



**CABY Integrated Regional Water Management Group
2014 IRWM Drought Grant Solicitation**

Attachment 3. Project Justification

Attached please find Project Summary Table (Table 4), Project Description, Regional Map and Project Maps and Cost Effectiveness Analysis (Table 6).



2014-2015 Drought Relief Measures in the CABY Region
Proposition 84, Drought Grant Solicitation

Attachment 3. Table 4 - Project Summary Table

Table 4 – 2014 IRWM Drought Solicitation Project Summary Table							
Drought Project Element		Project Name/ID	Project Name/ID	Project Name/ID	Project Name/ID	Project Name/ID	Project Name/ID
		City of Placerville, Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project	El Dorado County Water Agency, Regional Water Conservation Planning - Model Implementation and Education Programs	Georgetown Divide Public Utilities District, Water Conservation, Environmental Protection, and Supply Reliability Project	Grizzly Flats Community Services District, Drought Measures Infrastructure Project	Nevada Irrigation District, Rock Creek Contingency Intertie Project	Placer County Water Agency, Greeley Canal Drought Measures Optimization Project
D.1	Provide immediate regional drought preparedness	X	X	X	X	X	X
D.2	Increase local water supply reliability and the delivery of safe drinking water	X	X	X	X	X	
D.3	Assist water suppliers and regions to implement conservation programs and measures that are not locally cost-effective						
D.4	Reduce water quality conflicts or ecosystem conflicts created by the drought	X		X	X		
IRWM Project Element							
IR.1	Water supply reliability, water conservation, and water use efficiency	X	X	X	X	X	X
IR.2	Stormwater capture, storage, clean-up, treatment, and management						

Table 4 – 2014 IRWM Drought Solicitation Project Summary Table

Drought Project Element		Project Name/ID	Project Name/ID	Project Name/ID	Project Name/ID	Project Name/ID	Project Name/ID
		City of Placerville, Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project	El Dorado County Water Agency, Regional Water Conservation Planning - Model Implementation and Education Programs	Georgetown Divide Public Utilities District, Water Conservation, Environmental Protection, and Supply Reliability Project	Grizzly Flats Community Services District, Drought Measures Infrastructure Project	Nevada Irrigation District, Rock Creek Contingency Intertie Project	Placer County Water Agency, Greeley Canal Drought Measures Optimization Project
IR.3	Removal of invasive non-native species, the creation and enhancement of wetlands, and the acquisition, protection, and restoration of open space and watershed lands						
IR.4	Non-point source pollution reduction, management, and monitoring						
IR.5	Groundwater recharge and management projects						
IR.6	Contaminant and salt removal through reclamation, desalting, and other treatment technologies and conveyance of reclaimed water for distribution to users						
IR.7	Water banking, exchange, reclamation, and improvement of water quality			X		X	
IR.8	Planning and implementation of multipurpose flood management programs						
IR.9	Watershed protection and management	X	X	X	X		
IR.10	Drinking water treatment and distribution	X			X	X	
IR.11	Ecosystem and fisheries restoration and protection	X		X		X	



2014-2015 Drought Relief Measures in the CABY Region Proposition 84, Drought Grant Solicitation

Attachment 3. Project Descriptions

Why Expedited Funding is Needed in the CABY Region

In the IRWMP process, a DAC is defined as a community with an annual median household income (MHI) less than 80 percent of the statewide annual MHI. Based on the 2010 Census, 18 communities within the CABY region are now identified as DACs (MHI is \$48,706 or below). Grizzly Flats Community Services District is the only project sponsor that officially meets the designation under this grant program (see Attachment 8); however, while not officially a disadvantaged community, the median incomes of the project sponsor's service territories often fall just above the technical definition of the disadvantaged level and many have extremely limited financial resources. These sponsors include Georgetown Divide Public Utilities District, El Dorado County Water Agency and the City of Placerville. Other project sponsors such as Nevada Irrigation District and Placer County Water Agency, again, while not meeting the definition of a DAC, are providing direct services to the communities identified in the table below.

The El Dorado County Water Agency's and SYRCL's Great Water Mystery Program would target water conservation programs in all 18 CABY region DACs to the extent practical that are identified in the table below. Communities listed below are considered disadvantaged (less than 80 percent of the California median household income).

County	Census Places	MHI (\$)
Amador	River Pines	9,918
	Plymouth	31,250
El Dorado	Kirkwood	48,155
	Grizzly Flats	32,173
Nevada	Soda Springs	40,757
	Graniteville (between Alleghany and Washington on Meadow Lake Road)	-
	Washington	17,566
	North San Juan	29,145
	Grass Valley	35,385
	Rough and Ready	39,020
	Penn Valley	47,530
Placer	Newcastle	29,324
	North Auburn	44,372
Sierra	Downieville	48,125
	Alleghany	22,188
	Pike	26,429
Yuba	Dobbins (just east of Oregon House)	42,946
	Camptonville	27,031

Source: Page 30 of the CABY IRWMP Update 2014.

City of Placerville, Waterline Replacement - Chamberlain/Sacramento Street Area

25 Word Project Description: This project will replace failing infrastructure resulting in increased drinking and agricultural water supply reliability as well as multiple other benefits.

How this Project Alleviates Drought Impacts in the CABY Region: As discussed in Attachment 2, drought-related impacts in the CABY region include inadequate drinking water (potable water) supplies, inadequate agricultural water supplies, potential lack of surface supply for aquatic habitats and critical downstream ecosystems, threats to downstream (out-of-CABY region) groundwater basin overdraft, and increased risk of TMDL violations as a result of lower flows and higher concentrations of heavy metals, especially in the northern CABY watersheds.

As described further in the following section, this project would conserve an estimated 15 acre-feet of water per year. This would result in increased drinking and agricultural water supply reliability. The amount of water the City needs to purchase from EID would then be reduced also by 15 acre-feet per year. This would result in reduced pumping costs and potentially diversions upstream and instream flow benefits. Thus the project would alleviate drought impacts to ecosystems upstream and downstream from the project and increase surface flows and reduce concentrations of heavy metal pollutants and other TMDLs.

How this Project is an Eligible Drought Project Type: The project addresses a number of eligible project type categories as described below:

1. Promote water conservation, conjunctive use, reuse and recycling:

The project promotes water conservation by actively addressing system inefficiencies and conserving water through the replacement of leaky deteriorated pipes and reduction of risk of water main breaks.

2. Achieve long term reduction of water use:

The project achieves long-term reduction of water use by installing new infrastructure that substantially decreases losses in the City's water delivery system.

3. Provide immediate regional drought preparedness:

The project decreases demands on the water supply by decreasing losses and increasing system efficiency.

4. Increase local water supply reliability and the delivery of safe drinking water:

The project increases supply reliability and delivery of safe drinking water by replacing deteriorated, aging systems prone to collapse that could introduce harmful sediments into the water supply. Also ensures that minimum flows for fire protection are met.

5. Reduce water quality conflicts or ecosystem conflicts created by the drought:

The project protects water quality by eliminating leaks, and reducing the risk of pipeline failure with associated soil erosion and potential sedimentation of nearby streams. Reduced losses will also reduce instream diversions, thereby increasing instream flows for downstream ecosystem benefits.

El Dorado County Water Agency, Regional Water Conservation Planning - Model Implementation and Education Programs

25 Word Project Description: A model retrofit program in County buildings and schoolchildren education will result in increased reliability and supplies for drinking water and agricultural customers.

How this Project Alleviates Drought Impacts in the CABY Region: As discussed in Attachment 2, drought-related impacts in the CABY region include inadequate drinking water (potable water) supplies, inadequate agricultural water supplies, potential lack of surface supply for aquatic habitats and critical downstream ecosystems, threats to downstream (out-of-CABY region) groundwater basin overdraft, and increased risk of TMDL violations as a result of lower flows and higher concentrations of heavy metals, especially in the northern CABY watersheds.

This project would help achieve a 20% reduction in water use per year resulting in increased reliability and supplies for drinking water and agricultural customers. The project would also promote immediate and long-term water use efficiency through school

programs.

How this Project is an Eligible Drought Project Type: The project addresses a number of eligible project type categories as described below:

1. Promote water conservation, conjunctive use, reuse and recycling:

The project promotes water conservation by actively addressing system inefficiencies and conserving water through retrofits in government buildings and assembly programs and classroom programs throughout the DAC communities of the CABY region.

2. Achieve long term reduction of water use:

The project achieves long-term reduction of water use by reducing water use and community outreach.

3. Provide immediate regional drought preparedness:

The project decreases demands on the water supply by decreasing losses and increasing system efficiency.

4. Increase local water supply reliability and the delivery of safe drinking water:

The project increases supply reliability and delivery of safe drinking water by replacing deteriorated, aging systems and out-dated toilets and appurtenances.

5. Reduce water quality conflicts or ecosystem conflicts created by the drought:

The project is designed to inspire the protection of fisheries and aquatic ecosystems.

Project 3. Georgetown Divide Public Utilities District, Water Conservation, Supply Reliability and Environmental Protection Project

25 Word Project Description: GDPUD will reduce seepage, increase stability, and decrease outages within its existing water conveyance system by lining 12,380 linear feet of the 69.9-mile ditch system.

How this Project Alleviates Drought Impacts in the CABY Region: The GDPUD serves an area of 75,000 acres, of which 30,000 acres have access to water supply. According to the District there are currently 388 irrigation customers with a demand of 4,722 ac-ft/yr. Water is supplied to residential, institutional and agricultural users throughout the Georgetown Divide using separate raw water and treated water systems. Raw water ditch sections proposed for lining supply all District customer categories.

This project, which will line and reinforce ditches that supply water to these agricultural users, will provide more reliable water deliveries to agricultural land. As discussed in Attachment 2, drought-related impacts in the CABY region include inadequate drinking water (potable water) supplies, inadequate agricultural water supplies, potential lack of surface supply for aquatic habitats and critical downstream ecosystems, threats to downstream (out-of-CABY region) groundwater basin overdraft, and increased risk of TMDL violations as a result of lower flows and higher concentrations of heavy metals, especially in the northern CABY watersheds.

This project would conserve an estimated 1,504 acre-feet of water per year resulting in increased reliability and supplies for drinking water and agricultural customers. A corresponding amount of water (1,504 acre-feet) would not be diverted upstream resulting in downstream instream flow benefits. Thus the project would alleviate drought impacts to ecosystems downstream from the project and increase surface flows and reduce concentrations of heavy metal pollutants and other TMDLs.

How this Project is an Eligible Drought Project Type: The project addresses a number of eligible project type categories as described below:

- 1. Promote water conservation, conjunctive use, reuse and recycling:** The ongoing loss of raw water in foothill ditch systems due to seepage, overflow, and natural degradation of open and unlined, earth bottom canals is a well-documented problem throughout the CABY region. Water losses up to 30% of canal capacity are prevalent along ditch systems throughout the GDPUD service territory which includes 69.9-miles of ditch and raw water piped systems. The project would line a 2.3 mile segment of canal with concrete/gunite. Project components primarily consist of new concrete lining for the ditch sections experiencing significant water loss. Gunite surfaces are strong, water tight, and smooth, which are ideal for efficient water transport. Gunite requires fewer joints than other types of concrete and is the least susceptible to cracking. The losses due to leakage in the gunite lined areas will be undetectable compared to other losses from evaporation and leakage from

unlined sections of ditch system. Future losses after lining are expected to be less than 10 percent.

2. **Improve landscape and agricultural irrigation efficiencies:** The conserved water from the proposed project will also help provide a more reliable water source to irrigation users during drought years.
3. **Achieve long term reduction of water use:** The conserved water will be delivered to customers throughout the District’s service area to meet future demands or, until needed, will remain undelivered in Pilot Creek for instream beneficial uses, which will ultimately result in more water remaining in the American River system. Under the District’s Drought Contingency Plan, raw water deliveries to irrigation users may be cut down by 50% in a Stage 1 drought and by 100% in a Stage 3 drought.
4. **Provide immediate regional drought preparedness:**
The project decreases demands on the water supply by decreasing losses and increasing system efficiency.
5. **Increase local water supply reliability and the delivery of safe drinking water:** This project would conserve an estimated 1,504 acre-feet of water per year resulting in increased reliability and supplies for drinking water and agricultural customers.
6. **Reduce water quality conflicts or ecosystem conflicts created by the drought:**
A corresponding amount of water (1,504 acre-feet) would not be diverted upstream resulting in downstream instream flow benefits. Thus the project would alleviate drought impacts to ecosystems downstream from the project and increase surface flows and reduce concentrations of heavy metal pollutants and other TMDLs.

Project 4. Grizzly Flat Community Services District, Grizzly Flat Drought Measures Infrastructure Project

25 Word Project Description: The project would result in much-needed infrastructure improvements to increase water reliability, and instream flows for the DAC Community of Grizzly Flats.

How this Project Alleviates Drought Impacts in the CABY Region: As discussed in Attachment 2, drought-related impacts in the CABY region include inadequate drinking water (potable water) supplies, inadequate agricultural water supplies, potential lack of surface supply for aquatic habitats and critical downstream ecosystems, threats to downstream (out-of-CABY region) groundwater basin overdraft, and increased risk of TMDL violations as a result of lower flows and higher concentrations of heavy metals, especially in the northern CABY watersheds.

Consistent with CABY Objective WS-1 (Water Conserved), significant water savings would be realized immediately with installation of new meters, leak detection-repair, and residential water conservation program including retrofit kits. It is estimated that 39.6 acre-feet of water would be saved. This project would help achieve a 20% reduction in water use per year resulting in increased reliability and supplies for drinking water and agricultural customers. The project would improve instream flows through decreased demands and decreases in wasted water and it would promote long-term water use efficiency.

How this Project is an Eligible Drought Project Type: The project addresses a number of eligible project type categories as described below:

1. **Promote water conservation, conjunctive use, reuse and recycling:**
The combination of all GFCSD projects (ARVs, Backwash Tanks, CP, Leak Detection-Repair, Meter Replacement, Residential Water Conservation and SCADA) would produce significant water savings over existing conditions.
2. **Achieve long term reduction of water use:**
Each project would have a measurable conservation benefits; however, the most significant water savings would be realized through new meters, leak detection and repair and water conservation program with residential water audits, rebates and plumbing retrofits including direct installation of ULFTs in many of the GFCSDs customer homes.
3. **Provide immediate regional drought preparedness:**
The combination of all GFCSD projects (ARVs, Backwash Tanks, CP, Leak Detection-Repair, Meter Replacement, Residential Water Conservation and SCADA) would produce immediate and significant water savings over existing conditions.
4. **Increase local water supply reliability and the delivery of safe drinking water:**
Modernization of many components and appurtenances will improve GFCSD water supply delivery system. GFCSD is a rural Disadvantaged Community its total water supply system is over 40 years old. Its system consists of five miles, of one-inch

to eight-inch pipeline that delivers water to over 600 residential accounts. Over 300 meters are past their 10-15 year life span and no longer function properly. Many of these old meters provide inaccurate readings and they lack leak indicators. Implementation of this project would replace roughly 300 meters to newer meters that not only provide accurate readings, but can detect leaks on properties.

5. Reduce water quality conflicts or ecosystem conflicts created by the drought:

Further demand reduction within GFCSD's service area would leave undiverted supplies in the two GFCSD supply creeks; thereby, enhancing habitat and riparian conditions and bolstering downstream supplies including the Sacramento-San Joaquin Bay Delta system.

Project 5. Nevada Irrigation District, Rock Creek Water Contingency Intertie

25 Word Project Description: The project would install a backup, gravity pipeline to interconnect existing water infrastructure to serve NID's customers during water shortage emergencies.

How this Project Alleviates Drought Impacts in the CABY Region: As discussed in Attachment 2, drought-related impacts in the CABY region include inadequate drinking water (potable water) supplies, inadequate agricultural water supplies, potential lack of surface supply for aquatic habitats and critical downstream ecosystems, threats to downstream (out-of-CABY region) groundwater basin overdraft, and increased risk of TMDL violations as a result of lower flows and higher concentrations of heavy metals, especially in the northern CABY watersheds.

This project would secure 35 cfs for backup drinking and agricultural water supplies, providing water supply reliability to 91,200 people. The project would result in permanent upgrades to aging infrastructure which is identified as one of the CABY region objectives.

How this Project is an Eligible Drought Project Type: The project addresses a number of eligible project type categories as described below:

- 1. Establish system interties:** The proposed intertie connection would provide much-needed back-up water supply deliveries for Pacific Gas & Electric (PG&E), which owns and operates Rock Creek Reservoir, and Placer County Water Agency, which delivers water to thousands of customers in western Placer County. Both PG&E and PCWA customers would also benefit from the increased system-wide redundancy proposed by this project.
- 2. Provide immediate regional drought preparedness:**
The proposed intertie and turnout pipelines would not increase the existing system capacity under normal conditions, but the project would improve NID's ability to provide additional water supply during times of high demand. The project would substantially improve the system reliability, redundancy and NID's responsiveness to drought, upstream canal failures and fire protection.
- 3. Increase local water supply reliability and the delivery of safe drinking water:**
The existing Combie Canal System is very limited for an emergency supply and requires large reductions in existing customer water deliveries in order to provide a limited supply of water to the Rock Creek Reservoir, and consequently, the two water treatment plants – this was evident during the Bear River Canal failure of 2011, described below (the canal also failed in 1996 affecting 75,000 people). This project will add an intertie pipeline that will directly connect the Combie Canal to the Rock Creek Reservoir, which can be used during outages of PG&E's Wise Canal, or Bear River Canal, or both.

Project 6. Placer County Water Agency, Greeley Canal Drought Measures Optimization

25 Word Project Description: Conserve more than 360 acre-feet of water per year in PCWA's Greeley Canal System by automation of control gates to minimize spilling at canal ends.

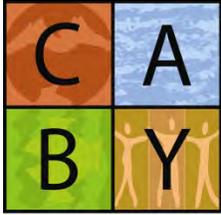
How this Project Alleviates Drought Impacts in the CABY Region: As discussed in Attachment 2, drought-related impacts in the CABY region include inadequate drinking water (potable water) supplies, inadequate agricultural water supplies, potential lack of surface supply for aquatic habitats and critical downstream ecosystems, threats to downstream (out-of-CABY region) groundwater basin overdraft, and increased risk of TMDL violations as a result of lower flows and higher concentrations of heavy metals,

especially in the northern CABY watersheds.

This project would conserve an estimated 360 acre-feet of water per year resulting in a corresponding amount available to PCWA to send to the storage reservoir for potential use in the PCWA water treatment plants. This would result in increased drinking and agricultural water supply reliability. The amount of water PCWA needs to purchase from PG&E would then be reduced also by 360 acre-feet per year. This would result in reduced PG&E diversions upstream and instream flow benefits. Thus the project would alleviate drought impacts to ecosystems upstream and downstream from the project and increase surface flows and reduce concentrations of heavy metal pollutants and other TMDLs.

How this Project is an Eligible Drought Project Type: The project addresses a number of eligible project type categories as described below:

- 1. Promote water conservation, conjunctive use, reuse and recycling:**
Reduces amount of water necessary to deliver water to customers. Re-directs approximately 360 AF of water currently lost annually to system to storage reservoir for reuse.
- 2. Improve landscape and agricultural irrigation efficiencies:**
Increasing efficiency of irrigation delivery system reduces the water use per acre of land irrigated.
- 3. Achieve long term reduction of water use:**
Reducing the amount of water that is spilled at the ends of the canals will reduce the amount of water diverted from the delivery systems that provide the surface water to our regional water treatment plants. The estimated reduction is 360 AF per year.
- 4. Provide immediate regional drought preparedness:**
Drought relief would be provided shortly after the upgraded systems were installed.
- 5. Increase local water supply reliability and the delivery of safe drinking water:**
This project would install an electrically operated gate and meter combination to maintain a discharge flowrate to the Upper Greeley Canal regardless of upstream conditions. It would be connected to the PCWA SCADA system where it would receive the target flow rate to discharge. It would automatically make adjustment to itself to achieve the desired flow. SCADA would monitor the spill flows and based on the usage patterns and travel time from beginning of canal to end, make adjustments to minimize the amount of water reaching the spills. Estimated peak spill reductions of around 2/3 are anticipated which equal approximately 360 acre-feet per year.



**CABY Integrated Regional Water Management Group
2014 IRWM Drought Grant Solicitation**

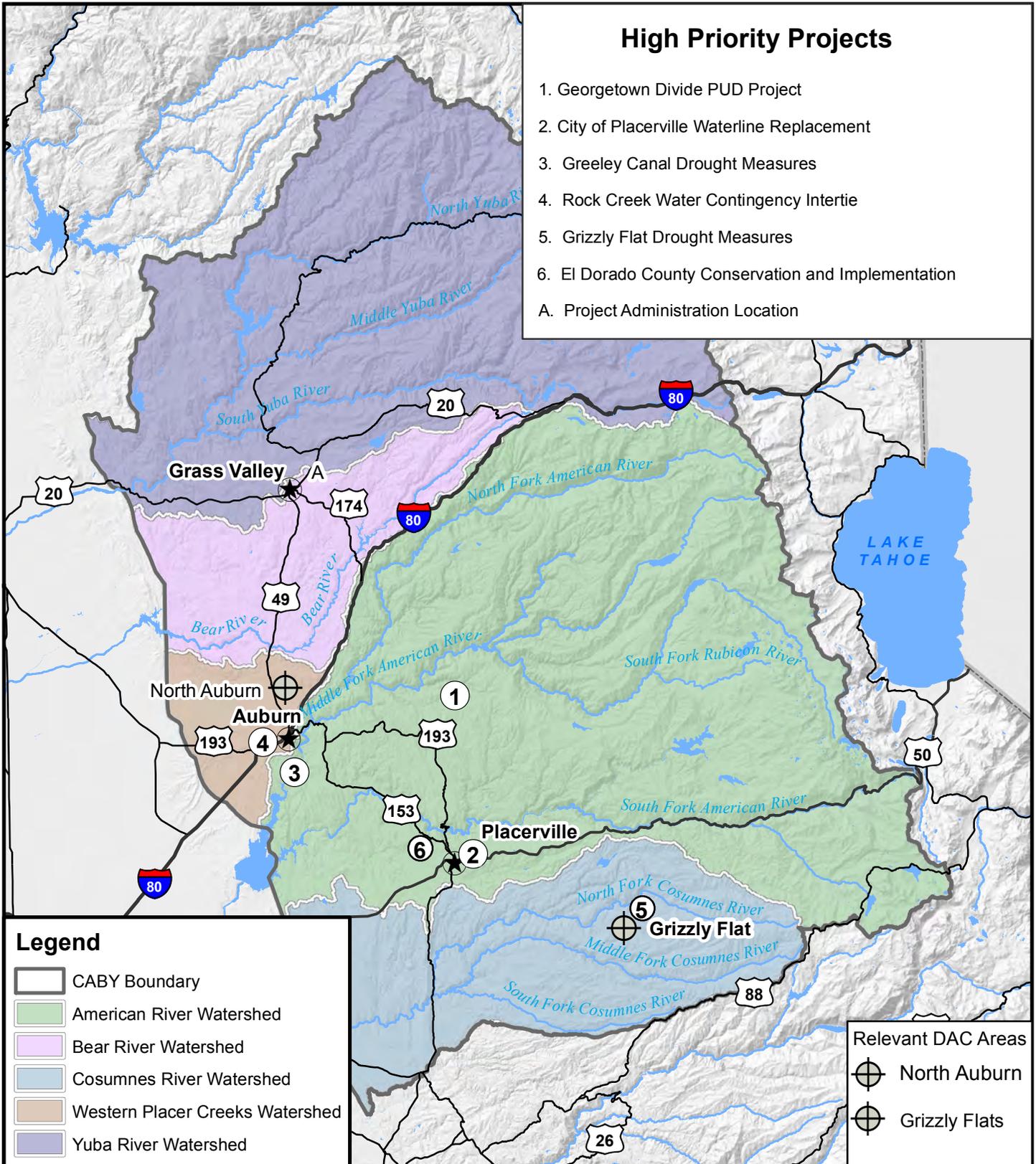
Attachment 3: Maps

Attached please find:

- Regional Map containing IRWM Boundary and location of each project
- Individual Project Maps

High Priority Projects

1. Georgetown Divide PUD Project
 2. City of Placerville Waterline Replacement
 3. Greeley Canal Drought Measures
 4. Rock Creek Water Contingency Intertie
 5. Grizzly Flat Drought Measures
 6. El Dorado County Conservation and Implementation
- A. Project Administration Location



Legend

- CABY Boundary
- American River Watershed
- Bear River Watershed
- Cosumnes River Watershed
- Western Placer Creeks Watershed
- Yuba River Watershed

Relevant DAC Areas

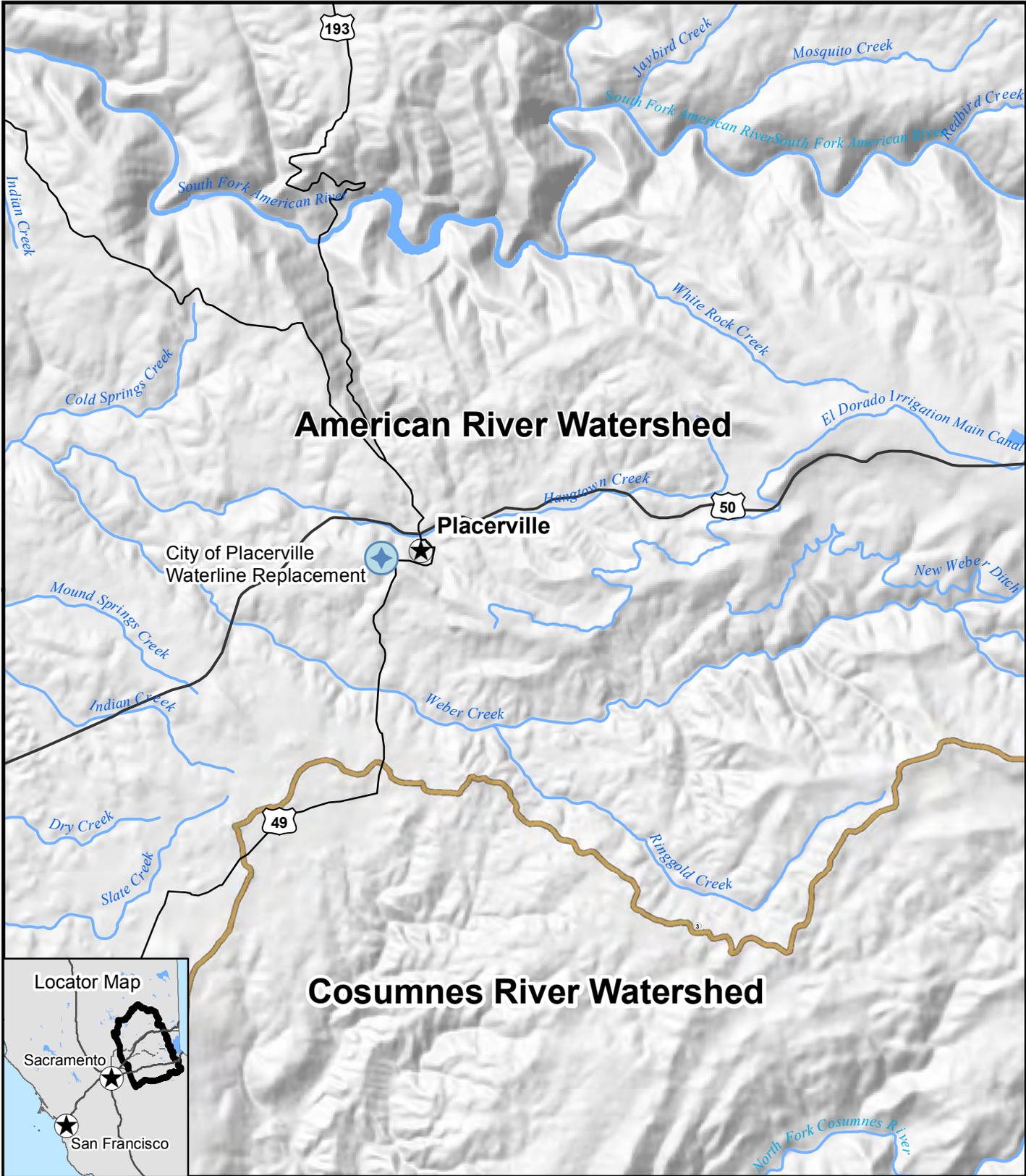
- North Auburn
- Grizzly Flats



Cosumnes, American, Bear & Yuba River
Integrated Regional Water Management

2014-2015 Drought Relief Measures in the CABY Region

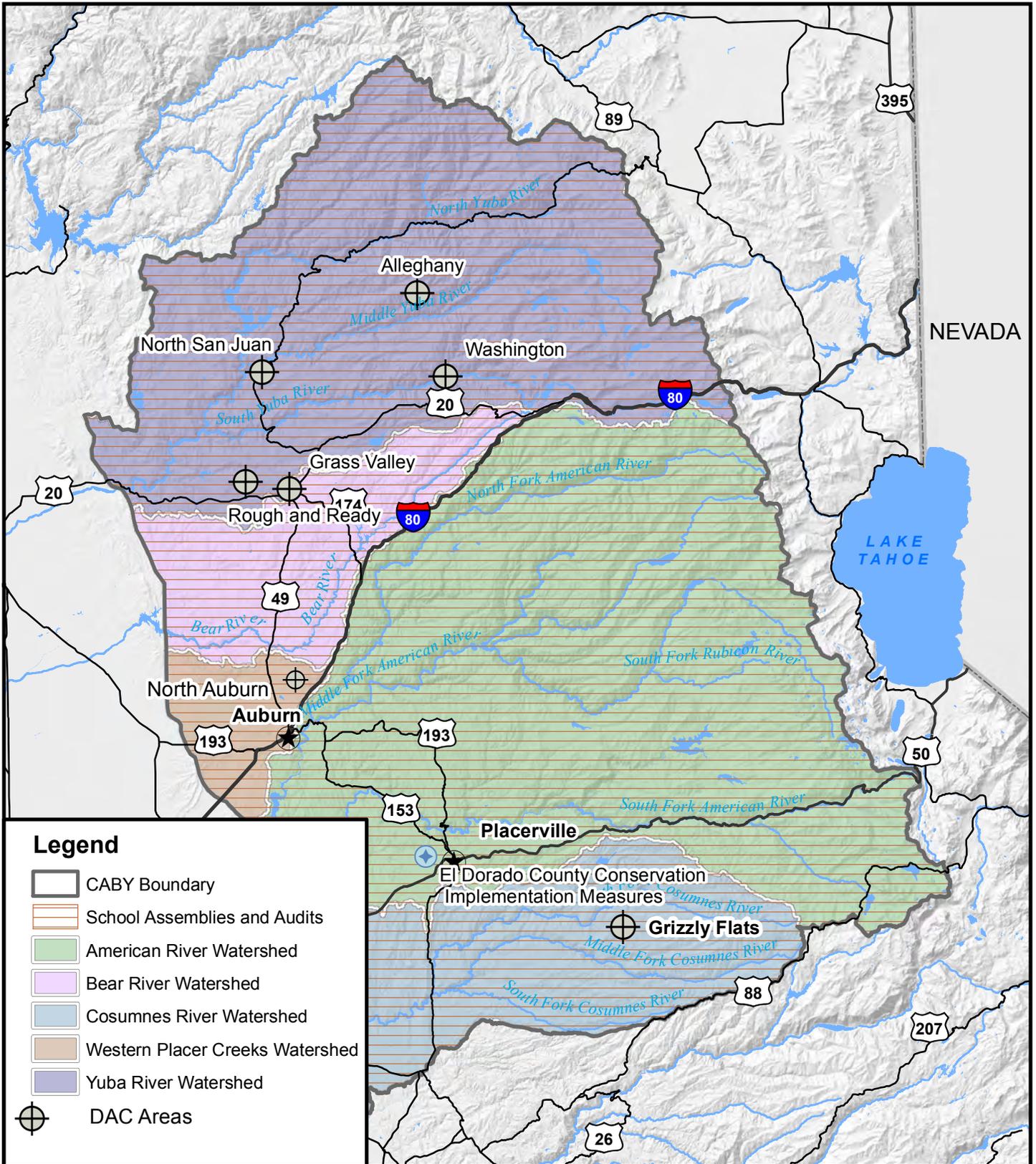




Cosumnes, American, Bear & Yuba River
Integrated Regional Water Management

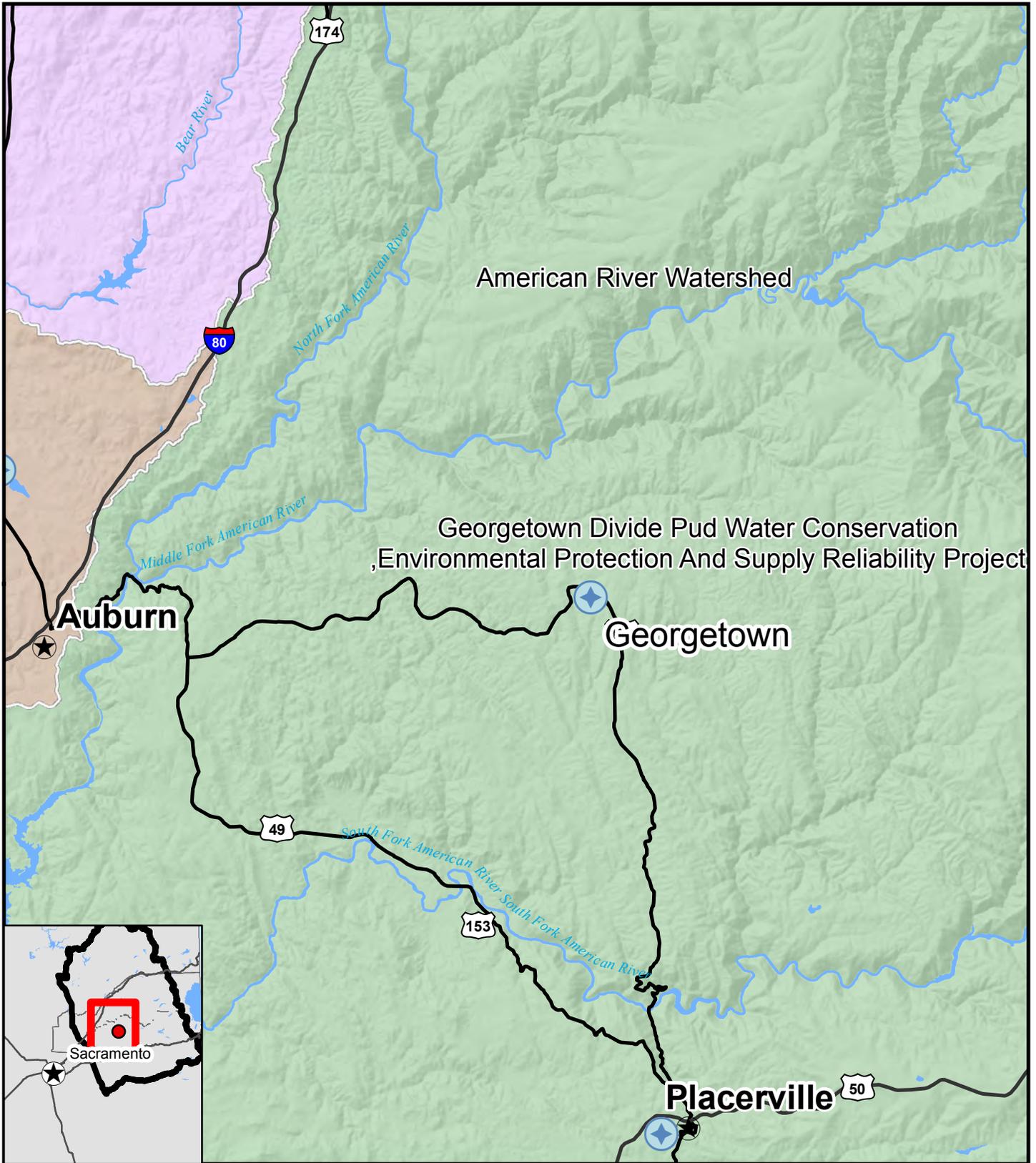
City of Placerville Waterline Replacement Chamberlain/Sacramento Street Area



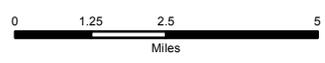


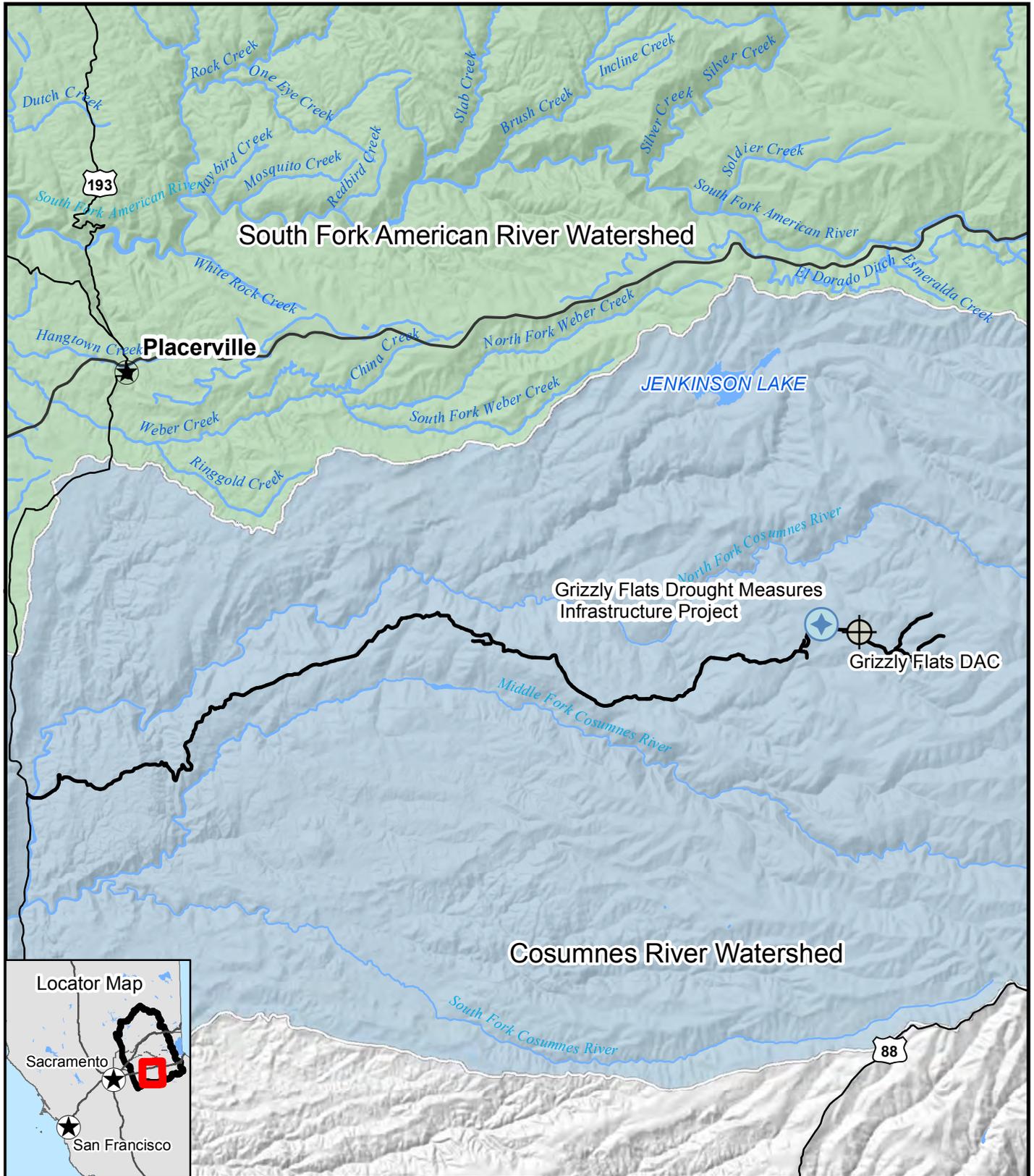
El Dorado County Conservation Implementation Measures





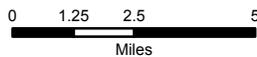
Georgetown Divide PUD Water Conservation
 ,Environmental Protection And Supply Reliability Project

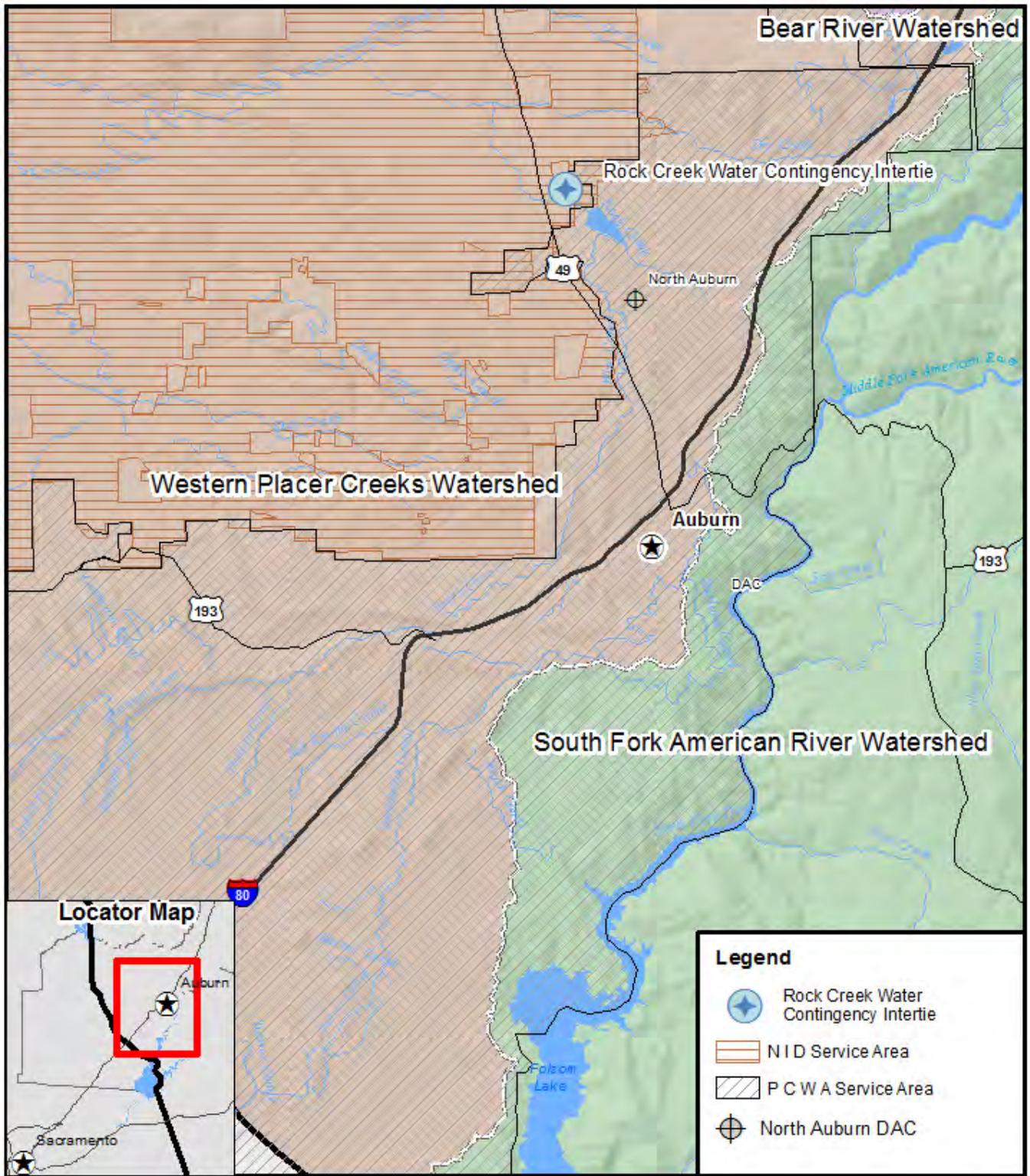




Cosumnes, American, Bear & Yuba River
Integrated Regional Water Management

Grizzly Flats Drought Measures Infrastructure Project



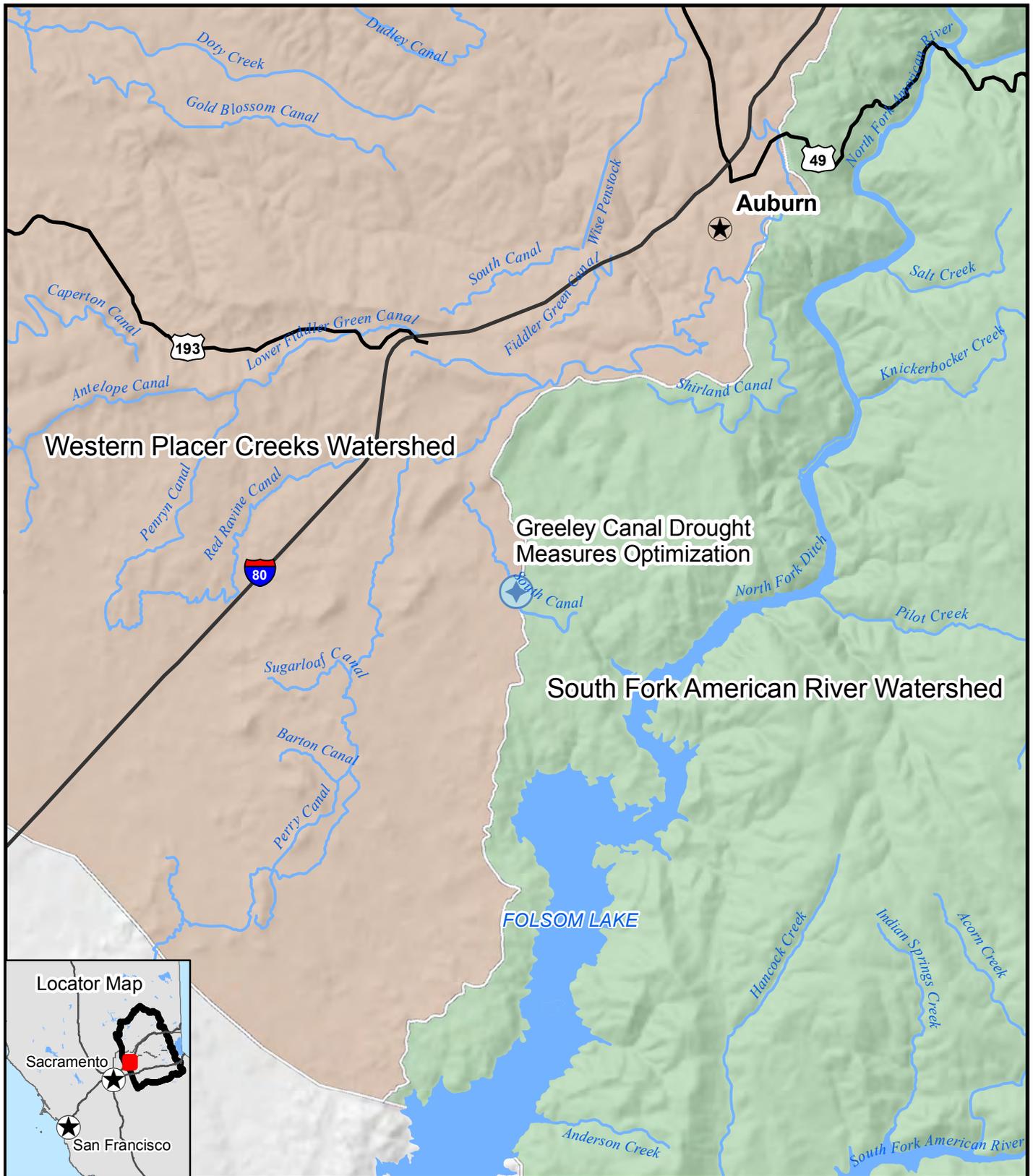


Rock Creek Water Contingency Intertie



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Cosumnes, American, Bear & Yuba River
Integrated Regional Water Management

Greeley Canal Drought Measures Optimization





**2014-2015 Drought Relief Measures in the CABY Region
Proposition 84, Drought Grant Solicitation**

Attachment 3. Table 6 - Cost Effectiveness Analysis

Project 1. City of Placerville, Waterline Replacement - Chamberlain/Sacramento Street Area

Table 6 – Cost Effective Analysis	
Project Name: City of Placerville Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project.	
Question 1	Types of benefits provided as shown in Table 5. Potable Water Conserved; Public Safety Improvements; Upgrade Aging Infrastructure; Integrated Flood Management; Water Service Reliability; Tons of GHG Emissions Avoided.
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? Yes
	If no, why?
	If yes, list the methods (including the proposed project) and estimated costs. Proposed Project. Replace pipe in current location (\$1,147,859); Alternative Method 1. Replace only a small portion of the pipe that is leaking (\$393,764).
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. The proposed project is preferred because it will replace the entire pipeline, thereby meeting fire flows, reducing leaks and maintenance costs, conserving water, and reducing customer service complaints caused by the continued deterioration of the aging pipeline. It will also utilize existing easements and right of ways while minimizing construction on private property that would increase project costs.
Comments/Source: City of Placerville Proposed Capital Improvement Program Budget 2008/2009 (pg.10-11)	

Project 2. El Dorado County Water Agency, Regional Water Conservation Planning - Model Implementation and Education Programs

Table 6 – Cost Effective Analysis	
Project Name: El Dorado County Water Agency, Regional Water Conservation Planning - Model Implementation and Education Programs	
Question 1	Types of benefits provided as shown in Table 5. Potable Water Conserved (Commercial Buildings); Increase Energy Efficiency; Potable Water Conserved (Residential); Public Outreach (number of people served)
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? No.

Table 6 – Cost Effective Analysis	
Project Name: El Dorado County Water Agency, Regional Water Conservation Planning - Model Implementation and Education Programs	
Question 1	Types of benefits provided as shown in Table 5. Potable Water Conserved (Commercial Buildings); Increase Energy Efficiency; Potable Water Conserved (Residential); Public Outreach (number of people served)
	If no, why? There are no viable alternatives to water savings retrofits and education outreach. The Great Water Mystery program has had demonstrable results in the CABY region and is considered a tried and true program. Education and outreach is a key component to conserving water and creating a populace that is actively engaged in conserving water in their daily lives. Improvements to infrastructure cannot always solve problems that are as simple as teaching people the benefit of turning off the tap. The education outreach component of the project will cost about \$3 per every 935 gallons of water saved and per every individual reached.
	If yes, list the methods (including the proposed project) and estimated costs.
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.
Comments/Source: See table 5.	

Project 3. Georgetown Divide Public Utilities District, Water Conservation, Supply Reliability and Environmental Protection Project

Table 6 – Cost Effective Analysis	
Project Name: Georgetown Divide Public Utilities District, Water Conservation, Environmental Protection, and Supply Reliability Project	
Question 1	Types of benefits provided as shown in Table 5. Water Conservation; Increase Instream Flows; Upgrades to Aging Infrastructure;
	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? Yes
	If no, why?
Question 2	If yes, list the methods (including the proposed project) and estimated costs. Proposed Project. Gunite lining of earthen reaches where seepage is prevalent (\$1,125,35.00); Alternative Method 1. Installation of vertical concrete crib-wall sections to cut off seepage or raise ditch banks (freeboard) where overflow is an issue (\$1,140,140). Alternative Method 2. Replace the leaking ditch reach with a new pipeline (\$2,254,313).
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. The proposed project is the most cost-effective alternative.
Comments/Source:	

Project 4. Grizzly Flat Community Services District, Grizzly Flat Drought Measures Infrastructure Project

Table 6 – Cost Effective Analysis	
Project Name: Grizzly Flats Community Services District, Drought Measures Infrastructure Project	
Question 1	Types of benefits provided as shown in Table 5. Water Conserved; Improve Water Supply Reliability; Implement 20x2020 Water Conservation Plan
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? Yes
	If no, why?
	If yes, list the methods (including the proposed project) and estimated costs. Proposed Project. Infrastructure Improvements (\$508,658); Alternative to Cathodic Protection. All new storage tanks (4 tanks @ \$1 million each). Alternative to Air Valves. Replacing five miles of pipeline at \$1 million per mile. Other elements have no alternatives as they are essential upgrades and integral components of the current system.
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.
Comments/Source: Carlton Engineering (2002). Water System Improvement Project. Tank Coating Evaluation. CSI Inspection Report (pages 3, 4).	

Project 5. Nevada Irrigation District, Rock Creek Water Contingency Intertie

Table 6 – Cost Effective Analysis	
Project Name: Nevada Irrigation District, Rock Creek Contingency Intertie Project	
Question 1	Types of benefits provided as shown in Table 5. Improve Water Supply Reliability; Drought Preparedness; Upgrade Aging Infrastructure
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? Yes
	If no, why?
	If yes, list the methods (including the proposed project) and estimated costs. Proposed Project. Replace pipe in current location (\$2,208,671); Alternative Method 1. Build a pipeline and pumping station to pump water from either the American River, or the Bear River through gravity-fed pipeline. This alternative would be extremely costly due to the length of piping required (>\$12 million estimated) and potential pumping station needed.
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. The proposed project is the preferred alternative as it is the least expensive.
Comments/Source: NID. 2012. Engineering memo.	

Project 6. Placer County Water Agency, Greeley Canal Drought Measures Optimization

Table 6 – Cost Effective Analysis

Project Name: Placer County Water Agency, Greeley Canal Drought Measures Optimization Project

Question 1	Types of benefits provided as shown in Table 5. Water Conservation;
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? Yes
	If no, why?
	If yes, list the methods (including the proposed project) and estimated costs. Proposed Project. Upgrade flow monitoring system flow (\$302,000); Alternative Method 1. Pipe Entire System (>\$5 million).
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. The proposed project is the most cost-effective alternative.
Comments/Source:	