. **El Dorado Irrigation District's Address**
   This is where you can send in payment or any other correspondence to the District.
2. **Utility Account Information**
   This includes account number, statement date, service address, billing cycle, last bill amount, payments made since last statement, adjustments made since last statement, balances brought forward from last bill, and the bills due date. If you are on recurring payments with the District it will also state Recurring CC Statement Date or Direct Debit Date, depending on what type of recurring payment you have setup.
3. **El Dorado Irrigation District's Contact Information**
   This includes the telephone number to the main office and for emergencies, and the direct telephone number for the Billing Department.
4. **Meter Information**
   This includes service periods, days in billing cycle, meter numbers, meter sizes, current readings, previous readings, and usage in cubic feet (CF). To determine which meter is your recycled water and which is your potable water, please look at the usage in this section and cross reference to the units in the Billed Line Items section.
5. **Billed Line Items**
   This includes the charges for water, sewer, and recycled water services. The recycled water charge will include the basic charge (if any), the consumption in cubic feet from the recycled meter, and the rate and charge for each applicable tier. The water charge will include the basic charge, the consumption in cubic feet from the potable meter, the rate and the charge for each applicable tier, Phase II Line and Cover Surcharge (if applicable), and Phase III Line and Cover Surcharge (if applicable). The sewer charge will include the basic charge, the commodity charge (tier 1) which is based on "Winter Quarter Average" consumption, reflected on your February statement, and El Dorado Hills Surcharge (if applicable).
   If there are any additional fees or penalties, they would be reflected below the sewer charges in a service category called total other charges.
   After all the charges are listed you will see a summary of total current charges, balance forward, total due, and estimated average cost per day based on this billing period.
6. **Bill Messages**
   This is where the District places any important message regarding your billing or other District information.
7. **Payment Coupon**
   If you wish to mail your payment in, please tear off and remit this coupon with your payment in the envelope provided.
8. **Important Information Regarding This Bill**
   This shows how to contact the District if you have questions about your bill, the terms of payment, and water conversion factors. These are subject to change at any time.
9. **Consumption History Graph**
   This graph shows a 2 year history of potable water consumption in cubic feet.
10. **Account Information Change**
    This section is for adding an email address to your contact information and updating your mailing address and/or phone numbers. Please fill out and return the back part of the coupon and check the box on the front.

Appendix F – 2016 Water Quality Report

EL DORADO IRRIGATION DISTRICT

2016 Water Quality Report

Water testing performed in 2016

Main Water System

Este informe contiene información muy importante sobre su agua beber. Tradúzcalo o hable con alguien que lo entienda bien.

About the Water Quality Report

The Water Quality Report is an annual summary of the results of ongoing tests for contaminants in drinking water. The report is designed to inform you of the quality of your drinking water. Each year, the State Water Resources Control Board and U.S. Environmental Protection Agency (EPA) require EID to compile and distribute a report to all of our water customers. The report includes a comparison of the District's water quality to state and federal standards.

Where Your Water Comes From

EID has rights to approximately 75,000 acre-feet of water from various sources in the Sierra Nevada foothills. (An acre-foot equals one acre of land covered by a foot of water; there are 325,851 gallons in an acre-foot.) Jenkinson Lake, at the center of Sly Park Recreation Area, provides nearly one half of the Main System's water supply and is treated at the Reservoir A water treatment plant in Pollock Pines. Forebay Reservoir in Pollock Pines delivers water to the Reservoir 1 water treatment plant under a pre-1914 water right from the high-alpine streams and lakes that are part of our Project 184 hydropower system. We have a water contract with the Bureau of Reclamation at Folsom Lake, which Reclamation operates as part of the state's Central Valley Water Project. We also hold ditch water rights (Weber, Slab, and Hangtown creeks), water rights at Weber Reservoir, and a water right under Permit 21112 for Project 184 water—all of which is delivered from Folsom Lake through the El Dorado Hills water treatment plant. The EID Main water system provides water to 40,605 service accounts within a 225 square mile service area.

About EID

EID is a multi-service, water-based public utility serving about 118,000 people in El Dorado County. The District holds water rights in the Sierra Nevada foothills that date back to the Gold Rush. Today EID provides a unique combination of services—from drinking water and water for pastures, orchards, and vineyards to wastewater treatment, recycled water for irrigated landscapes and front and back yards, hydroelectric and solar power generation, water efficiency programs, and outstanding recreation in Sierra Nevada alpine and western slope environments.

Information about potential sources of pollution

The State Water Resources Control Board requires water providers to conduct a source water assessment to help protect the quality of water supplies. The assessment describes where a water system's drinking water comes from, the types of polluting activities that may threaten the quality of the source water, and an evaluation of the water's vulnerability to the threats.

Updated assessments of EID's drinking water sources were completed in 2006, 2008, and 2013. Our source water is considered most vulnerable to recreation, residential sewer, septic system, and urban runoff activities, which are associated with constituents detected in the water supply. Our source water is also considered most vulnerable to illegal activities, dumping, fertilizer, pesticide and herbicide application, forest activities, and wildfires, although constituents associated with these activities were not detected.

Copies of the assessments are available at the State Water Resources Control Board, Division of Drinking Water, P.O. Box 997377, Sacramento, CA 95899-7377. To view them, contact Ali Rezvani, DDW Sacramento District Engineer, at 916-445-5285, or Dana Strahan, EID Drinking Water Division Operations Manager, at 530-642-4060.

Testing the water

To help ensure that safe water is delivered to our customers, EID's water quality monitoring program includes taking samples of raw and treated water throughout the year from many locations in the District's service area. Analyses cover more than 100 different constituents. Analysis of the water is performed at state-certified commercial labs.

The state of California may grant monitoring waivers for contaminants when historical monitoring results are less than the Maximum Contaminant Level. As a result, some of our data, although representative, may be more than a year old. The information shows that EID continues to deliver safe drinking water. When available, the data reported reflects the treated water supply.

A Note for Sensitive Populations

Some people who drink water containing Haloacetic Acids (five) (HAA5) in excess of the maximum contaminant level (MCL) over many years may have an increased risk of getting cancer. The MCL violations occurred in a part of our service area along Salmon Falls Road served from the Monte Vista tank from January 1, 2016 to December 31, 2016 and the Gold Hill area served by Reservoir 5 from April 1, 2015 to March 31, 2016.

As part of our ongoing efforts to supply the highest quality drinking water to our customers, we are implementing operational practices and/or design modifications that will reduce the formation of disinfection by-products in your drinking water. Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the U.S. EPA Safe Drinking Water Hotline at 1-800-426-4791.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. EID is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking.

If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, test methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline, or at www.epa.gov/safewater/lead.

Questions?

For more information from EID about this report, contact Dana Strahan, Water Division Operations Manager, at 530-642-4060.

For information from the State Water Resources Control Board, Division of Drinking Water, contact Ali Rezvani, DDW Sacramento District Engineer, at 916-445-5285.

U.S. EPA Safe Drinking Water Hotline: 1-800-426-4791

This Consumer Confidence Report (CCR) reflects changes in drinking water regulatory requirements during 2016. All water systems are required to comply with the state Total Coliform Rule. Beginning April 1, 2016, all water systems are also required to comply with the federal Revised Total Coliform Rule. The new federal rule maintains the purpose to protect public health by ensuring the integrity of the drinking water distribution system and monitoring for the presence of microbials (i.e., total coliform and E. coli bacteria).

The U.S. EPA anticipates greater public health protection as the new rule requires water systems that are vulnerable to microbial contamination to identify and fix problems. Water systems that exceed a specified frequency of total coliform occurrences are required to conduct an assessment to determine if any sanitary defects exist. If found, these must be corrected by the water system. EID did not exceed specified frequency of total coliform occurrences.

The following definitions help explain information in the table on the next page.

Maximum contaminant level (MCL): The highest level of a contaminant allowed in drinking water. Primary MCLs are set as close to the PHG or MCLGs as is economically and technologically feasible. Secondary MCLs (SMCL) are set to protect the odor, taste, and appearance of drinking water.

Maximum contaminant level goal (MCLG): The level of contaminant in drinking water below which there is no known or expected risk to health. The U.S. Environmental Protection Agency (EPA) sets these levels.

Maximum residual disinfectant level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for the control of microbial contaminants.

Maximum residual disinfectant level goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Primary drinking water standard (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Public health goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. The California Environmental Protection Agency sets PHGs.

Regulatory action level (AL): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements for water systems.

Treatment technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Turbidity: Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

Main Water System - Source Water Quality

Primary Standards - Health Based (units)	Primary MCL	PHG (MCLG)	Highest Single Measurement	Lowest Monthly Percentage of Samples Meeting Limits	MCL Violation?	Most Recent Sampling Date	Typical Source of Constituent
Turbidity							
Highest single measurement of the Treated Surface Water (NTU)	TT = 1.0	n/a	0.19	n/a	No	2016	Soil runoff
Lowest Monthly % of theTreated Surface Water Meeting NTU Requirements	TT = 95% of samples ≤ 0.3 NTU	n/a	n/a	100%	No	2016	Soil runoff

Secondary Standards - Aesthetic (units)	Secondary MCL	PHG (MCLG)	Range of Detection	Average Level	MCL Violation?	Most Recent Sampling Date	Typical Source of Constituent
Chloride (mg/L)	500	n/a	3-5.5	4.1	No	2016	Runoff/leaching from natural deposits; seawater influence
Corrosivity (A.I.)	Non-corrosive	n/a	9.6-9.8	9.70	No	2016	Natural or industrially-influenced balance of hydrogen, carbon and oxygen in the water; affected by temperature and other factors
Odor-Threshold (units)	3	n/a	1-2	2	No	2016	Naturally-occurring organic materials
Specific Conductance (µmhos/cm)	1600	n/a	39-75	53	No	2016	Substances that form ions when in water; seawater influence
Sulfate (mg/L)	500	n/a	0-1.3	0.6	No	2016	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (mg/L)	1000	n/a	35-39	38	No	2016	Runoff/leaching from natural deposits
Turbidity (NTU)	5	n/a	0-0.18	0.06	No	2016	

Other Parameters (units)	Notification Level	PHG (MCLG)	Range of Detection	Average Level	MCL Violation?	Most Recent Sampling Date	Typical Source of Constituent
Alkalinity (mg/L)	Unregulated	n/a	10-25	17	n/a	2016	No Known Typical Source of Constituent
Bicarbonate (mg/L)	Unregulated	n/a	19-26	22	n/a	2016	
Calcium (mg/L)	Unregulated	n/a	2.0-5.4	3.3	n/a	2016	
Hardness as CaCO3 (mg/L)	Unregulated	n/a	11-16	13	n/a	2016	
Hardness as CaCO3 (grains/gal)	Unregulated	n/a	0.65-0.94	0.76	n/a	2016	
Hexavalent Chromium (ug/L)	Unregulated	0.02	ND-0.07	ND	n/a	2013	
Magnesium (mg/L)	Unregulated	n/a	0.7-1.5	1.1	n/a	2016	
pH (pH units)	Unregulated	n/a	7.2-8.1	7.7	n/a	2016	
Sodium (mg/L)	Unregulated	n/a	5.7-6.1	5.9	n/a	2016	
Strontium (ug/L)	Unregulated	n/a	ND-53	35	n/a	2013	
Vanadium (ug/L)	50	n/a	ND-0.63	0.18	n/a	2013	

Disinfection Byproduct Precursors (units)	Action Level	PHG (MRDLG)	Range of Detection	Lowest RAA Quarterly Average	MCL Violation?	Most Recent Sampling Date	Typical Source of Constituent
Total Organic Carbon [TOC] Filtered water (mg/L)	TT= Removal	n/a	0.98-1.20	n/a	n/a	2016	Various natural and manmade sources
Total Organic Carbon [TOC] Removal Ratio (Actual/Required)	TT=>1.0	n/a	n/a	1.0	No	2016	Various natural and manmade sources

Main Water System - Distribution System Water Quality

Microbiological Constituents (units)	Primary MCL	PHG (MCLG)	Value	MCL Violation?	Most Recent Sampling Date	Typical Source of Constituent
Total Coliform Bacteria > 40 Samples/Month (Present / Absent)	No more than 5% positive monthly sample	(0)	Highest number of monthly samples positive was 1%	No	2016	Naturally present in the environment

Disinfection Byproducts and Disinfectant Residuals (units)	Primary MCL (MRDL)	PHG (MRDLG)	Range of Detection	Highest Running Annual Average (RAA)	MCL Violation?	Most Recent Sampling Date	Typical Source of Constituent
Chlorine [as Cl_2] (mg/L)	(4.0)	(4)	0.44-1.07	0.60	No	2016	Drinking water disinfectant added for treatment
HAA5 [Total of five Haloacetic Acids] (ug/L)	60	n/a	**16-84**	**62 ***	**Yes**	2016	Byproduct of drinking water disinfection
TTHMs [Total of four Trihalomethanes] (ug/L)	80	n/a	10-96	76*	No	2016	Byproduct of drinking water chlorination

Inorganic Constituents (units)	Action Level	PHG (MCLG)	Sample Data	90th % Level	MCL Violation?	Most Recent Sampling Date	Typical Source of Constituent
Copper (mg/L)[at the tap]	1.3	0.3	None of the 56 samples collected exceeded the action level	0.16	No	2014	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ug/L)[at the tap]	15	0.2	1 of the 56 samples collected exceeded the action level	ND	No	2014	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

Other Parameters (units)	Notification Level	PHG (MCLG)	Range of Detection	Average Level	MCL Violation?	Most Recent Sampling Date	Typical Source of Constituent
Chlorate (ug/L)	800	n/a	74-240	131	n/a	2013	No Known Typical Source of Constituent
Hexavalent Chromium (ug/L)	Unregulated	0.02	0.06-0.09	0.08	n/a	2013	No Known Typical Source of Constituent
Strontium (ug/L)	Unregulated	n/a	38-55	45	n/a	2013	No Known Typical Source of Constituent
Vanadium (ug/L)	50	n/a	0.38-0.72	0.50	n/a	2013	No Known Typical Source of Constituent

Footnotes:
Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether the contaminants need to be regulated.

*Highest Locational Running Annual Average (LRAA)

KEY

NA=not applicable
ND=not detected
NR=not reportable

NTU=nephelometric turbidity unit (measure of clarity)
mg/L=milligrams/liter
µg/L=micrograms/liter
µmho/cm=micromhos per centimeter

Your Drinking Water—What You Should Know

The sources of drinking water-both tap and bottled-include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activity.

The following contaminants may be present in source water before it is treated.

- **Microbial contaminants** such as viruses and bacteria from sewage treatment plants, septic systems, livestock operations, and wildlife.
- **Inorganic contaminants** such as salts and metals that occur naturally or stem from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and farming.
- **Pesticides and herbicides** from sources such as agriculture, urban stormwater runoff, and residential uses.
- **Organic chemical contaminants** such as synthetic and volatile organic chemicals that are byproducts of industrial processes and petroleum production or that come from gas stations, urban stormwater runoff, agricultural applications, and septic systems.
- **Radioactive contaminants** that occur naturally or are the result of oil and gas production and mining.

To ensure that tap water is safe to drink, the EPA and the State Water Resources Control Board prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Water Board regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Unregulated contaminant monitoring helps EPA and the State Water Resources Control Board determine where certain contaminants occur and whether the contaminants need to be regulated.

NOTE: Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. Contact the EPA's Safe Drinking Water Hotline at 1-800-426-4791 for more about contaminants and potential health effects.

Get Involved

The El Dorado Irrigation District Board of Directors meetings are open to the public and are held on the second and fourth Mondays of each month. Meetings begin at 9:00 a.m. in the Placerville headquarters building at 2890 Mosquito Road. Go to the District website at www.eid.org to learn more.

The information provided in this report is required by law to be issued to every water user. Property owners: please share this information with your tenants.

Jenkinson Lake at Sly Park Recreation Area in Pollock Pines

In accordance with the Americans with Disabilities Act and California law, it is the policy of the El Dorado Irrigation District to offer its public programs, services and meetings in a manner that is readily accessible to everyone, including individuals with disabilities. If you are a person with a disability and require information or materials in an appropriate alternative format; or if you require any other accommodation, please contact the ADA Coordinator at the number or address below at least 72 hours prior to the meeting or when you desire to receive services. Advance notification within this guideline will enable the District to make reasonable arrangements to ensure accessibility. The District ADA Coordinator can be reached by phone at (530) 642-4045 or e-mail at adacoordinator@eid.org.

Appendix G – Administrative Regulation 1041

Fourth reported violation of any provision of AR 1041: the District shall levy a $500 fine on the violator's water bill. If all four violations occurred within an 18-month period, the District may elect to discontinue service of the water supply that has been wasted. If service is discontinued due to AR 1041 violations, the District will charge a reconnection fee of $100 to restore service after abatement of the violation and payment of the fine. Restoration of service may occur without prejudice to any party's position pending appeal under AR 1041.6.

Unpaid fines are subject to the property lien procedure of Water Code section 25806.

AR 1041.6 Appeal and Hearing

A customer may appeal any notice of water waste violation by filing a written request for a hearing with the District's General Counsel within seven calendar days after receiving the notice. The appeal shall identify the property and state the grounds of appeal together with all material facts in support of it. Appeals will be heard by the General Counsel or her or his designee. The filing of a request for hearing shall stay any consequences for violation until the appeal is decided.

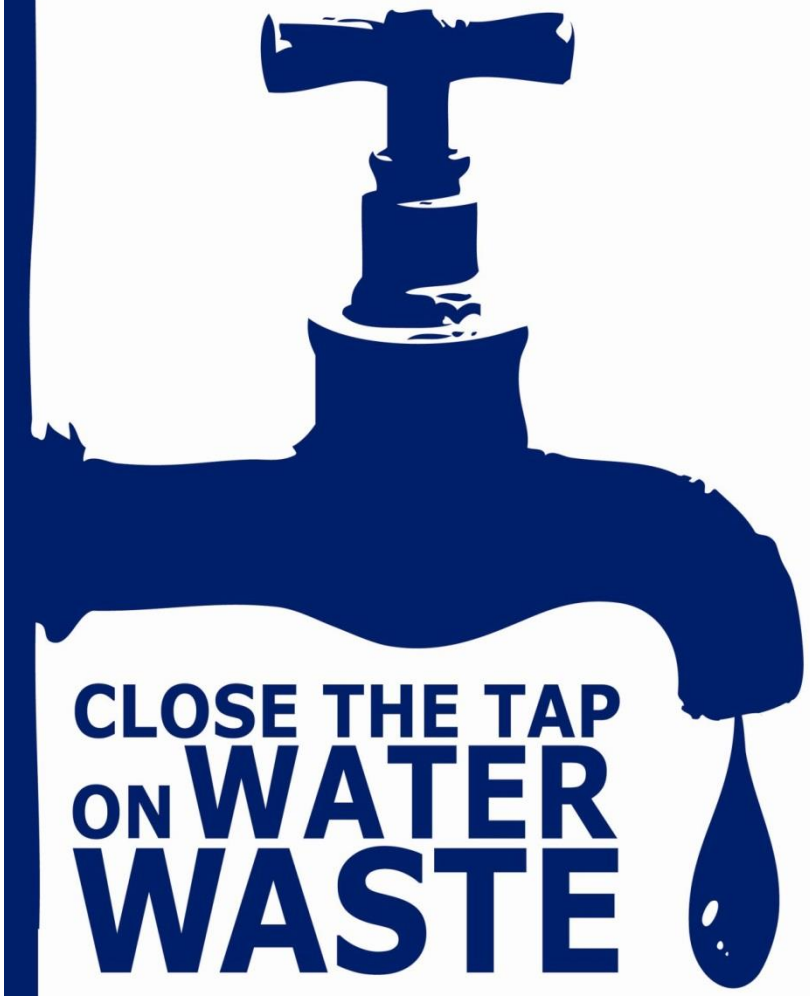
When a hearing is requested, the hearing officer shall send written notice to the appellant by certified mail, return receipt requested, stating the time and place of the hearing. Hearing procedures shall be informal, but serve the goals of proper decorum and the pursuit of the truth. At the hearing, the appellant shall have the right to present information as to the alleged facts upon which the notice was issued, and as to any other facts that may aid the hearing officer in determining whether a violation has occurred and, if so, the appropriate consequences.

Within ten calendar days after the close of the hearing, the hearing officer shall issue a written determination either upholding, reversing, or modifying the notice of water waste violation, and briefly stating the reasons that support the determination. Failure to issue a written determination within ten calendar days shall automatically reverse the notice of water waste violation. The hearing officer's written determination shall constitute the District's final action.

www.eid.org
530.622.4513

Striving for water efficiency every day

El Dorado Irrigation District



Water Waste Prohibition

Administrative Regulation 1041

Water Waste Prohibition

Administrative Regulation (AR) 1041

Approved: February 26, 2008

Last Revised: May 13, 2016

The District prohibits uses of District-supplied raw, potable, and recycled water that constitutes water waste. The objective is to encourage reasonable use of water supplies by prohibiting all intentional or unintentional water waste, including the use of wasteful equipment or techniques, when a reasonable solution or alternative is available. See AR 5011 for additional water waste regulations that apply during declared drought conditions.

AR 1041.1 Definition of Water Waste

Any of the following acts or omissions, whether willful or negligent, shall constitute the waste of water.

A. Causing or permitting water to discharge, flow, or run to waste into any gutter, sanitary sewer, water course, or storm drain, or to any adjacent lot, from any tap, hose, faucet, pipe, sprinkler, or nozzle. In the case of irrigation, "discharge," "flow," or "run to waste" means that the earth intended to be irrigated has been saturated with water to the point that excess water flows over the earth to waste. In the case of washing, "discharge," "flow," or "run to waste" means that water in excess of that necessary to wash, wet or clean the dirty or dusty object, such as an automobile, sidewalk, or parking area, flows to waste.

B. Allowing water fixtures or heating or cooling devices to leak or discharge.

C. Maintaining ponds, waterways, decorative basins, or swimming pools without water recirculation devices.

D. Backwashing, so as to discharge waste water from swimming pools, decorative basins, or ponds in excess of the frequency reasonably necessary to maintain the clarity and cleanliness of the water.

E. Operation of an irrigation system that applies water to an impervious surface or that is in disrepair.

F. Hosing off sidewalks, driveways and other impervious hardscapes, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency

G. Use of a water hose not equipped with a control nozzle capable of completely shutting off the flow of water except when positive pressure to leave the hose on is applied.

H. Irrigation of landscaping during or within 48 hours of measurable precipitation.

I. Overfilling of any pond, pool, or fountain that results in water discharging to waste.

J. Irrigating ornamental turf with potable water on public street medians.

K. Failure to comply with any conservation practices during a District-declared drought.

AR 1041.2 Exceptions

Notwithstanding AR 1041.3, the following acts do not constitute the waste of water.

A. Flow resulting from temporary water supply system, water fixture, or heating/cooling device failures or malfunctions lasting 48 hours or less.

B. Flow resulting from firefighting or routine inspection of fire hydrants or from fire training activities.

C. Water applied to abate spills of flammable or other hazardous materials, where water is an appropriate abatement methodology.

D. Water applied to prevent or abate imminent health, safety, or accident hazards when alternate methods are not available.

AR 1041.3 Informing District Customers of the Regulation

The District shall inform customers at least once a year of the water waste regulation, either through a special item in the newsletter that accompanies each two-month bill or as a separate insert in the bill.

AR 1041.4 Enforcement

To enforce this regulation, District personnel will follow the process outlined in AR 1041.5, Penalties for Violation of the District's Water Waste Regulation.

AR 1041.5 Penalties for Violation of the District's Water Waste Regulation

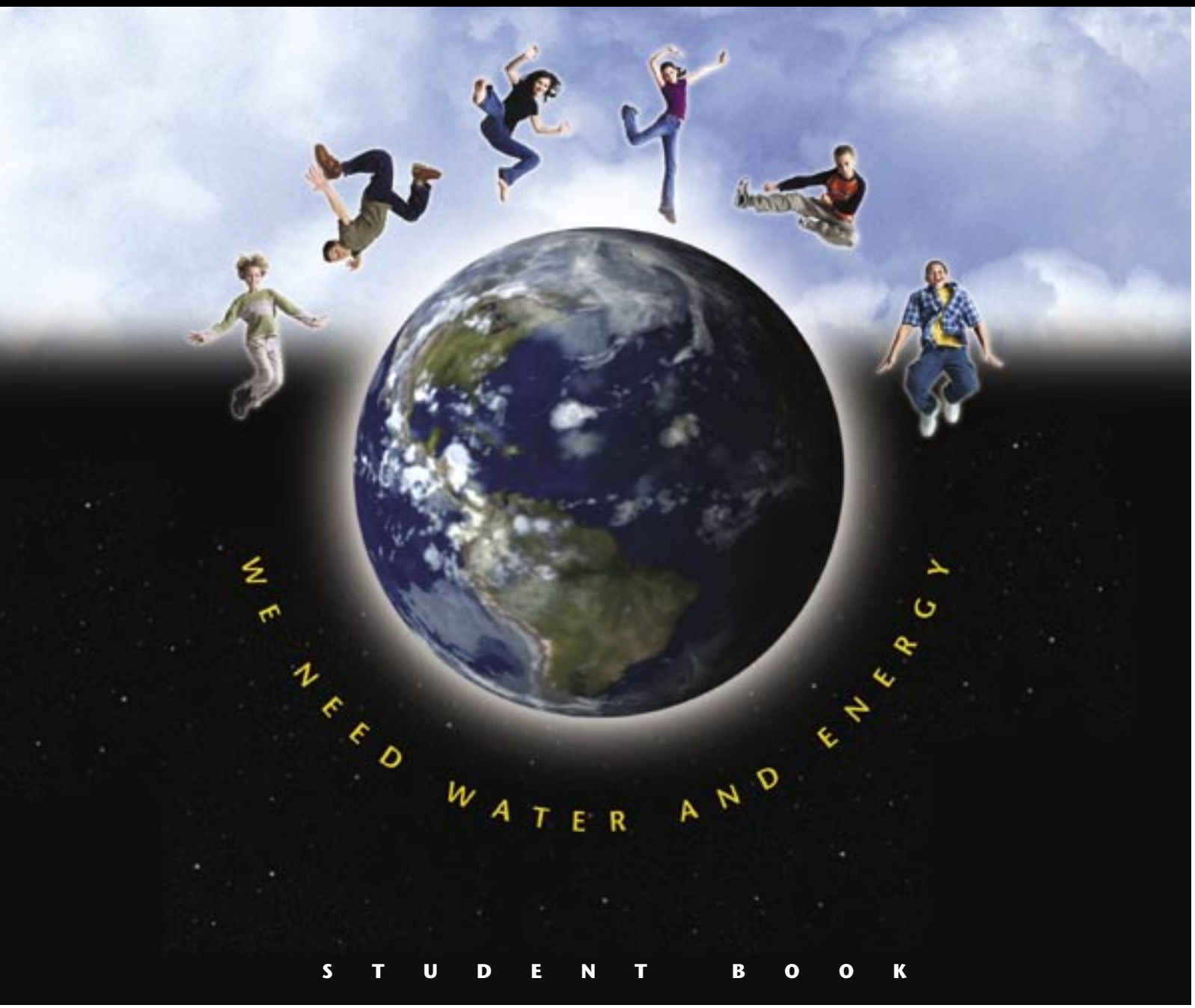
District personnel may report or receive reports of violations of AR 1041, which prohibits uses of raw, potable, and recycled water that result in waste. Violations will be penalized as follows:

- First reported violation of any provision of AR 1041: the District shall issue to the customer a written warning notice of and direction to cease and desist violation.
- Second reported violation of any provision of AR 1041: the District shall levy a fine on the violator's bill of $100, or 20% of the two-month water bill, whichever is greater.
- Third reported violation of any provision of AR 1041: the District shall levy a $200 fine on the violator's bill. If all three violations occurred within a 12-month period, the District may elect to discontinue service of the water supply that has been wasted. If service is discontinued due to AR 1041 violations, the District will charge a reconnection fee of $100 to restore service after abatement of the violation and payment of the fine. Restoration of service may occur without prejudice to any party's position pending appeal under AR 1041.6.

Appendix H – Educational Materials

CONSERVATION CONNECTION

WATER & ENERGY USE IN



STUDENT BOOK

CONNECTION: Water, Energy, & Conservation Connection

Think About It...

- What would a day be like **without** water or energy?
- How have you personally used water and energy today?
- How do you think your use of water and energy compares to people's use 100 years ago?
- Is there enough water and energy to last forever?

Learn About It...

We need water and energy.

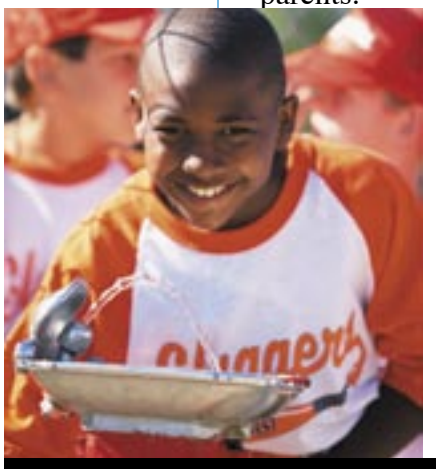
Water makes up about 65% of our bodies; we cannot live more than about a week without drinking water. And we need water to grow our food and make products that we use every day.

Energy is essential to life; we could not exist without the heat, light, and food that are created by the energy the sun provides. And, of course, we use energy in so many other ways, from cooking our food to running our cars.

We use **a lot** of water and energy every day. Is there a never ending supply? Well, yes...and no.

Water does fall from the sky, but it is not "new" water, just recycled water. The amount of water on Earth never increases or decreases. We have a fixed supply.

Heated by the sun, water on the ground in oceans, lakes, rivers, streams, and other areas evaporates; water vapor is also released from plants through transpiration. All this water vapor rises into the air, cools, and condenses into tiny droplets that gather and form clouds or fog. Finally, when the clouds meet cool air over land, precipitation in the form of rain, hail, sleet, or snow is triggered, and water returns to the land or sea. Thus, the water you use is the same water used by dinosaurs, early Native Americans, pilgrims, and your great grandparents.



WE NEED WATER AND ENERGY

Energy—which produces heat, light, or motion—comes from many sources, such as:

- fossil fuels (oil, natural gas, coal)
- the sun
- the wind

Some of our energy sources are *renewable*; they can keep on providing energy. For example, we expect the sun to keep shining and the wind to keep blowing. However, the energy sources that we depend on the most— oil, natural gas, and coal—are *non-renewable*. There is only a limited supply of these fossil fuels in the earth. Once they're gone, they're gone forever.

Our supply of water and energy meets our needs most of the time. But, in times of drought and during periods of high energy demand, we don't have enough water and energy. And the demand for water and energy is growing—every day—while our supply is decreasing as the population grows and as we find more ways to use these precious resources.

So how can we be sure we have enough for the future?

CONNECTION: Water Sources &

Think About It...

- Where does the water you drink and use every day come from?
- How much of the water from rain, and other precipitation, is available for us to actually use?

Learn About It...

We get all the water we use from only two places – **on** the ground and **under** the ground.

Surface Water

Water on top of the ground is called surface water. We can see this water in:

- lakes
- rivers
- streams
- oceans

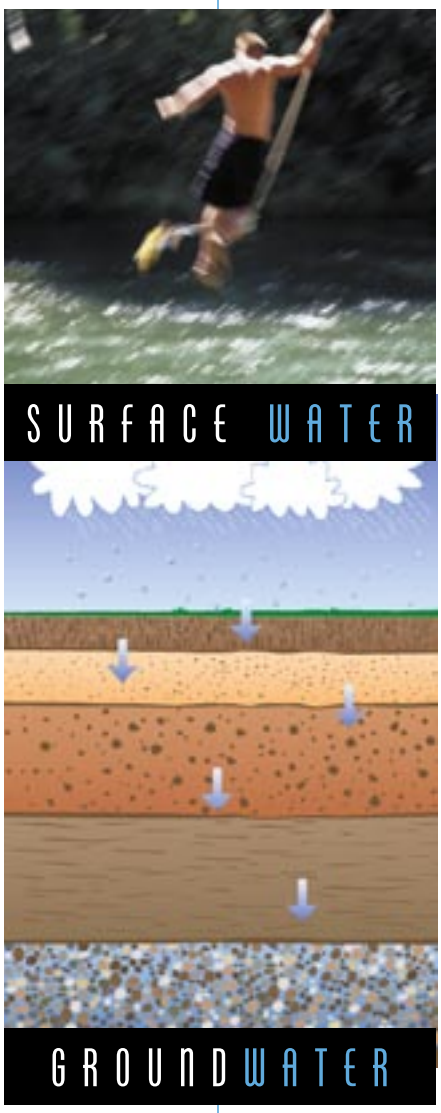
How does the water get there? From rain, of course, and snow and sleet and hail. In California, about 200 million acre-feet of water falls from the sky every year; that's about the same as 200 million football fields each filled a foot deep with water. That's a lot of water. But only about 1/3 of that water actually ends up in rivers, lakes, and streams. The rest of it is either used by trees, plants, and animals or soaks into the ground or evaporates.

Groundwater

Water that soaks into the ground collects in basins called aquifers. These aquifers are not like lakes above ground. They are more like sponges, holding water in spaces between particles of sand and gravel and in cracks in rocks.

California has about 500 aquifers. Some are just the size of small pools; others are miles long and hundreds of feet deep. Some are just a few feet underground; others are thousands of feet underground. In all of them, the water gets there by soaking into the ground from:

- rain
- irrigation of crops
- river and stream beds
- recharge ponds where water is purposely spread on the ground to refill the aquifer.



That's how water gets into the ground. How do we get it out? Wells are drilled into the ground and electric pumps push the water up to the surface. But even though a lot of water is stored underground, we can't pump it all up. Some of it is too deep and too expensive to reach, and some of it is too salty or too polluted.

Even if we could, we shouldn't pump out all the groundwater because that can cause "overdraft," which causes problems, such as:

- The ground may compact and never be able to hold water again.
- Land may sink, causing buildings, roads, and pipelines to crack or break.
- Plants depending on the groundwater may die.

In California, during most years—

- about 2/3 of the water we use comes from surface water
- about 1/3 of the water we use comes from groundwater.

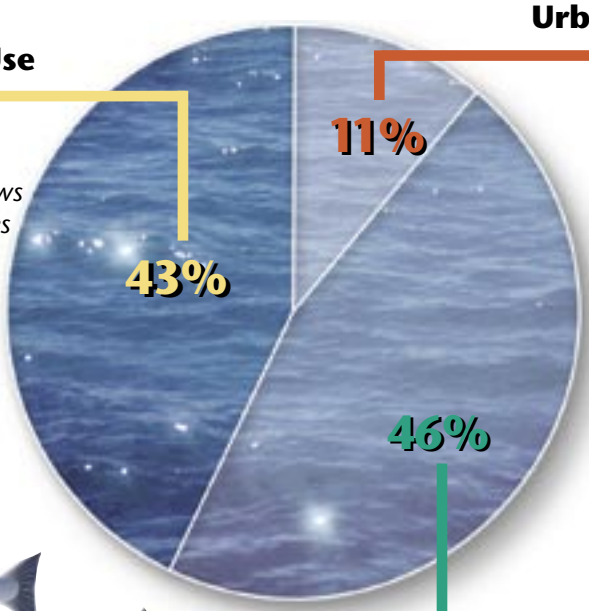
CONNECTION: Water Use &

Think About It...

- Besides personal uses, what else is water needed for?
  - What do you think the most water is used for in

Learn About It...

In California, we use all the water we have available to use. We even bring extra water into California from other states. Here's where the water goes:



Agricultural Water Use

- **Crops** *(for people—California grows half the fruit and vegetables eaten in America—and for animals, e.g., alfalfa and corn)*
- **Animals** *(for drinking, e.g., a cow can drink 35 gallons a day)*

Urban Water Use

- **Homes** *(toilets, faucets, hoses, etc.)*
- **Businesses** *(shops, office buildings, restaurants, hotels, car washes, etc.)*
- **Industry** *(to make products, to cool machinery, to produce food, etc.)*
- **Public services** *(street cleaning, fire fighting, park watering, etc.)*

Environmental Water Use

- **Streams** *(to keep flowing)*
- **Plants and trees** *(to live)*
- **Wetlands** *(to stay healthy)*
- **Fish and other animals** *(for habitat and to drink)*
- **Coastal fresh water basins** *(to keep ocean water out)*

Supplying so much water to everyone that needs it is not easy or inexpensive.

About 75% of the rain and snow in California falls in the northern part of the State. But about 75% of the people live in the central and southern part of the state. So the water must be moved to where it is needed.

Continued....

Aqueducts—channels, pipelines, and tunnels—carry water across land and over or through mountains. The system of aqueducts in California moves more water farther than anywhere else in the world. All along the aqueducts are **reservoirs** that are used to store the water until it is needed. These reservoirs might be large storage tanks or lakes formed by dams.

This system of aqueducts and reservoirs allows us to live throughout California. And there are other benefits. Reservoirs are often used for recreation—like fishing, swimming, boating, and waterskiing. Also, reservoirs and the dams that create them can provide flood control by holding back water and can provide electricity by releasing water to turn turbine-generators.

So, what's the problem?

- **First, money.**
  It is very expensive to build and maintain aqueducts and reservoirs. Water must be pumped along the way and lifted over huge mountains. Great amounts of electricity are used, which costs a lot of money.

- **Second, the environment.**
  Taking water out of rivers and streams can have negative impacts on the plants and animals that depend on them and on the people that enjoy them. Water companies try to affect the environment as little as possible. But even so, large amounts of land are taken up by aqueducts, pumping plants, dams, and reservoirs. And when dams are built to form reservoirs, land is flooded, which obviously affects the people, animals, and plants that live there.

Think About It...

- If there's only a fixed supply of water, how can we get more?
- Do you waste any water?

Learn About It...

We can't manufacture water. The surface water and groundwater that we have are all that we'll ever have. But we can stretch our supply.

Recycling

Water that goes down the drain ends up at a wastewater treatment plant. At these plants, water goes through a series of cleanings and treatments. Some of this "reclaimed" water is put back into the environment—rivers, lakes, the ocean, the ground. But some of it, after even more cleaning, is recycled—that is, it is delivered to people to use.

California has been using reclaimed water for irrigation for about 70 years. Now recycled water can be used for all purposes except drinking:

- to water school grounds, cemeteries, golf courses, nurseries, parks, greenbelts
- to irrigate crops and pastures
- to manufacture products and cool industrial machinery
- to make snow, fight fires, clean streets
- to flush toilets
- to recharge groundwater

Using recycled water for these purposes saves large amounts of fresh water. But reclaiming water to recycle it is expensive. First, of course, money must be spent to clean the water. But then we must also build separate pipelines, pumps, and storage reservoirs for the recycled water.

WATER RECYCLING

DESALINATION

However, as more facilities are built and more recycled water is used, the cost of recycled water will decrease. Using more recycled water can help California maintain a reliable supply of fresh water.

Desalination

Where is most of the surface water on the earth? In the ocean, of course. But ocean water is too salty to drink. We can, however, take the salt out of the water in a process called *desalination*.

California already has several desalination plants. One plant on Santa Catalina Island, off the coast of Southern California, produces 25% of the island's drinking water. The desalination plant in the Monterey Bay area is the largest in the state.

Because California is next to the ocean, plenty of salt water is available. However, turning seawater into fresh water is much more expensive than other methods of supplying fresh water. Money must be spent not only to build and maintain the plants but also to pay for the huge amounts of energy it takes to remove the salt. Then the salt must be disposed of. It is often put back into the ocean, where it may upset the delicate ecological balance of the marine environment.

As technology improves and as we need more water to meet our growing demand, desalination may not be so expensive.

Continued....

Conservation

The best way to stretch our water supply is to conserve water. Conservation means not wasting water and using water efficiently.

Californians are familiar with conservation. California has always had droughts—long dry periods without much rain or snow. The longest drought in California lasted 60 years! During these times, people had no choice but to use less water. But if we used less water *every day,* we could:

- make our water supply go further
- reduce costs for distributing water
- benefit the environment by taking less fresh water out and putting less wastewater back in.

Water can be conserved in homes, on farms, at businesses, and in industries—through both improved technology and non-wasteful practices.

New technologies include:

NEW TECHNOLOGIES

CONSERVATION PRACTICES

- faucets and showerheads that put out fewer gallons per minute
- toilets that use a lot less water with every flush
- recycling systems for water used in car washes, laundromats, amusement parks, factories, power plants
- clothes washers and dishwashers that use 40% less water
- drip irrigation systems that put water only where it is needed
- evapotranspiration (ET) systems that monitor the evaporation from soil and the transpiration from plants to determine the exact amount of water lawns and plants need
- irrigation systems that return run-off from the bottom of a field to be used again.

Conservation practices include:

- turning water off when brushing your teeth or washing dishes
- taking shorter showers
- keeping drinking water in the refrigerator instead of running water until it becomes cool
- planting low-water-use plants
- turning off sprinklers when it's raining
- using a broom instead of a hose to clean pavement.

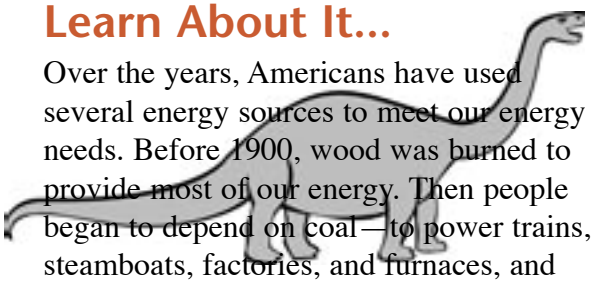
Conservation—with both water-saving devices and practices—would save millions of gallons of water, as well as millions of dollars, every day.

CONNECTION: Energy Sources &

Think About It...

- Where does the energy you use every day come from?
  - Are the energy sources we depend on the same as those in the past?

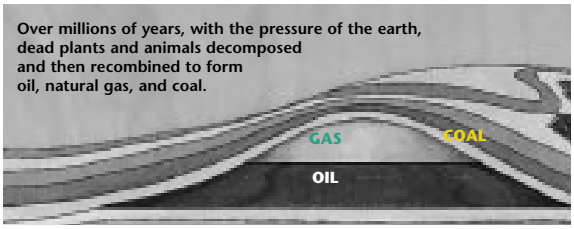
Learn About It...



Over the years, Americans have used several energy sources to meet our energy needs. Before 1900, wood was burned to provide most of our energy. Then people began to depend on coal—to power trains, steamboats, factories, and furnaces, and eventually to generate electricity. Today, the United States—and California—rely on a variety of resources to meet our energy requirement, but fossil fuels supply the majority of our energy.

Fossil Fuels

Petroleum (oil), natural gas, and coal are fossil fuels. Millions of years ago, when the plants and animals that lived on earth died,



they were covered with water, mud, and rock. Over millions of years, with the pressure of the earth, the dead plants and animals decomposed and then recombined to form oil, natural gas, and coal. These fuels are rich in stored up energy. When we burn fossil fuels, the stored energy is released as heat.

Oil, a thick, brown liquid, is found under land and water. We drill holes to find the oil and then pump it out of the ground. Most oil is used to make gasoline and other vehicle fuels. But it is also used to make heating oil to burn in furnaces and to make petrochemicals, which are used to make such products as plastic, fabrics, and cosmetics.

Natural gas is an invisible, odorless gas that is sometimes found along with oil. Drills are used to reach the natural gas, which then rises through pipes to the surface. Most natural gas is delivered to homes and businesses through underground pipes and is used in furnaces and stoves. Natural gas is also used in power plants to generate electricity and, like oil, used to make chemicals used in such products as ink, glue, and nylon.

Coal, which looks like rough black rocks, must be dug out of the ground. The primary use of coal is to generate electricity in power plants, though it is also burned in some buildings and factories to provide heat.

Fossil fuels have been fairly easy to obtain and to use. We have established systems for using them in our cars, homes, factories, and power plants. In California, we use them to generate more than 50% of our electricity. But there are disadvantages to using fossil fuels.

- First, fossil fuels are nonrenewable. They are becoming more difficult to find and recover, and once they are used up, they cannot be replaced.
- Second, the use of fossil fuels causes environmental problems. Whether burned in power plants or in our cars, fossil fuels release harmful pollutants into the air, causing smog and other air pollution problems.

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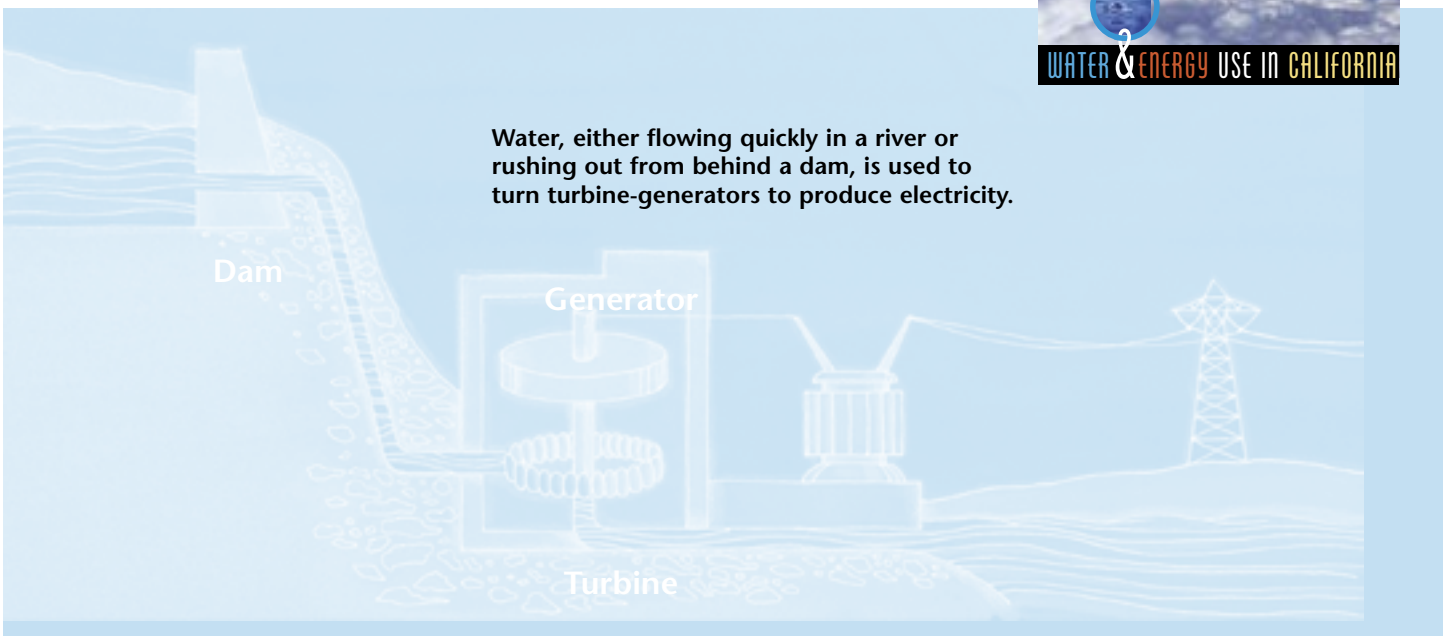


HYDROELECTRIC POWER PLANT

Hydropower

Hydro means water. So *hydropower* means "water power." Water, either flowing quickly in a river or rushing out from behind a dam, is used to turn turbine-generators to produce electricity. Hydropower is an important source of electricity for the nation and for California. About 23% of the total electricity in California is from hydropower.

Some hydroelectric power plants are both producers and consumers of electricity. Here's how it works. During times when a lot of electricity is being used—such as on hot summer days—water is released from a dam at a high elevation to generate electricity. The water ends up in a reservoir at a lower elevation. Then at night, when less electricity is needed, the water is pumped from the lower reservoir back to the higher reservoir to be used again.

Hydropower is a renewable energy source, as long as rivers and streams continue to flow. But there are only so many places with water that we can use for hydropower.

Nuclear Power

Nuclear energy comes from the tiny dense core of the atom—the nucleus. In a nuclear power plant, the nuclei of atoms of uranium, a heavy mineral, are split apart. As each one splits, it releases neutrons, which travel at high speed, hitting other atoms, splitting them apart, causing a chain reaction. This splitting of millions of atoms—called fission—creates a lot of heat, which is then used to make steam to turn turbine-generators in a nuclear power plant.

There are two nuclear power plants in California, producing about 16% of our electricity.

Uranium, the fuel for nuclear fission, is nonrenewable; however, it is a common, inexpensive mineral found worldwide. The primary problem with nuclear energy is that the material left over after the atoms are split apart is radioactive, which means that it gives off radiation that can be harmful to us. Thus, the waste material must be stored carefully since it remains radioactive for hundreds of years.

Continued....

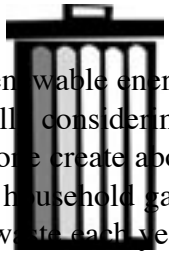
Biomass

Bio means *life*, so *biomass* refers to organic waste material, such as:

- lumber waste from harvesting trees
- plant waste from agricultural crops
- trash and garbage from our homes.

Biomass is burned in power plants to produce heat, which is used to create steam to turn turbine-generators to produce electricity.

In California, there are about 100 waste-to-energy power plants that contribute about 2% of our total electricity.

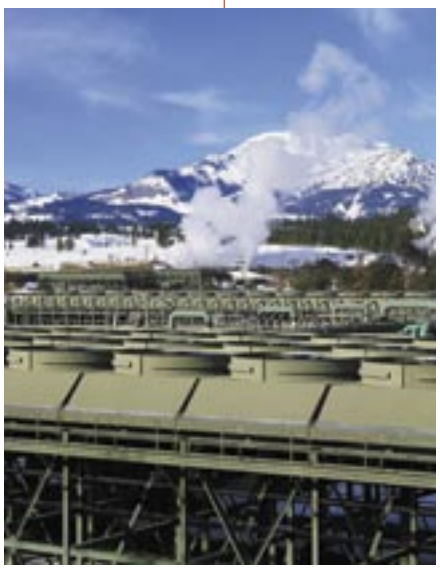


Biomass is a renewable energy source, especially considering that Californians alone create about 45 million tons of household garbage and industrial waste each year; that's nearly 3,000 pounds every second! Burning waste material does, however, release pollutants into the air.

Geothermal

Geothermal energy comes from heat inside the earth. We can see the results of that heat in volcanoes, geysers, and hot springs. The heat underground often heats water or creates steam that we can tap to generate electricity in power plants. The hot water can also be used directly by piping it through buildings to heat them.

California has more than 40 geothermal power plants that produce almost 5% of our total electricity. Geothermal energy is considered to be renewable since heat from the core of the earth is expected to last indefinitely. However, geothermal energy can be tapped only in areas where the heat is close enough to the surface. Also water that is removed must be reinjected into the earth so that the land doesn't sink and the source doesn't "dry up."



GEOTHERMAL POWER PLANT

WIND FARM

Wind

People have been using wind for energy for thousands of years. Wind has powered sailboats, pumped water from wells, and turned grinding stones to mill wheat or corn. Today, wind also turns wind turbines to make electricity. A wind turbine is similar to a child's pinwheel or the propeller of an airplane. The giant blades are connected to a shaft, which in turn is connected to a generator that produces electricity. Often, hundreds of wind machines are grouped together in wind farms in particularly windy areas.

In California, more than 14,000 wind turbines produce about 1% of our electricity.

Wind is, of course, a renewable energy source—but it's not reliable. Winds must blow at a constant high speed to generate electricity, and that condition is not found in very many places and never all year long.

Continued....

Solar

Solar energy—energy from the sun—is the principal source of all the earth's energy. Sunlight heats the land and warms the water. It causes the winds to blow and the rains to fall. It allows plants to grow, providing the stored energy on which all animals live. Even fossil fuels are "stored sunshine." Without the sun, the earth as we know it could not exist. But the energy source that powers the planet can also power the many machines that have become a part of our lifestyle.

There are basically two different ways in which we can capture and use the sun's energy.

- Thermal heat – The sun's heat can be used to heat water, which can be used directly or used to generate electricity.
- Photovoltaic cells – These devices actually convert sunlight into electric current.

Thermal Heat

The intense energy of the sun has long been used to heat water. Pioneer families had homes equipped with solar water heaters. Today, homes across the nation have solar hot water heaters installed. In these systems, cold water from the home's regular water line is pumped to a thermal collector on the roof, where the sun's heat warms the water. The heated water then flows into the regular hot water tank. These systems are used to heat water for homes and businesses and for swimming pools.

Solar heat can also be used to heat water in power plants. At a solar thermal power plant, huge mirrors—solar collectors—are used to focus sunlight onto a tank filled with water or other fluids. The sun heats the fluid to a very high temperature, creating steam to power turbine-generators to produce electricity. California has a few such power plants located in the Mojave Desert.

SOLAR POWER PLANT

SOLAR CELL PANELS

Photovoltaic Cells

Photovoltaic cells—or PVs or, more commonly, solar cells—are composed of thin layers of silicon and other materials. When sunlight strikes a solar cell, chemical reactions release electrons, generating a little electric current. We find solar cells in calculators, camera light meters, sidewalk lighting systems, and freeway phones for stranded motorists. But solar cells, put together into solar panels or modules, are now also providing electricity for homes and businesses.

Electric utilities can use photovoltaic plants to supplement the electricity they provide. A facility in central California provided enough power for about 2,500 homes.

Now, solar cells are appearing on rooftops of individual homes and businesses that have clear access to the sun for most of the day. Some of these solar panels are simply attached to the roof; others are actually part of the roofing material. In some cases, a PV system can be connected to the electric utility's system. Then, if the solar panels are providing more power than the home or business uses, the extra electricity goes to the utility for other people to use—and the home or business's electricity meter actually spins backwards!

CONNECTION: Energy Use &

Think About It...

- Besides personal uses, what else is energy needed for?
- What do you think the most energy is used for in California?
- What costs are involved in making energy available for us to use?

Learn About It...

From 1960 to 2000, California's population doubled. But California's energy use almost tripled!

What is all that energy used for?

Businesses 15%

- offices
- hotels
- restaurants
- stores
- schools
- etc.

Transportation 38%

- cars & trucks
- airplanes
- trains
- ships
- etc.

Homes 17%

- heating
- lighting
- cooking
- running appliances
- etc.

Industry 30%

- generate electricity
- make products
- manufacture steel
- produce & package food
- pump water
- etc.

In California, we use a lot of energy for transportation; in fact, California ranks first in the nation in gasoline consumption! Even without all our cars, SUVs, motor homes, trucks, trains, ships, and airplanes, we use a lot of energy; and each of us seems to be using more every year as more and more things are manufactured that use energy—from computers to camera phones.

A lot of energy is used to generate electricity, which we then use in our homes and businesses. California generates about 3/4 of the electricity we use. The remaining 1/4 we get from other states. Natural gas is imported to burn in power plants. And electricity generated at hydroelectric plants in the Pacific Northwest—Oregon and Washington—is delivered across power transmission lines.

Continued....

So what's the problem?

First, supply.

The amount of energy we have doesn't always match the amount we need. In the 1970s, the "energy crisis" had us waiting in long lines and paying high prices to buy gasoline, sometimes only on specified days. Because we depend on other countries for much of the oil we need to manufacture gasoline, our supply is not always certain.

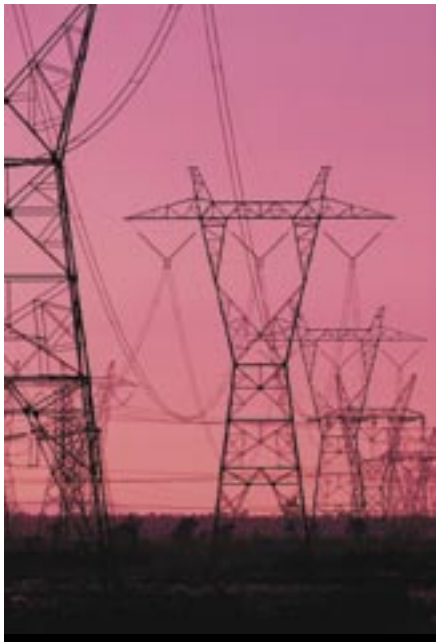
In 2001, the "energy crisis" caused "rolling blackouts" throughout California, meaning that various areas were without electricity for periods of time. Along with other factors, the shortage of electricity was caused by:

- more demand during hot summer weather
- less supply from the hydroelectric plants in the Pacific Northwest where rainfall was low.

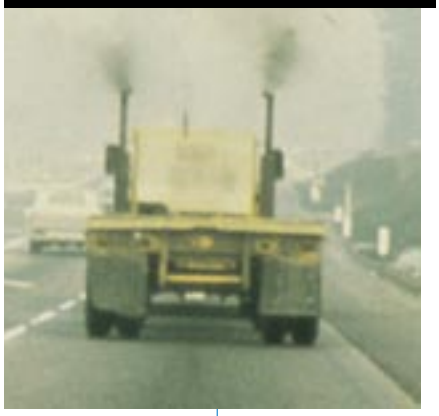
Second, the environment.

Most of our energy comes from burning fossil fuels, which emit pollutants into our air. In California, and other places, these pollutants cause smog. In other parts of the country, fossil fuels also contribute to acid rain; and in the world they may be causing global warming.

Other energy sources also impact the environment—whether taking up space, flooding land behind dams, or creating radioactive waste. The more energy we use, the more the environment is affected.



SUPPLY



ENVIRONMENT

POPULATION

Third, money.

It's expensive to supply the energy we need. Fossil fuels must be drilled for or dug out of the ground and transported to where they are needed; power plants must be built; transmission lines must be connected. When we import energy, even more money must be spent. As the demand goes up and our supply goes down, consumers will be spending even more each month for the energy they use.

Fourth, population.

California is the fastest growing state in the nation.

- In 2004, our population was approximately 35 million.
- By 2050, it is projected to be 55 million.

Energy will be needed to make the products and distribute the water consumed by all these people. And, of course, each person will use energy every day just to live their lives.

So how will we have enough energy for the future?

Think About It...

- What can we do to have enough energy for the future?
  - Do you waste any energy?

Learn About It...

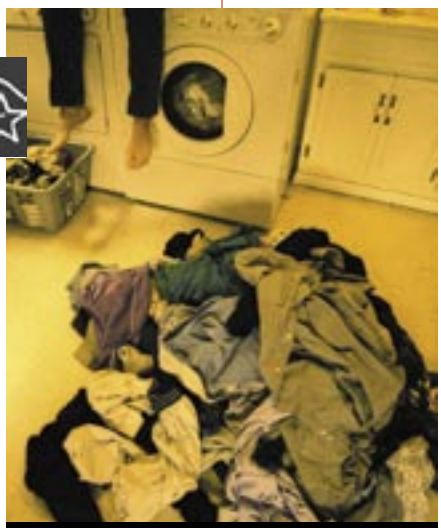
There is probably not one solution to the problems we face supplying energy. Rather the key is likely to find a mix of new technologies and practices that will help us have enough energy for the future.

Technology

Efficiency

Increasing energy efficiency—that is, using less energy to do more—is an important part of our energy future.

The appliances we use every day eat up a lot of electricity, but they can be—and many have been—designed to consume less. Since 1980, appliances have improved in energy efficiency by 30 to 90%. Today, products that meet strict energy efficiency guidelines set by the EPA and the U.S. Department of Energy earn the Energy Star label. These products have advanced technologies that use 10 to 50% less energy than standard models. Energy Star products include big appliances such as refrigerators, clothes washers, dishwashers, and air conditioners, as well as table lamps and windows.



ENERGY EFFICIENCY

Other improvements in technology include:

- Smarter thermostats that can cut heating and air-conditioning costs up to 33%. Using a micro-computer, these thermostats allow you to divide the day into periods and to program each period with a specific temperature. For example, at 6 a.m., a half hour before you get up on a cold day, the thermostat can increase the heat to a comfortable temperature. When everyone leaves the house at 8 a.m., the thermostat goes back down. Then at 5 p.m., just before people come home, the heat comes back on, until 10 p.m. when everyone goes to bed.
- Compact fluorescent light bulbs (CFLs) that can last up to 10,000 hours—10 times longer than a standard light bulb. To get the same light, the CFL needs to be just one-fourth the wattage of the standard incandescent bulb, thus using 75% less electricity. These bulbs can replace standard bulbs in table lamps, desk lamps, and ceiling or wall fixtures. They are particularly efficient in lights that will be left on for 3 to 4 hours at a time. CFLs also produce less "waste heat," thus reducing air-conditioning in warmer weather.

Entire buildings can be made more energy efficient by using these improved technologies and by installing:

- solar roof panels
- skylights
- light sensors that naturally reduce lighting
- separate climate control zones
- low-emission windows that allow in maximum light but minimum heat

Continued....

Solar and Other Renewables

Such renewable energy sources as solar, wind, and geothermal represent only a small part of our current energy supply, but we may need to depend on them much more in the future. Using these sources, as well as other renewables, provides several benefits:

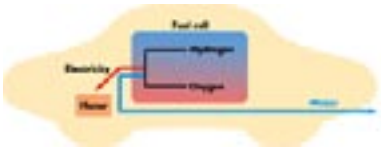
- They are sustainable—meaning they will never run out.
- They do not add pollutants to our air or water.
- They can reduce our dependence on energy from other countries.

Advances are being made particularly in solar technology. Soon we may have solar cells placed in window panes or glass roofs, turning buildings into micro-power plants!

CONSERVATION

Fuel Cells

Fuel cell technology is often thought of as "space-age" technology because fuel cells have been successfully used in space craft to provide electricity. Now the technology can be used to power vehicles, homes, and businesses.



FUEL CELLS

In a fuel cell, no fuel is burned; instead, hydrogen and oxygen are combined to produce electricity. And the only emissions are heat and pure water vapor!

Unfortunately, the hydrogen needed for the fuel cell is very expensive, and it must be stored at high pressure and at an extremely low temperature. But fuel cell systems can include a "fuel reformer," which chemically changes another fuel—such as natural gas, methanol, even gasoline—to hydrogen to power the fuel cell. This process emits some pollutants but much less than using the original fuel.

Fuel cells are being used in some experimental vehicles. They are being designed for use in electric power plants as well as for buildings—hospitals, hotels, manufacturing plants, shopping centers. Eventually, small systems may be used in homes with natural gas supplying the fuel.

Conservation

Even with improved energy efficiency, each of us is still using more energy than we did in the past.

Not only do we have more "things" that use energy—at home and in businesses—but also many of our appliances continue to use energy even when they have been turned off. TVs, DVD players, audio systems, security systems, cable boxes, computers—all can drain electricity when they are just waiting to be used. This "standby power" can add up to almost 10% of residential use and can cost $100 per year per household.

To reduce the amount of energy we use, we all need to conserve energy—that is, use it wisely and not waste it. Turning off lights, lowering the water heater temperature, weather stripping around windows and doors, along with other conservation practices, can all help reduce our demand for energy. We'll save money, protect the environment, and increase our supply for the future.

Water and Energy Efficient Home

Conservation Connection
Water & Energy Use in California

With improved technology and non-wasteful practices that
- conserve water and
- conserve energy

you can help protect the environment, stretch our supply of water and energy, and reduce your costs.

Central Basin Municipal Water District

West Basin Municipal Water District

HELP LES LEAKY

Find and Stop Water Waste

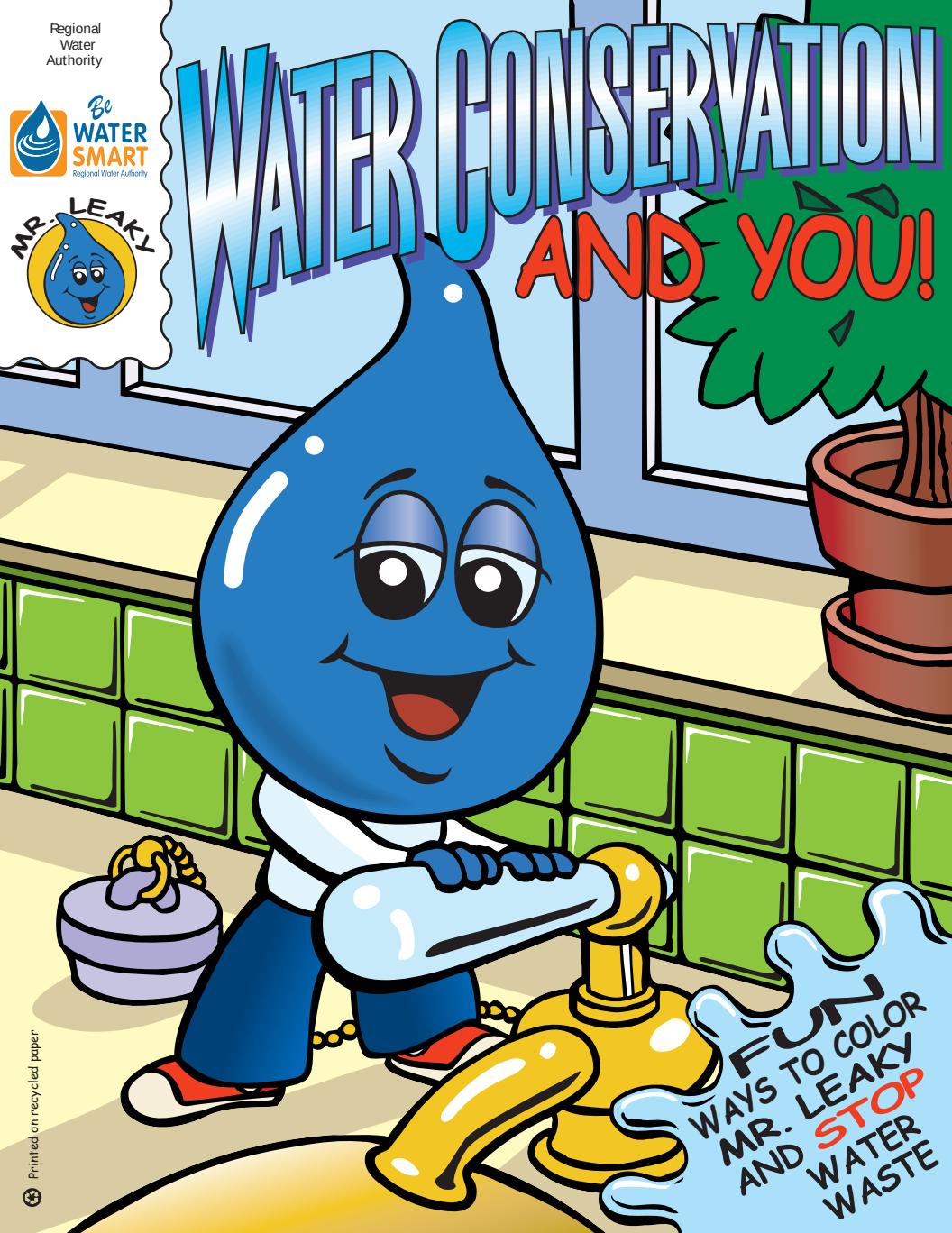
Learn more ways TO SAVE WATER at BeWaterSmart.info

Regional
Water
Authority

Be
WATER
SMART
Regional Water Authority

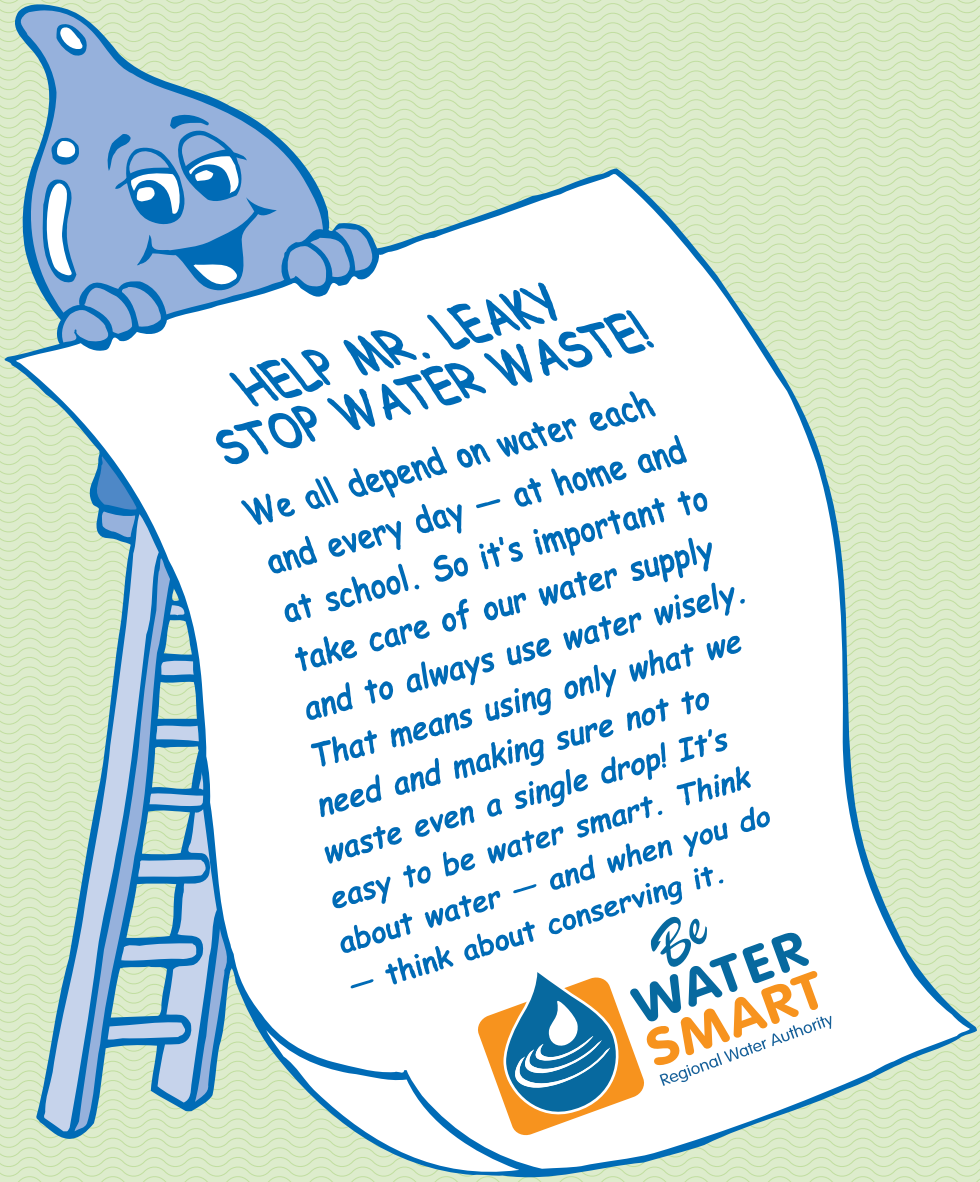
MR. LEAKY

WATER CONSERVATION AND YOU!

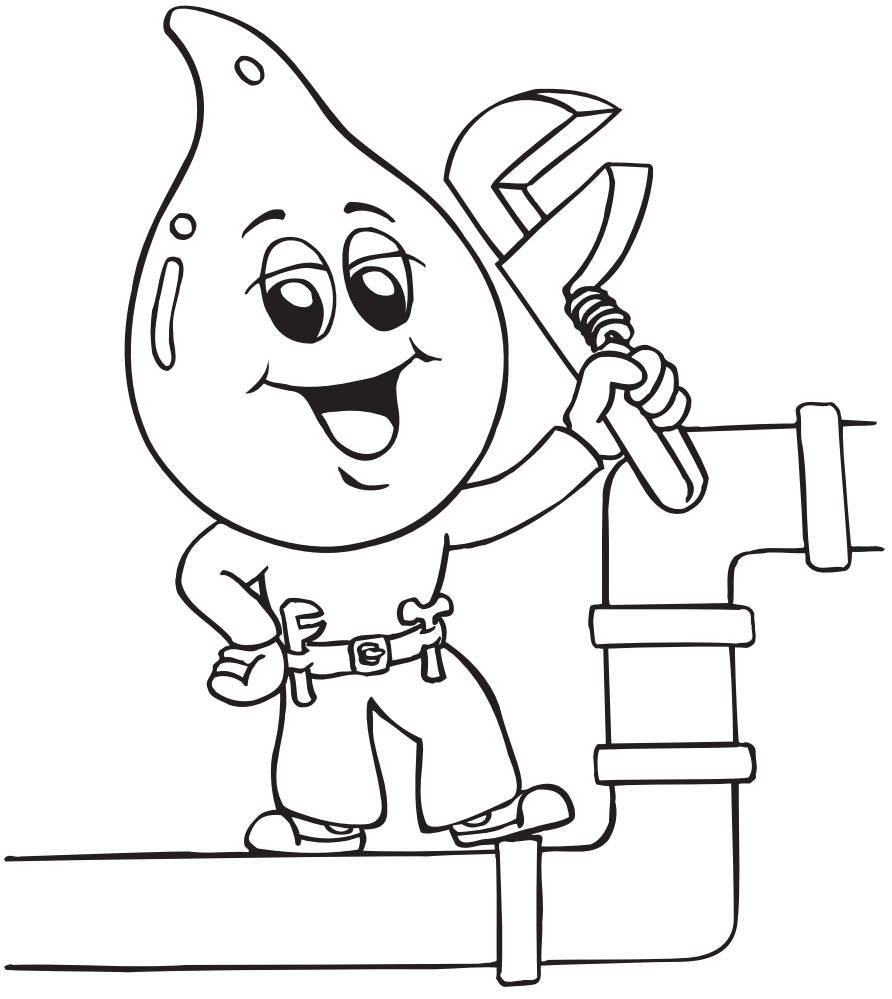


FUN WAYS TO COLOR MR. LEAKY AND STOP WATER WASTE

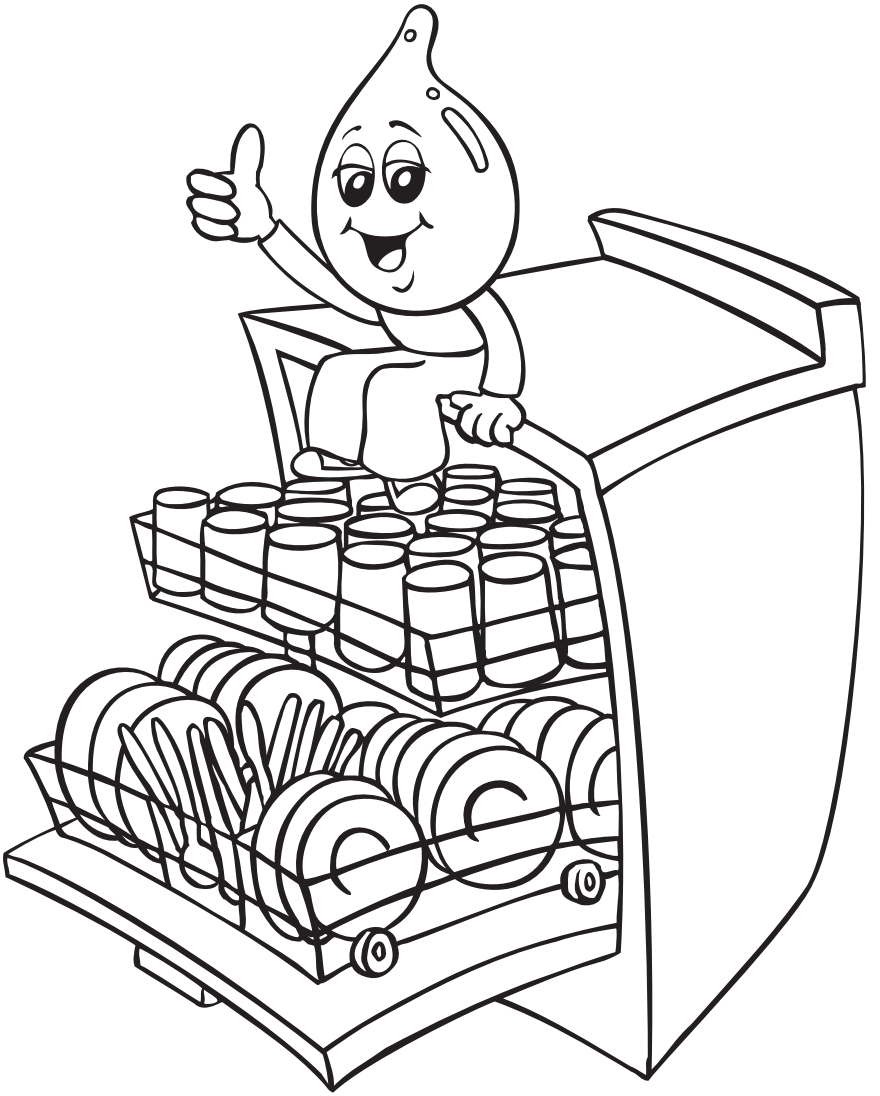
Printed on recycled paper



www.BeWaterSmart.info

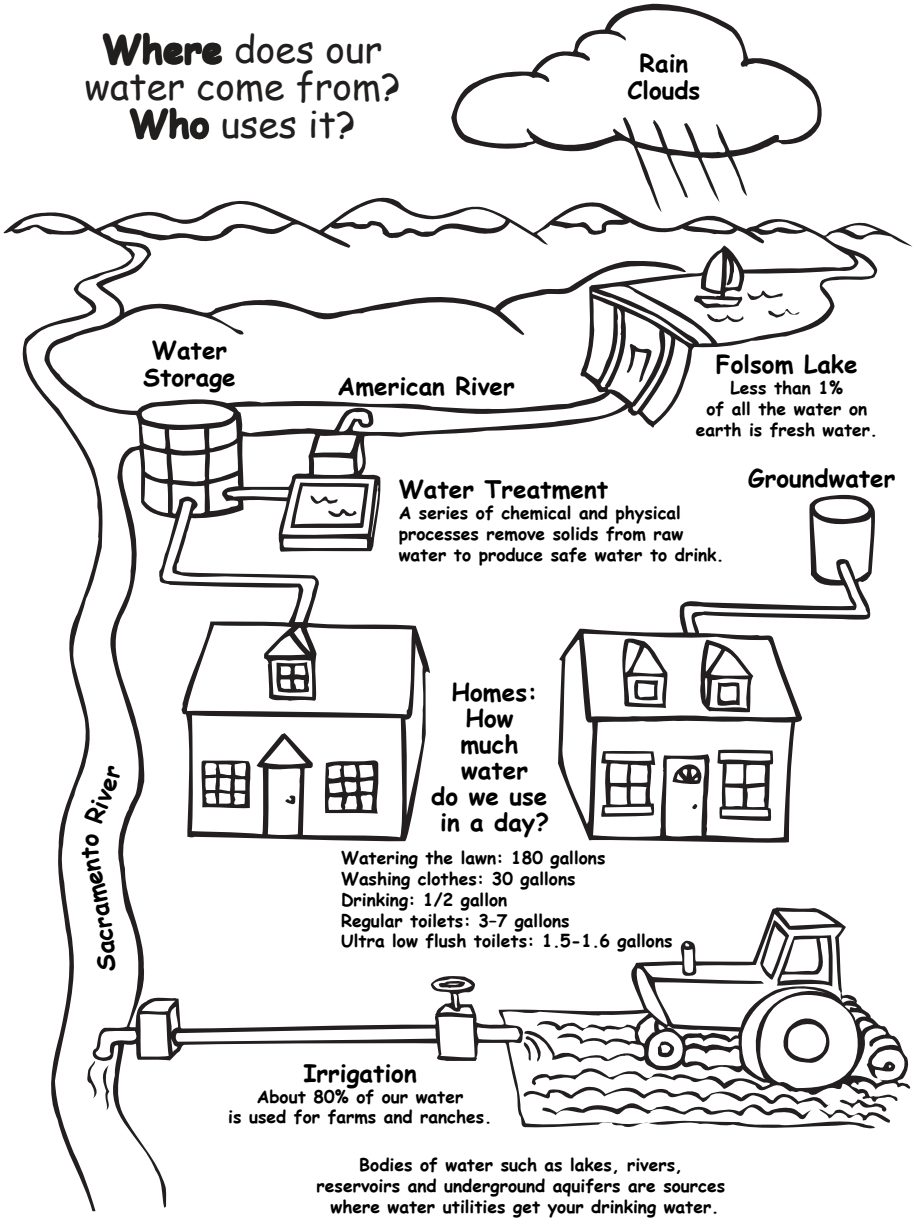


Mr. Leaky fixes leaks!

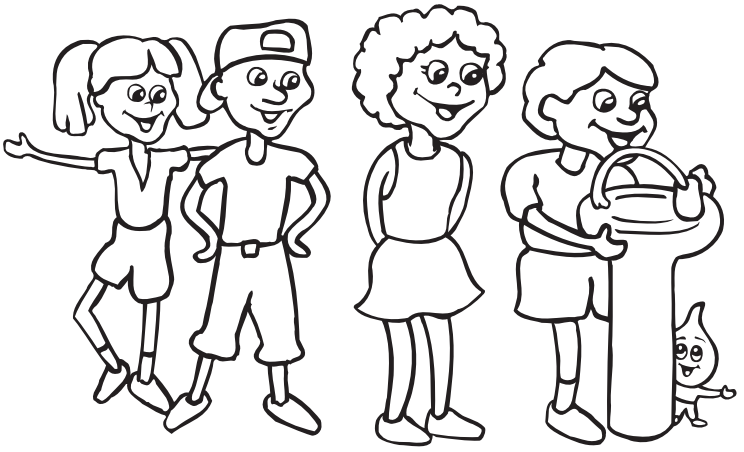


Mr. Leaky runs the dishwasher only when it is full.

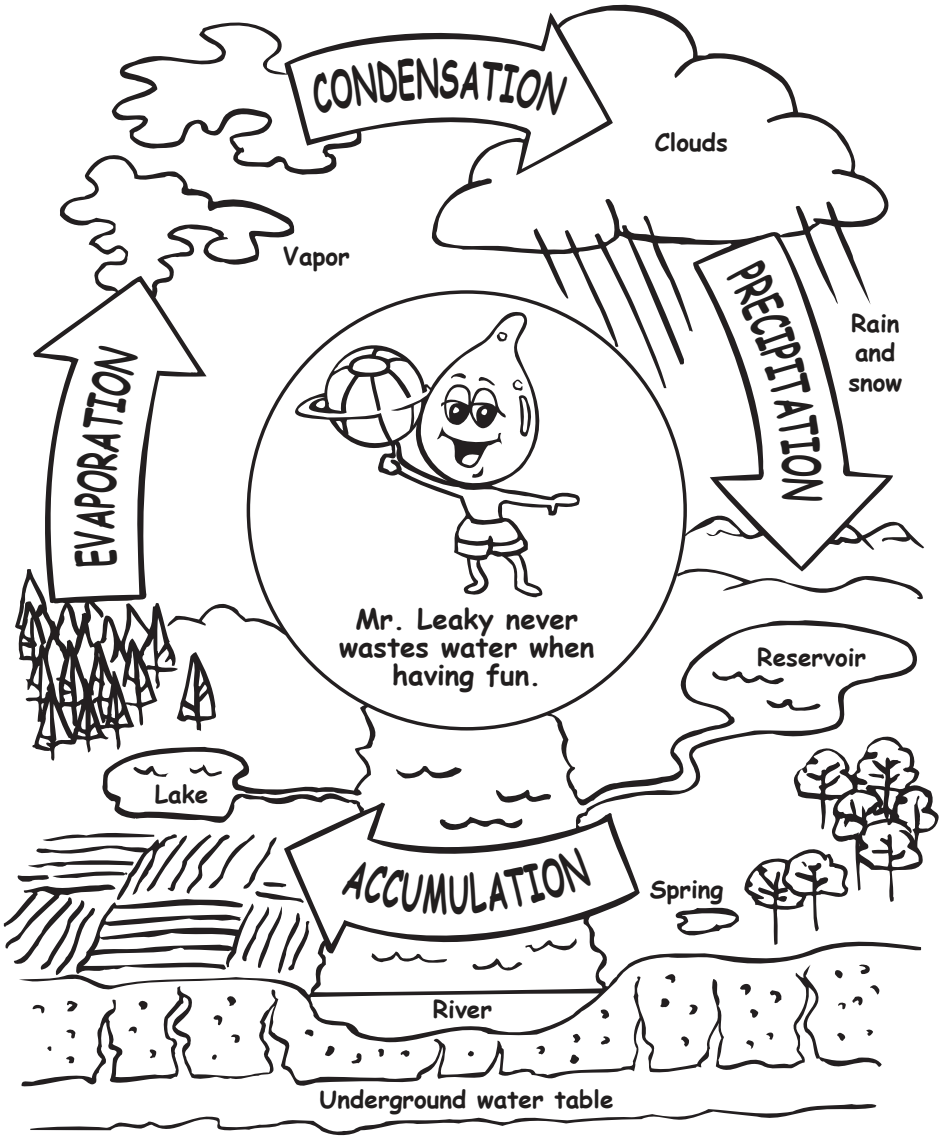
Where does our water come from? **Who** uses it?



Bodies of water such as lakes, rivers, reservoirs and underground aquifers are sources where water utilities get your drinking water.

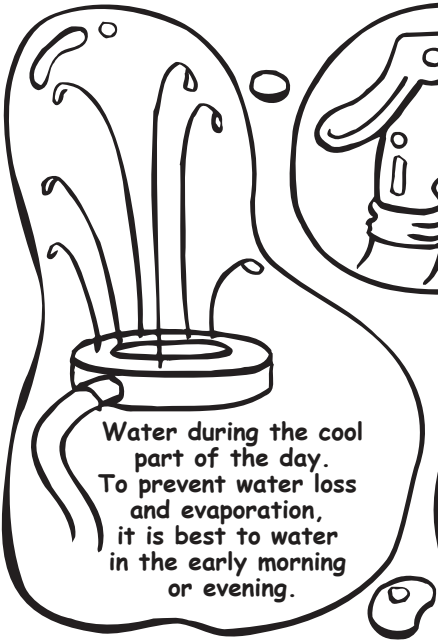


Find **Mr. Leaky**.

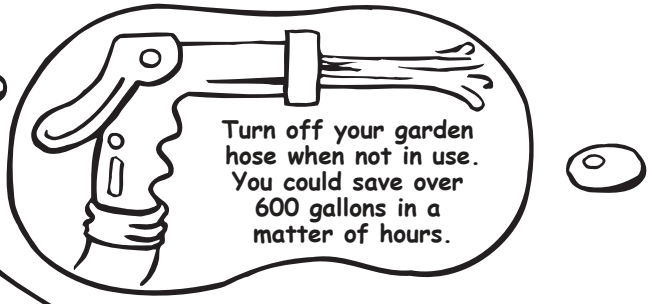


The **water cycle** helps **Mr. Leaky** have fun.

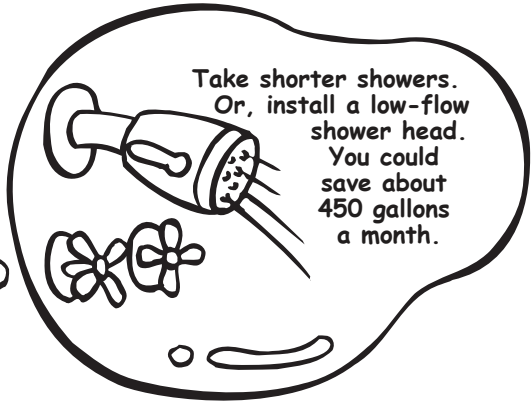
On the trail of water waste



Water during the cool part of the day. To prevent water loss and evaporation, it is best to water in the early morning or evening.



Turn off your garden hose when not in use. You could save over 600 gallons in a matter of hours.



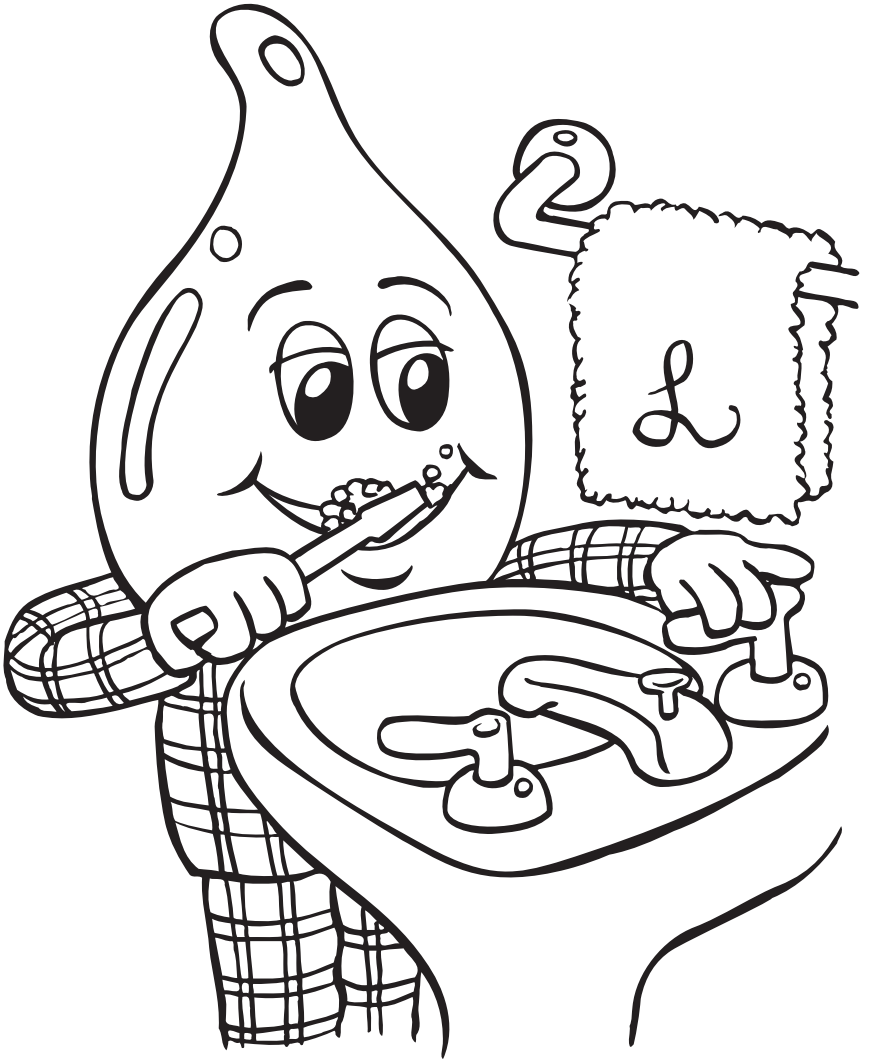
Take shorter showers. Or, install a low-flow shower head. You could save about 450 gallons a month.

For cold drinking water, fill a pitcher with tap water and put it in your refrigerator.

Don't use the toilet as a wastebasket.

Know when Mother Nature plans to water the garden so you can shut off the sprinklers.

Cut water waste. Check for leaky faucets, toilets or pipes around the house. You could be losing 10 gallons per day to leaks.



Mr. Leaky always shuts off the water while brushing his teeth.

Be Water Smart
Water Facts Crossword Puzzle

Test your water knowledge. Read the sentences below and fill in the correct word at the corresponding number. Some of the letters have already been filled in.

ACROSS

2. Another name for saving water is _____.

4. The salt water covering 3/4 of the earth's surface (the Pacific and the Atlantic) is called the _____.

5. Water is an important and valuable natural _____.

8. The device in the sink that turns the water on and off is called a _____.

9. Another name for precipitation — the drops that fall from the sky — is known as _____.

DOWN

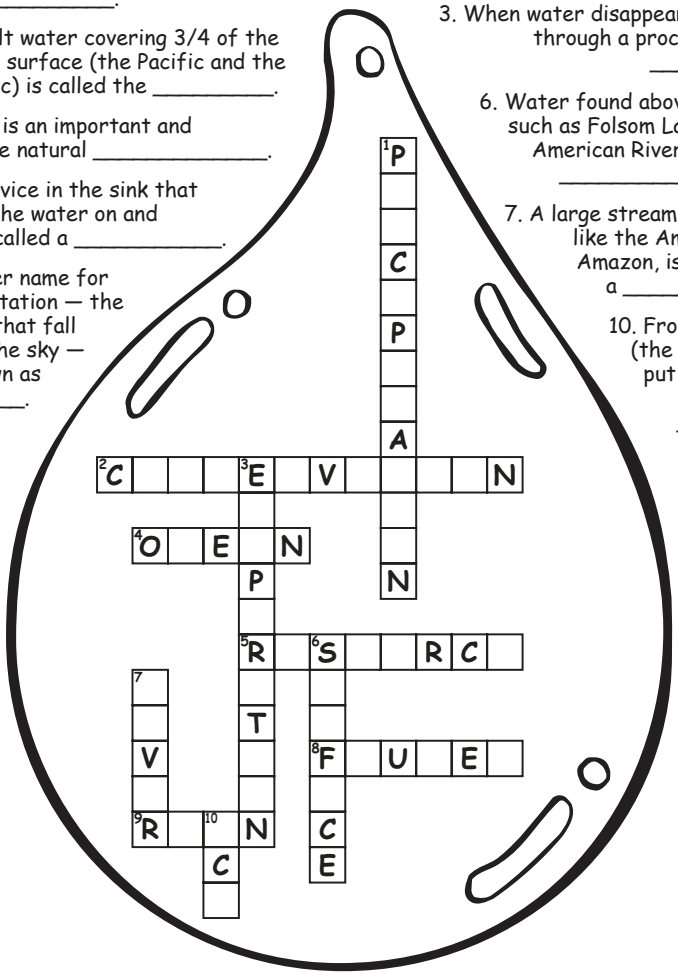
1. Another name for rain is_____.

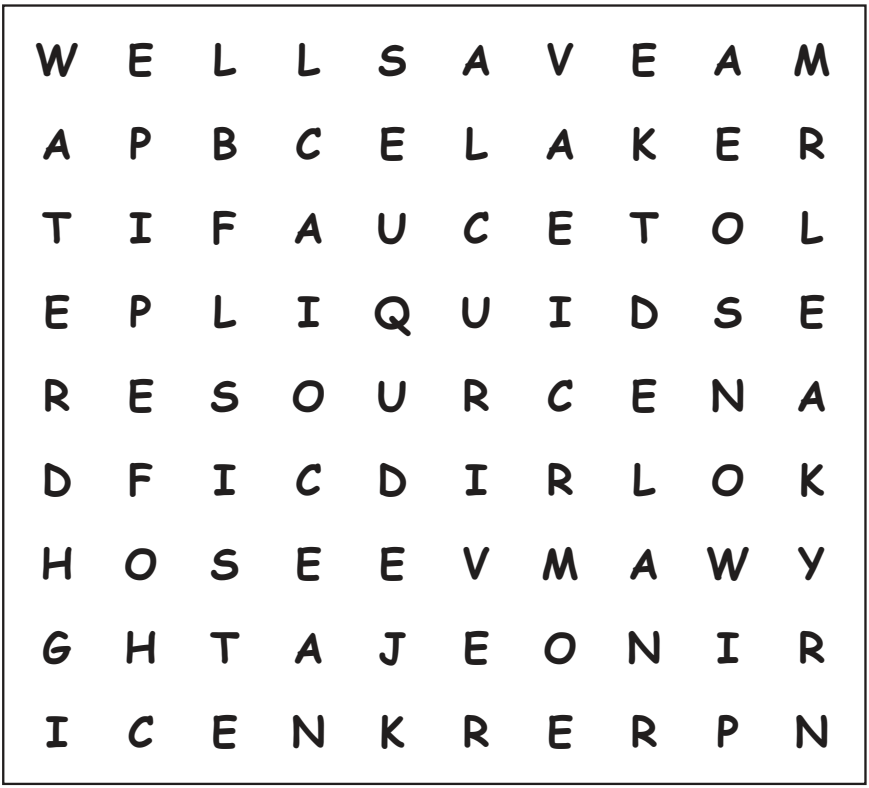
3. When water disappears, it goes through a process called _____.

6. Water found above ground, such as Folsom Lake or the American River, is called _____ water.

7. A large stream of water, like the American or Amazon, is known as a _____.

10. Frozen water (the cubes you put in drinks) is called _____.





Water Words Search

The words below relate to the many places water is found and the different ways water is used. Find and circle the words in the box. They are found across, down and diagonal.

FAUCET	HOSE	ICE
LAKE	LIQUID	MR LEAKY
OCEAN	PIPE	RAIN
RESOURCE	RIVER	SAVE
SNOW	WATER	WELL

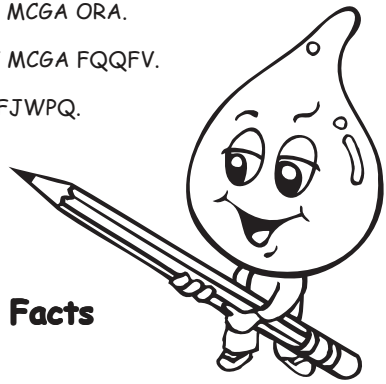
Water De-Coder

Each letter represents a different letter. Use the letter code below to discover Mr. Leaky's important messages.

Letter Code

A=R	B=N	C=O	D=P	E=Q	F=T
G=U	H=V	I=W	J=S	K=Z	L=X
M=Y	N=B	O=C	P=D	Q=E	R=A
S=J	T=F	U=G	V=H	W=I	X=L
		Y=M	Z=K		

1. NQ IRFQA JYRAF.
2. OCBJQAHQ IRFQA.
3. PCB'F XQF FVQ VCJQ AGB IVQB MCG IRJV MCGA ORA.
4. FGAB FVQ TRGOQF CTT IVQB MCG NAGJV MCGA FQQFV.
5. IRFQA MCGA XRIB IVQB WF WJ OCCX CGFJWPQ.
6. OVQOZ TRGOQFJ TCA XQRZJ.
7. FRZQ JVCAF JVCIQAJ.



Wacky Water Facts

Fill in the blanks and learn important water facts.

1. There are three states of water: _____, _____ and _____.
2. An animal with a hump on its back that can go for days without water is called a _____.
3. When water boils, it makes _____.
4. Hot, dry land that has very little water is called a _____.
5. The room in the house that uses the most water is the _____.
6. The process that moves water from the earth to the air and back to the earth again is called the _____.
7. Long periods without rain are known as a _____.

Help **Mr. Leaky** find his way home.

Water De-Coder Answers

1. BE WATER SMART.
2. CONSERVE WATER.
3. DON'T LET THE HOSE RUN WHEN YOU WASH YOUR CAR.
4. TURN THE FAUCET OFF WHEN YOU BRUSH YOUR TEETH.
5. WATER YOUR LAWN WHEN IT IS COOL OUTSIDE.
6. CHECK FAUCETS FOR LEAKS.
7. TAKE SHORT SHOWERS.

Wacky Water Facts Answers

1. liquid, solid, gas
2. camel
3. steam
4. desert
5. bathroom
6. water cycle
7. drought

Be a friend to **Mr. Leaky**. Help him be water smart.
You can visit **Mr. Leaky's Web site** at
www.BeWaterSmart.info

You are ready to take the pledge!
Together we can help Mr. Leaky.

I PLEDGE

to be water smart and conserve and protect our drinking water.

_____

Name

Thanks for helping us!

REGIONAL WATER AUTHORITY

Be WATER SMART
Regional Water Authority

This book was made possible by your local water agency.
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Appendix I – Fiscal Year 2012 Category 1 Business Plan

RWA Water Efficiency Program
Fiscal Year 2012
Category 1 Business Plan

INTRODUCTION

The Regional Water Authority (RWA) Water Efficiency Program (WEP) priorities include assisting participating agencies in compliance with conservation requirements of the following: California Urban Water Conservation Council (CUWCC), Water Forum Agreement Water Conservation Element, U.S. Bureau of Reclamation conservation requirements, and SBX7 7.

The WEP consists of two categories of programs to achieve these priorities:

- **Category 1 Program** consists of core subscription services that address water efficiency activities common to all participants. Category 1 programs are designed to benefit the entire WEP membership. Participating WEP members fund Category 1 through annual dues to support staff and other direct costs of program implementation.

- **Category 2 Programs** are specialized subscription services offering additional water efficiency programs beyond Category 1 programs. Category 2 programs are structured as "pay for services" programs and benefit only those WEP members who committed financially to participate in the programs. Supplementary funding supports Category 2 programs and these resources may come from the U.S. Bureau of Reclamation, California Department of Water Resources, Sacramento Regional County Sanitation District, Sacramento Municipal Utility District, Pacific Gas & Electric Company and other resources as available.

The WEP Category 1 Program is subject to approval of an annual business plan including scope, budget and fee schedule for member participation. To develop the Fiscal Year (FY) 2012 WEP Category 1 Business Plan, staff discussed their plan with the RWA Executive Committee on March 23, 2011 and solicited feedback from the Regional Water Efficiency Program Advisory Committee (RWEPAC) on May 10, 2011. Based on feedback, the WEP Category 1 Business Plan for Fiscal Year 2012 will focus on the following areas:

1) Analyzing 2010 Urban Water Management Plans (UWMPs) and 2009-10 CUWCC BMP reports.
2) Complying with the CUWCC's public information and school education BMP's through a regional program.
3) Detailed program implementation and activity reporting and grant implementation and activity reporting, including water savings.
4) Identifying and assisting with regional grant writing efforts.

The top priority for FY12 is the review of current and planned future conservation activities discussed in the UWMPs of the current 19 RWA members. This review will enable RWA to best plan for the next 3-5 years of the Regional Water Efficiency Program. The information collected will specifically help RWA to understand the current baseline gallons per capita per day (gpcd) usage for each member's service area, and which conservation best management practices (BMPs) will be emphasized to meet Senate Bill (SB) 7x-7 targets. Another key outcome of this planning effort is preparation for the next round of Prop 84 and other grant opportunities. In

addition, data from the UWMPs will support the regional public outreach efforts (e.g., sharing with media the regional statistics on current and forecasted water supply and demands and planned conservation and recycling programs).

BUDGET SUMMARY

To implement the priorities under the Category 1 Program, a budget including $471,000 in planned expenses is proposed. Total planned revenues for FY12 include $387,000 in member fees and an estimated $69,000 from grants, $9,500 encumbered from School Education funds from FY2011, and $5,500 from WEP Cash reserves, for a total of $471,000.

Table 1. Budget Summary	
Program Revenues	
Projected FY 2012 Category 1 Income	387,000
Grant Revenue DWR Drought Assistance	60,000
Grant Revenue EPA Grant (Green Gardener Program)	9,000
Revenues	**456,000**
Encumbered School Education funds from FY11	9,500
Total from Cash Reserves	5,500
Total Revenues	**471,000**

Program Expenses	
Program Management and Implementation, Technical Assistance	
Staff, Legal, and Audit Services	199,000
Consulting Services	40,000
Foundational BMP 2. Education Programs	
Public Outreach	166,000
School Education	34,000
Programmatic BMP's Support	
Landscape	23,000
EPA funded Green Gardener Program/RWA Cost Share	9,000
Total Expenses	**471,000**

FY 2012 PROGRAM MANAGEMENT ACTIVITIES

Category 1 program management activities for FY12 are designed to assist participating agencies in complying with conservation requirements and increase public support for water conservation. Staff activities are outlined in Table 2. Some activities include the use of RWA staff and others may include the use of consultant support. While maintaining existing partnerships and contractual obligations, we will continue to represent the region in statewide initiatives and forums and report back to WEP participants. Staff will serve as a regional spokesperson and respond to water conservation related media requests.

Working with the Water Forum and water agency staff, RWA staff plans to assist participants in conservation program development and reporting. Assistance may include: (1) review or help in determining BMP compliance targets for CUWCC tracks and SBx7-7 as agencies engage in their own annual conservation program planning; (2) suggestions for quantification of water savings associated with targets to meet GPCD reduction goals; and (3) information sharing to determine cost effectiveness and BMP program costs, including RWA support for planned CUWCC training in cost effectiveness.

In ongoing support of the CUWCC MOU implementation, RWA will continue to organize and provide data for foundational BMP's and programmatic BMP's as applicable from WEP Category 1 and 2 programs (e.g.; clothes washer rebates, toilet rebates, CII rebates, etc.).

TABLE 2. Category 1 Program Management Activities

Staff Activity	Description
BMP Compliance Assistance and Reporting	• Organize and provide reporting data for BMP programs that RWA provides implementation services for (e.g., Foundational BMP 2 – Education). • Additional data provided for Programmatic BMP's as applicable from WEP Category 2 programs (e.g.; toilet rebates, clothes washer rebates, etc.). • Manage the regional public information and school education programs (Foundational BMP 2 programs).
Coordinate Grant Efforts, Grant Writing Assistance and Reporting	• Identify and assist with regional grant writing efforts to build financial investments through regional grants and cost sharing opportunities. • Coordinate outside contract support to follow up as needed. • Track and report on grant programs for member agencies and funding agencies.
Technical Assistance	• Long range regional program planning beginning with analyzing agency 2010 UWMP's and 2009-10 CUWCC reports and aims to support future grant applications (e.g., Prop 84 and USBR). • Compile or develop regional statistics, data and other appropriate information, including review of SB 7x-7 implementation targets. • Support for member agency's quantification of water savings associated with targets. • Provide review and technical assistance with BMP program costs quantification, cost-effectiveness analysis, and cost-benefit analysis.
Building and Maintaining Partnerships	• Maintain contact with Landscape Organizations (CLCA, UC Extension/Master Gardeners, River Friendly Landscape Program) • Coordinate outside contract support to follow up with partnership activities as needed.

Regional Representation to Key State and Local Agencies and Organizations	• Attend Water Forum meetings, committees, and plenary. • Participate in CUWCC Board Meetings, participate on select committees, and track BMP modifications and identify opportunities for regional implementation. • Participate on California Irrigation Institute Board, AWWA, others as available.

FY 2012 FOUNDATIONAL BMP 2 EDUCATIONAL PROGRAMS

WEP Category 1 activities for FY12 are designed to fully implement CUWCC Foundational BMP 2 Educational requirements for program participants. Program tasks and budget estimates are outlined in Table 3 below.
Since the public outreach campaign and RWA's fiscal year are not on the same cycle, funds remaining in the FY11 budget will be encumbered for 2012. Working with the outreach consultant and the Public Outreach Committee, we will complete the second year of our successful Blue Thumb public outreach campaign, evaluate the campaign's effectiveness after reviewing results of the planned telephone survey, and refresh the Blue Thumb campaign for future years. Specific details of the refreshed campaign will be developed by the outreach consultant and the Public Outreach Committee based on survey results and overall review of campaign goals.

FY2011/2012 will be an ambitious year for the school education component of RWA's Water Efficiency Program. We propose continued activities with our established partners, the Sacramento Bee, through the Media in Education (M.I.E.) Program, and Project WET (Water Education for Teachers) through the Water Education Foundation. The basic purpose of these efforts is to meet the California Urban Water Conservation Council's Best Management Practice's baseline requirement for school education and ultimately to reduce water use in our region. The committee's goal for next year is to increase involvement of both students and teachers in the various activities that comprise RWA's Water Efficiency School Program. The School Education Committee recommends hiring a part-time education consultant to focus on the following program goals: (1) Increase student and teacher participation in water efficiency programs by 10% per year; (2) Provide and/or support up to 4 teachers workshops annually; (3) Reach 10% of all the region's 5th grade classrooms per year for the next 10 years with the Environmental Education Initiative state adopted curriculum; (4) Create and organize capacity building opportunities and partnerships for member agencies and their school districts; (5) Develop and implement a Water Awareness PSA/Video contest as a new component of Sacramento Bee's M.I.E. program; and (6) Advance future strategies for RWA's Water Efficiency school education program with the school committee.

FY 2012 identifies $ 24,500 in the school education budget to be used for this purpose.

Table 3. BMP Program Implementation Activities – Foundational BMP 2. Education Programs		**$200,000**
PUBLIC OUTREACH AND EDUCATION		**TOTAL $200,000**
Regional Outreach Campaign "Blue Thumb"	Refresh Blue Thumb common message and branding	146,000
	Media Buys and Marketing (i.e.; TV and Radio ads, PSA's)	
	Collateral materials (i.e.; lawn signs, gloves, t-shirts, other)	
	Outreach Consultant and additional partnerships	
	River Cats Partnership beginning April 2012	10,000
Other Outreach Activities	Reprinting, Redesign, order new publications as needed	5,000
	Gardensoft Gallery on RWA website	5,000
SCHOOL EDUCATION		
School Education	Newspapers in Education - Grades K- 8	6,500
	Encumbered FY11 for Develop School Education Program	9,500
	Develop School Education Program/Consultant	15,000
	Project WET workshops	3,000

FY 2011 PROGRAMMATIC BMP's SUPPORT

Programmatic support for FY2012 is designed to assist participating agencies in implementing and promoting Programmatic BMP's 3 and 5, (Residential and Landscape), while satisfying additional requirements for the Outreach BMP. Expenses for these activities are summarized in Table 4.

This year's activities consist of partnering with the UC Cooperative Extension (UCCE) for homeowner and Master Gardener workshops, sponsorship of EcoLandscape of California's bi-annual conference for landscape professionals, updating the Water Wise Gardening in the Gold Country Region web site, and conducting the Green Gardener Training Program in English and Spanish. The Green Gardener Training Program is sponsored in part by grant funding from the EPA Climate Showcase Communities Grant awarded to the Sacramento County Stormwater Department.

In addition to the expense activities above, RWA plans to work with the Landscape Committee and consultant to leverage momentum of existing landscape community relationships by hosting a booth a at the Sacramento Landscape and Nursery Expo in January 2012 and work with the City of Roseville to develop a Green Gardener Training Program for Homeowners.

Table 4. Programmatic BMP's Supported Sponsorships (BMP 3 and 5)

BMP EXPENSES	**TOTAL $32,000** **GRANT FUNDED $9,000**
Green Gardener Training Program Materials	$5,000
Landscape Consultant/Green Gardener Program Manager	$15,000
EcoLandscape of California Sponsorship	$500
UC Cooperative Extension	$2,500
Green Gardener Training Program RWA Cost share for EPA grant	$9,000

Appendix J – 2015 CUWCC Filing

CUWCC BMP Retail Coverage Report 2015

Foundational Best Managemant Practices for Urban Water Efficiency

BMP 1.1 Operation Practices

ON TRACK

6293 El Dorado Irrigation District

1. Conservation Coordinator provided with necessary resources to implement BMPs?

Name: Bill Cassady

Title: Senior Water Efficiency Use Technician

Email: wcassady@eid.org

2. Water Waste Prevention Documents

WW Document Name	WWP File Name	WW Prevention URL	WW Prevention Ordinance Terms Description
Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.		http://eid.org/home/showdocument?id=402	EID adopted and enforces Water Waste Prohibition Regulation No. 1041 - web link inserted above and file uploaded.
Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.		..\..\AB 1881 - MWELO\El Dorado County Adopted Landscape Ordinance.pdf	EID coordinated with El Dorado County during its adoption of a water efficient landscape ordinance (attached).
Option C Describe any documentation of support for legislation or regulations that prohibit water waste.			
Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.	EID Requirements and Checklist.pdf		EID works in cooperation with El Dorado County staff to review and approve water audits for new landscape installations under the County's water efficient landscape ordinance.
Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.			
Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.	BMP 1.1 Option F EDC Excerpt of Section 493.1 Irrigation Audit EID6293.pdf		Attached is an excerpt from El Dorado County's water efficient landscape ordinance that describes the water audit procedure developed between EID and El Dorado County staff to review and approve water audits for new landscape installations.

At Least As effective As No

Exemption No

CUWCC BMP Retail Coverage Report 2015

Foundational Best Managemant Practices for Urban Water Efficiency

BMP 1.1 Operation Practices **ON TRACK**

Comments:

CUWCC BMP Coverage Report 2015

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control **ON TRACK**

6293 El Dorado Irrigation District

Completed Standard Water Audit Using AWWA Software?	Yes
AWWA File provided to CUWCC?	Yes
BMP 1.2_AWWA_Water_Audit_EID_6293_6293.xls	
AWWA Water Audit Validity Score?	74
Complete Training in AWWA Audit Method	Yes
Complete Training in Component Analysis Process?	Yes
Component Analysis?	Yes
Repaired all leaks and breaks to the extent cost effective?	Yes
Locate and Repar unreported leaks to the extent cost effective?	Yes
Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.	Yes

Provided 7 Types of Water Loss Control Info

Leaks Repairs	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost Of Interventions	Water Saved (AF)
1538	618872	958573		False	871860.75	

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2015

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.3 Metering With Commodity

ON TRACK

6293 El Dorado Irrigation District

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes
Number of CII Accounts with Mixed Use Meters	1198
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	Yes
Feasibility Study provided to CUWCC?	Yes

Date: 12/12/2006

Uploaded file name:

Completed a written plan, policy or program to test, repair and replace meters	Yes

At Least As effective As No

Exemption No

Comments:

BMP 1.3
Meter Reads/Year:
SF: 244,087 MF: 6,074 COM: 9,088 AG: 5,927 Other (municipal): 94

Estimated Meter Reads/Year:
SF:421 MF: 18 COM: 20 AG: 3 Other (municipal): 0

CUWCC BMP Coverage Report 2015

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.4 Retail Conservation Pricing

ON TRACK

6293 El Dorado Irrigation District

Implementation (Water Rate Structure)

Implementation Option: Use Canadian Water Wastewater Association Rate Design Model

[V] Use 3 years average instead of most recent year

Canadian Water and Wastewater Association

Customer Class	Water Rate Type	Conserving Rate?	(V') Total Revenue Comodity Charges	(M') Total Revenue Fixed Carges
Single-Family	Increasing Block	Yes	9131562	11456607
Multi-Family	Uniform	Yes	910636	607722
Commercial	Uniform	Yes	987081	794040
Dedicated Irrigation	Increasing Block	Yes	1280195	358700
Agricultural	Increasing Block	Yes	319722	436977
Other	Uniform	Yes	568588	410270
			13197784	**14064316**

Calculate: V / (V + M) **48 %**

Upload file:

Agency Provide Sewer Service: Yes

Customer Class	Rate Type	Conserving Rate?
Single-Family	Uniform	Yes
Multi-Family	Uniform	Yes
Commercial	Uniform	Yes

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2015

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

6293 **El Dorado Irrigation District** **Retail**

Does your agency perform Public Outreach programs? Yes

The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP

Sacramento Regional Water Authority (RWA)
Regional Water Efficiency Program (RWEP)
Amy Talbott, Program Manager
atalbott@rwah2o.org

The name of agency, contact name and email address if not CUWCC Group 1 members

Did at least one contact take place during each quater of the reporting year? Yes

Public Outreach Program List	Number
Newsletter articles on conservation	25
Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	123567
Website	50
Email Messages	573
General water conservation information	17
Total	**124232**

Did at least one contact take place during each quater of the reporting year? Yes

Number Media Contacts	Number
Written editorials	43
Total	**43**

Did at least one website update take place during each quater of the reporting year? Yes

Public Information Program Annual Budget

Annual Budget Category	Annual Budget Amount
EID Water Efficiency Outreach	232000
Total Amount:	**232000**

Public Outreah Additional Programs
Website - Includes water efficiency information, link to interactive plant database, school education materials, teacher resources, and water management plan
Water Wise/Drought Tolerant Demonstration Garden - Located at our headquarters site, printed and viewable plant list available
Customer Notifications - Letters mailed to customers when meter reads show rise in use of 20% or more from same time in previous year; letter or call when reports of runoff, leaks, or broken sprinklers are noted or received

CUWCC BMP Coverage Report 2015

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

Description of all other Public Outreach programs

EID partners with local chapter of Native Plant Society

Comments:

Unless otherwise noted, the activity reported above was performed by EID. RWA's Regional Water Efficiency Program (RWEP), of which EID is a member, also performed media contacts, training, and outreach programs on behalf of their member agencies.

At Least As effective As	No

Exemption	No	0

CUWCC BMP Coverage Report 2015

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

6293 El Dorado Irrigation District **Retail**

Does your agency implement School Education programs? Yes

The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP

Sacramento Regional Water Authority (RWA)
Regional Water Efficiency Program (RWEP)
Amy Talbott, Program Manager
atalbott@rwah2o.org

Materials meet state education framework requirements? Yes

Through RWEP: student newspaper supplement called BeWater Smart News. It tells the never-ending story of the water cycle. Teacher's guide provides a regional focus and lessons based on the CA Content Standards

Materials distributed to K-6? Yes

Through RWEP: Be Water Smart News (2-6) supplement with teachers guide; Mr. Leaky's Water Conservation & You Booklet (K-4); and the California Waterways Map (4-8).

Materials distributed to 7-12 students? Yes (Info Only)

Through RWEP: Living Rivers of the Sacramento Valley newspaper supplement with teacher's guide (grades 7-12) ; and the Water Spots Video Contest (grades 9-12) with the unveiling at a River Cats game.

Annual budget for school education program: 18000.00

Description of all other water supplier education programs

EID partnerships with youth organizations, Farm Day for 3rd graders, Earth Day, and other community events.

Comments:

ALL reported activity is EID specific unless otherwise noted as "through RWEP" with the only exception being "Teacher Trainings" which were provided by Project WET (Water Education for Teachers) through EID's membership in RWEP.

At Least As effective As No

Exemption No 0

CUWCC BMP Coverage Report 2015

6293 El Dorado Irrigation District

Baseline GPCD: 346.82

GPCD in 2015 181.05

GPCD Target for 2018: 284.40

Biennial GPCD Compliance Table

ON TRACK

		Target		Highest Acceptable Bound	
Year	Report	% Base	GPCD	% Base	GPCD
2010	1	96.4%	**334.30**	100%	**346.80**
2012	2	92.8%	**321.80**	96.4%	**334.30**
2014	3	89.2%	**309.40**	92.8%	**321.80**
2016	4	85.6%	**296.90**	89.2%	**309.40**
2018	5	82.0%	**284.40**	82.0%	**284.40**