CABY Integrated Regional Water Management Group
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Attachment 3. Project Justification

Attached please find the Project Physical Benefits Table 5, with references included in attachments 3 of 5, 4 of 5 and 5 of 5.

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

Attachment 3. Table 5 - Project Physical Benefits

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

Table 5.1.1 – Annual Project Physical Benefits

Project Name: City of Placerville Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project
Type of Benefit Claimed: Potable Water Supply Conserved
Units of the Benefit Claimed: Acre-feet per Year
Additional Information About this Benefit:

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014			
2015	0	15	15
2016	0	15	15
Etc.			
Last Year of Project Life	0	15	15

Sources/References (see attached):

- System Losses and Expert Opinion - City of Placerville Engineer (page numbers not applicable)
- Water Purchase Summaries (internal system database, page numbers not available)
- Design Plans by Psomas Engineering (pages 4 and 12 of the Capital Improvement Plan)

Table 5.1.2 – Annual Project Physical Benefits

Project Name: City of Placerville Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project_
Type of Benefit Claimed: Improved Public Safety/Number of fire hydrants available to residential area
Units of the Benefit Claimed: Count
Additional Information About this Benefit___Each Hydrant would be able to provide approximately 1,500 gallons per minute

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014			
2015	0	2	2
2016	0	2	2
Etc.			
Last Year of Project Life	0	2	2

Comments:

- Expert opinion - taken from Engineering schematics (page numbers not applicable)
- Placerville Water Master Plan, pages 4 and 5 (Kennedy Jenks)

Table 5.1.3 – Annual Project Physical Benefits

Project Name: City of Placerville Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project_
Type of Benefit Claimed: Improve Integrated Flood Management
Units of the Benefit Claimed: Number of Residential Properties to Experience Reduced Flooding from Pipeline Leaks
Additional Information About this Benefit: The pipeline will create more sustainable flood and water management systems (page 12 of the PSP guidelines) and the overall flood protection system in the City of Placerville will be improved. The poor condition of the pipes in the Main Pipeline Service Area often results in customer complaints from the 15 homes which experience continuously wet areas on these private properties leading to continued complaints from residents to the City.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014			
2015	0	15	15
2016	0	15	15
Etc.			
Last Year of Project Life	0	15	15

Comments:
- City of Placerville Records for Customer Complaints of Pipeline Flooding (page numbers not applicable)
- Placerville Water Master Plan, pages 4 and 5 (Kennedy Jenks)

Table 5.1.4 – Annual Project Physical Benefits

Project Name: City of Placerville Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project
Type of Benefit Claimed: Upgrade or improve aging infrastructure/pipeline installed
Units of the Benefit Claimed: Linear Feet (ft)
Additional Information About this Benefit_____

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014			
2015	0	1,180	1,180
2016	0	1,180	1,180
Etc.			
Last Year of Project Life	0	1,180	1,180

Comments:
- Expert Opinion - Estimated using Engineering schematics

Table 5.1.5 – Annual Project Physical Benefits Project Name:_City of Placerville Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project Type of Benefit Claimed: Improve Water Service Reliability Units of the Benefit Claimed: Number of Customers Served Additional Information About this Benefit_____			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014			
2015	0	200	~200
2016	0	200	~200
Etc.	0	200	~200
Last Year of Project Life	0	200	~200
Comments: ▪ Expert Opinion - Estimated using Engineering schematics (page numbers not applicable)			

Table 5.1.4 – Annual Project Physical Benefits Project Name: City of Placerville Waterline Replacement – Chamberlain/Sacramento Street Area Waterlines Replacement Project Type of Benefit Claimed: Tons of emission avoided Units of the Benefit Claimed: Tons GHG Additional Information About this Benefit_____			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014			
2015			
2016			
Etc.			
Last Year of Project Life	0	7.29	-7.29
Comments: ▪ Calculation using online water savings EPA GHG calculator (page numbers not applicable).			

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

Table 5.2.1 – Annual Project Physical Benefits **Project Name: Regional Water Conservation Planning - Model Implementation and Education Programs** **Type of Benefit Claimed: Potable Water Conserved in Government Buildings** **Units of the Benefit Claimed: Gallons of Water Saved** **Additional Information About this Benefit:** As a direct function of plumbing retrofits occur, demand for water would be reduced resulting in low wastewater loads from the EDC Government Center.			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014	0	0	0
2015	0	553,520	553,520
2016	0	1,952,280	1,952,280
Etc.	0	3,433,320	3,433,320
Last Year of Project Life			After 2017, annual water use is expected to remain at approximately 11,354,640 gallons, which is a estimated savings of 735,284 annually.
Sources: Gallons saved based on EDC Conditions Assessment (all pages).			

Table 5.2.2 – Annual Project Physical Benefits **Project Name: Regional Water Conservation Planning - Model Implementation and Education Programs** **Type of Benefit Claimed: Increase Energy Efficiency** **Units of the Benefit Claimed: Percent Reduction in Energy Consumption** **Additional Information About this Benefit: Consistent with Objective CC-2 (Increase alternative energy and energy efficiency) of CABY plan**			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014	0	0	0
2015	0	~10%	~10%
2016	0	~20%	~20%
Etc.	0	~20%	~20%
Last Year of Project Life			
Comments: EDC staff and its consultant team developed an EDC Government Center Facilities Capital Improvement Plan (CIP 2013) that would be implemented over the next 3 to 4 years. As part of development of the CIP staff investigated potential energy savings achieved through equipment upgrades and replacements. The resulting investigations arrived at the potential energy savings of at least 20% annually after 2017 (all pages).			

Table 5.2.3 – Annual Project Physical Benefits			
Project Name: Regional Water Conservation Planning - Model Implementation and Education Programs			
Type of Benefit Claimed: Potable Water Conserved in Residential Homes (gallons)			
Units of the Benefit Claimed : 19,635,000 gallons			
Additional Information About this Benefit_Students are expected to change their behavior as a result of the program and make changes in their daily lives that will result in water use efficiencies and water conservation.			
(a)	**(b)**	**(c)**	**(d)**
	Physical Benefits		
Year	**Without Project**	**With Project**	**Change Resulting from Project (c) – (b)**
2014	0	2,805,000.00	On average, 935 gallons of water will be saved per child per year
2015	0	8,415,000.00	On average, 935 gallons of water will be saved per child per year
2016	0	19,635,000.00	On average, 935 gallons of water will be saved per child per year
Etc.	0	19,635,000.00	On average, 935 gallons of water will be saved per child per year
Last Year of Project Life	0	19,635,000.00	On average, 935 gallons of water will be saved per child per year
Comments: Through the life of this project, about 24,000 children will benefit from this project, resulting in an average water savings of 19,635,000 gallons per year. This is based in part on The Great Water Mystery pre and post surveys of students conducted in 2004 as charted in Graph Analyses 2 and 3 (all pages).			

Table 5.2.4 – Annual Project Physical Benefits			
Project Name: Regional Water Conservation Planning - Model Implementation and Education Programs			
Type of Benefit Claimed: Public Education			
Units of the Benefit Claimed :Number of children reached			
Additional Information About this Benefit_Students are expected to change their behavior as a result of the program and make changes in their daily lives that will result in water use efficiencies and water conservation.			
(a)	**(b)**	**(c)**	**(d)**
	Physical Benefits		
Year	**Without Project**	**With Project**	**Change Resulting from Project (c) – (b)**
2014	0	6,000.00	On average, 150 students will be engaged in each program presentation
2015	6000	9,000.00	On average, 150 students will be engaged in each program presentation
2016	6000	9,000.00	On average, 150 students will be engaged in each program presentation
Etc.	0	0.00	On average, 150 students will be engaged in each program presentation
Last Year of Project Life	0	0.00	On average, 150 students will be engaged in each program presentation
Comments: Through the life of this project, about 24,000 children will benefit from this project. This is based in part on The Great Water Mystery pre and post surveys of students conducted in 2004 as charted in Graph Analyses 2 and 3 (all pages).			

Table 5.2.5 – Annual Project Physical Benefits			
Project Name: Regional Water Conservation Planning - Model Implementation and Education Programs **Type of Benefit Claimed: Promote Water Conservation** **Units of the Benefit Claimed: Percent Decreased Demand** **Additional Information About this Benefit:** Consistent with Objective WS-1 (Implement Urban Water Conservation Plans) of CABY plan The Great Water Mystery Water Conservation Program and School Audit Program is designed to promote life-long water conservation behaviors through the Great Water Mystery Water Conservation Program. The Great Water Mystery would be adapted by the South Yuba River Citizens League (SYRCL) to create an El Dorado County version of the Great Water Mystery.			
(a)	**(b)**	**(c)**	**(d)**
	Physical Benefits		
Year	**Without Project**	**With Project**	**Change Resulting from Project (b) – (c)**
2014	0	0%	0
2015	0	10%	10%
2016	0	20%	20%
Etc.	0	20%	20%
Last Year of Project Life			
Comments: In 2004, DWR funded a Water Use Efficiency program with school assemblies and a water audit program and this program is modeled after this previous project. In 2004, pre- and post surveys were conducted of individual students and the results of the surveys were then plotted and graphed (see references folder - Graphs Totals2 "Behaviors" tab).			

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

GDPUD Table 5.3.1 – Annual Project Physical Benefits			
Project Name: Georgetown Divide Public Utility District Water Conservation, Environmental Protection, and Supply Reliability Project **Type of Benefit Claimed: Water conserved** **Units of the Benefit Claimed : Acre-feet per year (ac-ft/yr)** **Additional Information About this Benefit**: According to the GDPUD water management staff, an estimated 3,000 ac-ft/yr is attributed to operational losses including seepage through unlined ditches. This project will result in an estimated 1,504 ac-ft/yr of water savings through lining of unlined porous canal sections, which equates to 150,400 ac-ft over the 100-year life of the project.			
(a)	**(b)**	**(c)**	**(d)**
	Physical Benefits		
Year	**Without Project**	**With Project**	**Change Resulting from Project (c) – (b)**
2015 to Last Year of Project Life	0	1,504	1,504
Comments - Sources and references used to support the numbers above. ▪ KASL Consulting Engineering, Inc. 2002. Water System Reliability Study. Submitted to the Georgetown Divide Public Utility District. November 2002 (pg VI-19). ▪ GDPUD Customer Water Delivery Data for the Main/Pilot Hill Ditch and Kelsey Ditch systems (database). ▪ United States Department of Agriculture - Natural Resources Conservation Service. 1978. Soil Survey of the El Dorado Area. (update in progress) All pages. ▪ GDPUD ditch tender inspection reports. ▪ GDPUD Professional Engineers estimates based on percolation rates of nearby soils.			

GDPUD Table 5.3.2 – Annual Project Physical Benefits

Project Name: Georgetown Divide Public Utility District Water Conservation, Environmental Protection, and Supply Reliability Project
Type of Benefit Claimed: Increased Instream Flows in Pilot Creek, the Middle Fork of the American River, and Folsom Reservoir/Lower American River and Bay-Delta Outflows
Units of the Benefit Claimed : Acre-feet per life of project (ac-ft/100 yr)
Additional Information About this Benefit: This project will immediately reduce GDPUD diversions by approximately 1,504 ac-ft per year, thereby increasing instream flows in Pilot Creek, the Middle Fork of the American River, and Folsom Reservoir/Lower American River which equates to 150,400 ac-ft over the 100-year life of the project.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2015 to Last Year of Project Life	0	150,400	150,400

Comments - Sources and references used to support the numbers above.

- KASL Consulting Engineering, Inc. 2002. Water System Reliability Study. Submitted to the Georgetown Divide Public Utility District. November 2002 (pg VI-19).
- GDPUD Customer Water Delivery Data for the Main/Pilot Hill Ditch and Kelsey Ditch systems (database).
- United States Department of Agriculture - Natural Resources Conservation Service. 1978. Soil Survey of the El Dorado Area. (update in progress) All pages.
- GDPUD ditch tender inspection field datasheets (page numbers not available)
- GDPUD Professional Engineers estimates based on percolation rates of nearby soils (page numbers not applicable).

GDPUD Table 5.3.3 – Annual Project Physical Benefits

Project Name: Georgetown Divide Public Utility District Water Conservation, Supply Reliability and Environmental Protection Project
Type of Benefit Claimed: Upgrade aging infrastructure
Units of the Benefit Claimed : Linear Feet of Canal Upgraded
Additional Information About this Benefit: 17,830 linear feet of canal is currently unlined. This project will line approximately 12,380 linear feet of unlined porous canal sections. The gunite, essentially concrete, lining only gets stronger with time up to 100 years, this is an industry accepted and proved life-expectancy. Additionally, the reinforcing mat will add further strength and life to the project.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2015 to Last Year of Project Life	0	12,380	12,380

Comments - Sources and references used to support the numbers above.

- KASL Consulting Engineering, Inc. 2002. Water System Reliability Study. Submitted to the Georgetown Divide Public Utility District. November 2002 (pg VI-19).
- GDPUD Customer Water Delivery Data for the Main/Pilot Hill Ditch and Kelsey Ditch systems (database).
- United States Department of Agriculture - Natural Resources Conservation Service. 1978. Soil Survey of the El Dorado Area. (update in progress) All pages.
- GDPUD ditch tender inspection reports (database, pages not available).
- GDPUD Professional Engineers estimates based on percolation rates of nearby soils.

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

Table 5 – Annual Project Physical Benefits

Project Name: Grizzly Flats Community Services District, Drought Measures Infrastructure Project

Type of Benefit Claimed: Water Conserved

Units of the Benefit Claimed : Acre-feet per year (AFY)

Additional Information About this Benefit: 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.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014	132	132	0
2015	132	112.2	19.8
2016	132	92.4	39.6
Etc.	132	92.4	39.6
Last Year of Project Life (100 years)	13,200	9,240	3,960

Comments/Sources: DWR. 2010. 20x2020 Water Conservation Plan (pages 45-60).
Consistent with the 20x2020 statewide per capita water reduction, this project promotes water use efficiency to help achieve countywide 20% per capita water demand reduction.

- Meter Reading History Report (pages all)
- CSTTank Coating (pages all)
- Carlton Engineering. 2012. Water System Improvement Plan.
- Water Demand Update Report (pages all)

Table 5 – Annual Project Physical Benefits

Project Name: Grizzly Flats Community Services District, Drought Measures Infrastructure Project

Type of Benefit Claimed: Improve Water Supply Reliability

Units of the Benefit Claimed : Acre-feet per year (AFY)

Additional Information About this Benefit: Consistent with Objective WS-2 (Upgrade Aging Infrastructure) of CABY plan, the main components include: ARVs, meters, SCADA, leak detection, retrofit kits.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014	132	132	0
2015	132	118.2	13.2
2016	132	107	24.8
Etc.	132	107	24.8
Last Year of Project Life (100 years)	13,200	10,700	2,500

Comments:

- Meter Reading History Report (pages all)
- CSTTank Coating (pages all)
- Carlton Engineering. 2012. Water System Improvement Plan.
- Water Demand Update Report (pages all)

Table 5 – Annual Project Physical Benefits

Project Name: Grizzly Flats Community Services District, Drought Measures Infrastructure Project

Type of Benefit Claimed: Improvements to Aging Infrastructure

Units of the Benefit Claimed : Acre-feet per year (AFY)

Additional Information About this Benefit: Consistent with Objective HL-5 (Support DAC project development activities) of CABY Plan The main components include: ARVs, meters, SCADA, leak detection, retrofit kits. Additional savings would be realized but not immediately quantifiable. GFCSD assumes up to 15% water savings as result of replacement of aging infrastructure.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014	132	132	0
2015	132	112.2	19.8
2016	132	112.2	19.8
Etc.	132	112.2	19.8
Last Year of Project Life (100 years)	13,200	112,200	19,800

Comments:

- Meter Reading History Report (pages all)
- CSTTank Coating (pages all)
- Carlton Engineering. 2012. Water System Improvement Plan.
- Water Demand Update Report (pages all)

Table 5 – Annual Project Physical Benefits			
Project Name: Grizzly Flats Community Services District, Drought Measures Infrastructure Project **Type of Benefit Claimed: Implement DWR 20x2020 Water Conservation Plan** **Units of the Benefit Claimed : Acre-feet per year (AFY)** **Additional Information About this Benefit: Consistent with CABY Objective WS-1 (Water Conserved) Water savings from residential water conservation would be realized within the first year, subsequent savings would follow and long-term water savings would be achieved through behavior changes to water use and efficiency.**			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014	132	132	0
2015	132	118.2	13.2
2016	132	105.6	26.4
Etc.	132	105.6	26.4
Last Year of Project Life (100 years)	13,200	10,500	2,700
Comments: ▪ Meter Reading History Report (pages all) ▪ CSTTank Coating (pages all) ▪ Carlton Engineering. 2012. Water System Improvement Plan. ▪ Water Demand Update Report (pages all)			

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

NID Table 5.5.1 – Annual Project Physical Benefits			
Project Name: Rock Creek Water Contingency Intertie **Type of Benefit Claimed: Water Supply Reliability** **Units of the Benefit Claimed: Cubic Feet per Second** **Additional Information About this Benefit: NID's North Auburn WTP, PCWA's Foothill WTP, and Placer County agricultural customers rely on the Bear River Canal for source water. In 2011, the Bear River Canal was damaged by storms and the canal was out-of-use for about six weeks, creating a severe drought emergency for western Placer County (or 69.4 AF/day) of Additional & Emergency Source Water.**			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014	488 cfs	NA	0
2015	488 cfs	523 cfs	35 cfs
2016	488 cfs	523 cfs	35 cfs
Etc.			35 cfs
Last Year of Project Life	488 cfs	523 cfs	35 cfs
Comments: Flows stated are maximum capacities. Actual flows are less depending upon demand and time of season. Project life defined as the useful life of the completed project (pipeline) and is assumed 100 years. **Sources and references used to support the numbers above.** NID Customer Water Delivery Data for the North Auburn (database, pages not available) NID Professional Engineers estimates based on 7-17-2012 memorandum (pages 1-6).			

NID Table 5.5.2 – Annual Project Physical Benefits Project Name: Rock Creek Water Contingency Intertie Type of Benefit Claimed: Upgrades to Infrastructure Units of the Benefit Claimed: Linear Feet of Additional Pipeline Installed Additional Information About this Benefit: The intertie would be approximately 3,350 feet in length and 36 inches in diameter. The turnout to NID's North Auburn WTP would be approximately 1,150 feet in length and 24 inches in diameter.			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014	0	NA	0
2015	0	3,750 lf	3,750 linear feet of additional pipeline
2016	0	3,750 lf	3,750 linear feet of additional pipeline
Etc.			
Last Year of Project Life	0	3,750 lf	3,750 linear feet of additional pipeline

Sources and references used to support the numbers above.

- NID Professional Engineers estimates based on 7-17-2012 memorandum (pages 1-6).

NID Table 5.5.3 – Annual Project Physical Benefits Project Name: Rock Creek Water Contingency Intertie Type of Benefit Claimed: Drought Preparedness Units of the Benefit Claimed: Number of Customers Served Additional Information About this Benefit: ▪ Approximately 2,800 water customers in the North Auburn Area (a disadvantaged community) would be directly served by increased protection for severe water shortages in the event of upstream canal failure. ▪ An additional 59,380 customers in western Placer County would be indirectly served by increased protection for severe water shortages in the event of upstream canal failure.			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014	0	NA	0
2015	0	64,600	Additional drought preparedness for 64,600 customers
2016	0	64,600	Additional drought preparedness for 64,600 customers
Etc.			
Last Year of Project Life	0	>64,600	Additional drought preparedness for more than 64,600 customers

Project life defined as the useful life of the completed project (pipeline) and is assumed 100 years.

Sources and references used to support the numbers above.

- NID Customer Water Delivery Data for the North Auburn (system database, page numbers not available).
- NID Professional Engineers estimates based on 7-17-2012 memorandum (pages 1-6).

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

Table 5.6.1 – Annual Project Physical Benefits

Project Name: Greely Canal Drought Measures Optimization Project
Type of Benefit Claimed: Water Conserved
Units of the Benefit Claimed: Acre-feet per year
Additional Information About this Benefit: Re-directs approximately 360 AF of water currently lost annually from system to storage reservoir. This amount allows for some spill but this is a reasonable amount of water that could be conserved. The first year saving is estimated at a lower amount to allow time for algorithm to adjust and calibrate.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014	0	0	0
2015	0	180	180
2016	0	360	360
Etc.	0	360	Benefit applies annually in perpetuity

Comments: Sources used to estimate physical benefits based on:
- Flow data at two spill locations on the Greely Canal recorded over a ten year period (page #s not available)
- System Losses and Expert Opinion of PCWA Engineers (page #s not available).
- Customer usage data sheets for the Greely Canal area (page #s not available).

Table 5.6.2 – Annual Project Physical Benefits

Project Name: Greely Canal Drought Measures Optimization Project
Type of Benefit Claimed: Improve Water Supply Reliability
Units of the Benefit Claimed: Acre-feet per year
Additional Information About this Benefit: The proposed control and monitoring devices would allow detailed analyses and much more accurate estimates of customer water demands. Reducing the amount of water that is spilled at the ends of the canals would significantly reduce the amount of water diverted from the delivery systems that provide the surface water to PCWA's regional water treatment plants. This would reduce the amount of water PCWA needs to purchase from PG&E by 360 acre-feet per year. PCWA is limited in how much water the agency can purchase from PG&E in a given year; therefore, reduced purchases result in increased water supply reliability. Combined spill rates have a maximum to minimum variation ranging from 1 to 2 CFS. This equates to a volume of approximately 530 acre-feet per year that reaches the spills and is lost to the system.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014	0	0	0
2015	0	180	180
2016	0	360	360
Etc.	0	360	Benefit applies annually in perpetuity
Last Year of Project Life			

Comments: Sources used to estimate physical benefits based on:
- Flow data at two spill locations on the Greely Canal recorded over a ten year period (page #s not available)
- System Losses and Expert Opinion of PCWA Engineers (page #s not available).
- Customer usage data sheets for the Greely Canal area (page #s not available).

Table 5.6.3 – Annual Project Physical Benefits

Project Name: Greely Canal Drought Measures Optimization Project

Type of Benefit Claimed: Upgrades to Aging (and outdated) Infrastructure
Units of the Benefit Claimed: # of New Types of Discharge Rate, and Pressure Data Collected
Additional Information About this Benefit : This project would install automated equipment to make flow adjustments at the heads of the canals to minimize the peak spill flow rates. This project would install an electrically operated gate and meter combination, and a pressure sustaining valve with flow and pressure monitoring to maintain a discharge flow rate at proper pressure allowing the following:
-Electrically operated Headgate, flow measuring and recording, remote monitoring and control of flow, pressure monitoring and control to regulate deliveries

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014	0	4	0
2015	0	4	4
Etc.	0	4	Benefit applies annually in perpetuity
Last Year of Project Life			

Comments: Sources used to estimate physical benefits based on:
- Flow data at two spill locations on the Greely Canal recorded over a ten year period (page #s not available)
- System Losses and Expert Opinion of PCWA Engineers (page #s not available).
- Customer usage data sheets for the Greely Canal area (page #s not available).

Table 5.6.4 – Annual Project Physical Benefits

Project Name: Greely Canal Drought Measures Optimization Project

Type of Benefit Claimed: Accurate Prediction of Customer Demands for Irrigation Water
Units of the Benefit Claimed: Number of Days Per Year Customer Demands Are Accurately Met
Additional Information About this Benefit: Since deliveries to customers is based on pressure, variations in pressure result in inaccurate deliveries of flow. The automation of the valve between the Upper and Lower Greeley canals along with a pressure and flow meter at the site would enable the pressure in the pipe to be stabilized regardless of flow, preventing spilling at the spill associated with the pipe and stabilizing deliveries to the customers based on actual demand.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014	330	365	35
2015	330	365	35
2016	330	365	35
Etc.	330	365	Benefit applies annually in perpetuity
Last Year of Project Life			

Comments: Sources used to estimate physical benefits based on:
- Flow data at two spill locations on the Greely Canal recorded over a ten year period (page #s not available)
- System Losses and Expert Opinion of PCWA Engineers (page #s not available).
- Customer usage data sheets for the Greely Canal area (page #s not available).

Table 5.6.5 – Annual Project Physical Benefits

Project Name: Greely Canal Drought Measures Optimization Project

Type of Benefit Claimed: Increased Instream Flows/Environmental Water Use

Units of the Benefit Claimed: Acre-feet per year

Additional Information About this Benefit: Re-directs approximately 360 AF of water currently lost annually from system to storage reservoir. This would result in reduced water PCWA needs to purchase from PG&E and decreased upstream diversions. The first year saving is estimated at a lower amount to allow time for algorithm to adjust and calibrate based on actual demands.

(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2014	0	0	0
2015	0	180	180
2016	0	360	360
Etc.	0	360	Benefit applies annually in perpetuity
Last Year of Project Life			

Comments: Sources used to estimate physical benefits based on:

- Flow data at two spill locations on the Greely Canal recorded over a ten year period (page #s not available)
- System Losses and Expert Opinion of PCWA Engineers (page #s not available).
- Customer usage data sheets for the Greely Canal area (page #s not available).

CABY Integrated Regional Water Management Group
2014 IRWM Drought Grant Solicitation

Attachment 3: Project Physical Benefits Table 5-- References

Attached are the references that relate to Table 5 Project Physical Benefits Tables for project:

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

Pardi Way/Big Cut Rd/Sacramento St Waterline Replacement

DESCRIPTION:

Replace 1,300 lineal feet (LF) of deteriorated 12-inch cast iron water mains and relocate from existing cross-country locations to the roadways as shown on attached Sheet 4. Construction of new PVC water mains totals 2,650 LF (12-inch), 1,320 LF (8-inch), and 425 LF (6-inch).

COST SUMMARY:	PHASE 1A
Design/Environmental/Right of Way	$ 195,000
Construction	$ 1,650,000
Construction Engineering (Contract Admin/Inspection/Testing)	100,000
Subtotal	$ 1,945,000
Contingency	175,000
Total Estimate	$ 2,120,000

POTENTIAL FUNDING SOURCES:

State Department of Water Resources Water Conservation Grant	*$ 1,585,000*
El Dorado County Water Agency	*110,000*
Water Enterprise Fund	*425,000*

IMPACT ON ANNUAL MAINTENANCE AND OPERATION COSTS:

Replacing old, leaking lines will reduce operations cost by an estimated $20,000 per year and reduce the risk of a catastrophic main break.

ALTERNATIVES:

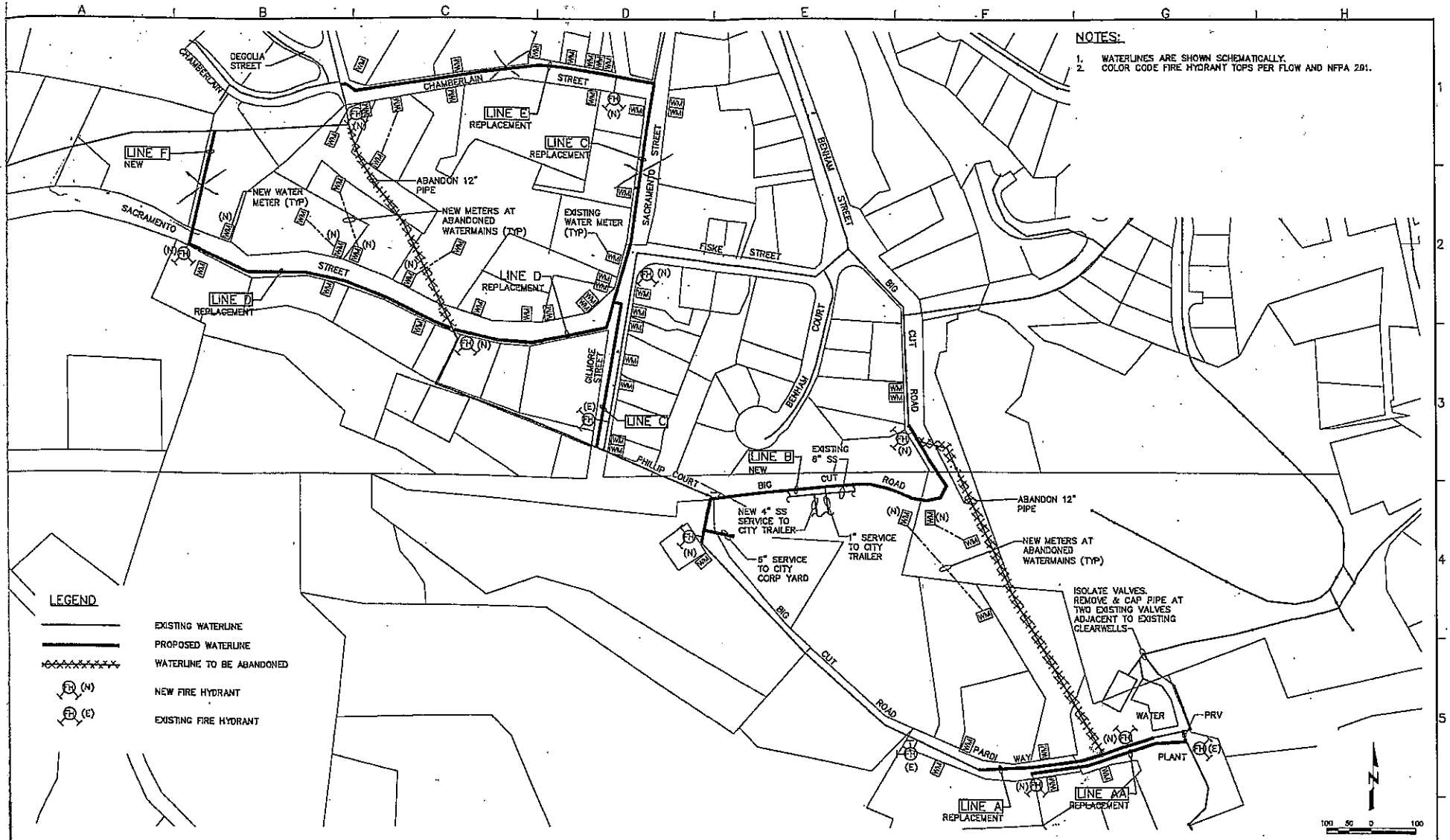
1. *No Project*

CITY OF PLACERVILLE - CAPITAL IMPROVEMENT PROGRAM BUDGET SUMMARY

PROJECT NAME	PROJECT NO.	PROJECT DESCRIPTION	ESTIMATED COST	FUND	PROPOSED FUNDING YEAR							
					2012/13	2013/14	2014/15	2015/16	2016/17	2017-2022	2022-2027	2027-2032
WATER SYSTEM PROJECTS												
Cedar Ravine Pressure Reducing Station	W-1	Replace Existing Pressure Reducing Valve and Associated Equipment on Cedar Ravine near Lyons Park with new Pressure Reducing Station	$100,000	Water	$100,000							
Pardi Lane/Big Cut Rd. Waterline Replacement/Relocation	W-2	Replace approximately 200 LF of deteriorated 12" Cast Iron and install 700 LF new 12" PVC in Big Cut Rd. to eliminate leaking cross country line	$425,000	Water		$200,000	$225,000					
Wiltse Rd. Pressure Reducing Station and Pressure Relief Valve	W-3	Install new Pressure Reducing Station, replace existing pressure relief valves at Wiltse Rd. near Broadway	$100,000	Water				$100,000				
Conrad Street Area Waterline Replacement/Looping	W-4	Replace 900 LF of 1", 3", & 4" water main with 6" PVC plus new service laterals, valves, fittings and fire hydrants	$260,000	Water				$91,000	$169,000			
Cottage Street Area Waterline Replacement	W-5	Replace 900 LF of 1",2",3"& 4" water main with 6" PVC plus new service laterals, valves, fittings and fire hydrants	$260,000	Water					$100,000	$160,000		
Sacramento Street Waterline Replacement	W-6	Replace 750 LF of 2" & 4" water main with 6" PVC plus new service laterals, valves, fittings and fire hydrants	$220,000	Water						$220,000		
Gilmore/Sacramento/Chamberlain Area Water Main Relocation	W-7	Construct 1300 LF 12" PVC main on Gilmore/Sacramento/Chamberlain & eliminate old 12" cross country main plus some existing 4" &6" lines	$490,000	Water						$490,000		
Manor Dr. Waterline Replacement	W-8	Replace 300 LF of 2" water main with new 6" PVC plus new service laterals, valves, fittings and fire hydrants	$90,000	Water						$90,000		
Elm St. Waterline Replacement	W-9	Replace 750 LF of 2" water main with 850 LF of looped 6" PVC plus new service laterals, valves, fittings and fire hydrants	$232,000	Water						$232,000		
School St./Pinecrest Ct. Area Waterline Replacement	W-10	Replace 1800 LF of 2" & 4" main with 2000 LF looped 6" PVC plus new service laterals, valves, fittings and fire hydrants	$580,000	Water						$139,000	$441,000	
Turner St./Corker St. Waterline Replacement	W-11	Replace 2000 LF of 2" & 4" main with new 6" PVC plus new service laterals, valves, fittings and fire hydrants	$580,000	Water							$580,000	
Spanish Ravine/Main St. Waterline Replacement	W-12	Replace 400 LF of 4" water main with new 8" PVC plus new service laterals, valves, fittings and fire hydrants	$128,000	Water							$128,000	
Mosquito Rd. Waterline Replacement	W-13	Replace 600 LF of 1" water main with new 8" PVC plus new service laterals, valves, fittings and fire hydrants	$190,000	Water							$190,000	
Cedar Ravine Waterline Extension	W-14	Extend 8" Water Main 2000 LF from LemonGrass Ct. to 500 Ft west of Country Club Dr. to loop and improve service and flexibility	$616,000	Water							$61,000	$555,000

CITY OF PLACERVILLE - CAPITAL IMPROVEMENT PROGRAM BUDGET SUMMARY

PROJECT NAME	PROJECT NO.	PROJECT DESCRIPTION	ESTIMATED COST	FUND	PROPOSED FUNDING YEAR							
Hickory Lane/Hilltop Dr. Waterline Replacement	W-15	Replace 900 LF of 2" cross country water main with 800 LF of 6" PVC plus new service laterals, valves, fittings and fire hydrants	$224,000	Water								$224,000
Hazzard St. Waterline Replacement	W-16	Replace 550 LF of 2 1/2" cross country main with 700 LF of 6" PVC plus new service laterals, valves, fittings and fire hydrants	$200,000	Water								$200,000
Schnell School Rd. Pressure Reducing Station Upgrades	W-17	Relocate the existing Pressure Reducing station to an area behind SW for safety when valve maintenance and adjustment is required	$100,000	Water								$100,000
Morrene Drive @ Emigrant Ravine Pressure Reducing Station	W-18	Replace existing deteriorated Pressure Reducing Valve and associated equipment with new package Pressure Reducing Station	$100,000	Water					$31,000	$69,000		
Tunnel Street Area Waterline Relocation	W-19	Construct 2100 LF of 6" PVC main in Tunnel St./Tunnel Ct., eliminate 3200 LF cross country main, plus new service laterals, hydrants, etc.	$624,000	Water				$109,000	$215,000	$300,000		
Naomi Ct. Waterline Replacement	W-20	Replace 400 LF of 2" water main with new 6" PVC plus new service laterals, valves, fittings and fire hydrants	$112,000	Water								$112,000
Bing Ct. Waterline Replacement	W-21	Replace 200 LF of 2" water main with new 6" PVC and extend 100 LF to loop system plus new laterals, valves, fittings and fire hydrants	$120,000	Water								$120,000
Simis Way Waterline Replacement and Extension	W-22	Replace 300 LF of 2" water main with new 6" PVC and extend 100 LF to Bee St. to loop plus new laterals, valves, fittings and fire hydrants	$112,000	Water								$112,000
Pressure Control System Replacement Program	W-23	Annual Program to remove, replace, or upgrade deteriorating pressure control systems to maintain service reliability throughout system	$300,000	Water						$100,000	$100,000	$100,000
Bypass Pnematic Tank @ Country Club Drive EID Connection	W-24	Eliminate 800 LF of existing 4" water main, tie customers to existing 6" water main, eliminating need to keep old pressure tank in service	$50,000	Water								$50,000
Total Water Project Costs Per Period			**$6,213,000**		**$100,000**	**$200,000**	**$225,000**	**$300,000**	**$515,000**	**$1,800,000**	**$1,500,000**	**$1,573,000**



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Checked SDH
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CITY OF PLACERVILLE
PARDI WY/BIG CUT RD/SACRAMENTO ST WATERLINE REPLACEMENT PROJECT

OVERALL SITE PLAN
PROPOSED WATERLINE IMPROVEMENTS

Scale 1"=100'-0"
Drawing No.
Sheet No. 4 of 17

140

Kennedy/Jenks Consultants

10850 Gold Center Drive
Rancho Cordova, CA 95670
916-858-2700
916-858-2754 (Fax)

City of Placerville
Water Master Plan

13 December 2005

REGISTERED PROFESSIONAL ENGINEER
ROBERT F. YOUNG
No. C 31036
expires 3/31/06
CIVIL
STATE OF CALIFORNIA

Prepared for

City of Placerville
487 Main Street
Placerville, CA 95667

K/J Project No. 012509.00

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COLOR LEGEND

= Existing Facilities

= 2005 Improvements

= 2009 Improvements

= 2015 Improvements

SYMBOLS

= WATER PIPELINE

= EID SERVICE

= VALVE

= RESERVIOR

The Woods Development

NOTES:

1. WATERLINES ARE SHOWN SCHEMATICALLY.
2. COLOR CODE FIRE HYDRANT TOPS PER FLOW AND NFPA 291.

LEGEND

- EXISTING WATERLINE
- PROPOSED WATERLINE
- WATERLINE TO BE ABANDONED
- (N) NEW FIRE HYDRANT
- (E) EXISTING FIRE HYDRANT

Install New Hydrant (none existing)

Install New Hydrant (none existing)

Replace 2-inch "Wharf" hydrant, see attached flow test "066-1-P016"

Install New Hydrant

Existing Hydrant (typical)

LINE F NEW

LINE D REPLACEMENT

LINE E REPLACEMENT

LINE C REPLACEMENT

LINE B NEW

LINE A REPLACEMENT

LINE AA REPLACEMENT

NEW WATER METER (TYP)

ABANDON 12" PIPE

NEW METERS AT ABANDONED WATERMAINS (TYP)

EXISTING WATER METER (TYP)

EXISTING 6" SS

NEW 4" SS SERVICE TO CITY TRAILER

1" SERVICE TO CITY TRAILER

6" SERVICE TO CITY CORP YARD

ISOLATE VALVES. REMOVE & CAP PIPE AT TWO EXISTING VALVES ADJACENT TO EXISTING CLEARWELLS

WATER PLANT

PRV

DEGOLIA STREET

CHAMBERLAIN STREET

SACRAMENTO STREET

FISKE STREET

BENHAM STREET

BIG CUT ROAD

BENHAM COURT

GILMORE STREET

PHILLIP COURT

PARDI WAY

100 50 0 100

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Rev	Date	By	Description

Designed DWH
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Checked SDH
Job No. 6PLA1530

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CITY OF PLACERVILLE
PARDI WY/BIG CUT RD/SACRAMENTO ST
WATERLINE REPLACEMENT PROJECT

OVERALL SITE PLAN
PROPOSED WATERLINE IMPROVEMENTS

Scale 1"=100'-0"
Drawing No.
Sheet No. 4 of 17

J:\6PLA1530D City of Pulle - Pardi - Big Cut - Sac St Area Waterline Repl Project\Design\DRAWINGS\Bid Drawings\6PLA1530-Pro Imp.dwg
DARYL.HEIGHER

El Dorado County Fire Protection District

Hydrant Flow Test By Hydrant

Hydrant Number = "066-1-P016 "

i6-1-P016 772 BIG CUT RD & SIERRA DR MUE

te	Static	Residual	Pitot	Pitot 2	GPM	20 PSI	10 PSI	0 PSI
/24/2004	32	14	40.00	0.00	106	85	118	145
05	BALDOCK, GARY							
btotal Flow Tests:		1		Min:	106	85	118	145
				Max:	106	85	118	145
				Avg:	106	85	118	145

tal Flow Tests: 1

Notice of Exemption

Form D

To:

County Clerk
County of El Dorado
360 Fair Lane
Placerville, CA 95667

From: (Public Agency) City of Placerville, Public Works
3101 Center Street
Placerville, CA 95667
(Address)

Project Title: Pardi/Big Cut/Sacramento Street Area Waterlines Replacement Project

Project Location - Specific:

The project is located ~1200 feet South of Highway 50 within the City of Placerville with a latitude/longitude of 38.723 N and 120.803 W. Specific road sections are Pardi Lane, Chamberlain Street, Sacramento Street (Hwy 49), Big Cut Road, and Gilmore Street.

Project Location – City: Placerville Project Location – County: El Dorado

Description of Nature, Purpose and Beneficiaries of Project:

The Project consists of replacing and relocating water distribution pipeline sections that are: 1) deteriorated, 2) undersized, and/or 3) poorly located with maintenance inaccessibility. Approximately 3,700 feet of 8-inch and 12-inch replacement pipeline will be installed within existing road rights-of-way and utility easements.

Name of Public Agency Approving Project: City of Placerville, Public Works Department

Name of Person or Agency Carrying Out Project: City of Placerville, Public Works Department

FILED
JUN 26 2012
WILLIAM E. SCHULTZ, Recorder-Clerk
By

Exempt Status: **(check one)**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☐ Categorical Exemption. State type and section number:
- ☒ Statutory Exemptions. State code number: Public Resources Code, Section 21080.21

Reasons why project is exempt:

The length of pipeline replacement and relocation does not exceed one mile in length and is located within existing public streets/rights-of-way.

Lead Agency Contact Person: Mike Webb Area Code/Telephone/Extension: 530-642-5250

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☒ No

Signature: Date: 6/19/12 Title: Director of Community Development and Engineering

☒ Signed by Lead Agency

☐ Signed by Applicant

Date received for filing at County Clerk's Office:

Revised 2005

Notice of Exemption

Form D

To:

County Clerk
County of El Dorado
360 Fair Lane
Placerville, CA 95667

From: (Public Agency) City of Placerville, Public Works
3101 Center Street
Placerville, CA 95667
(Address)

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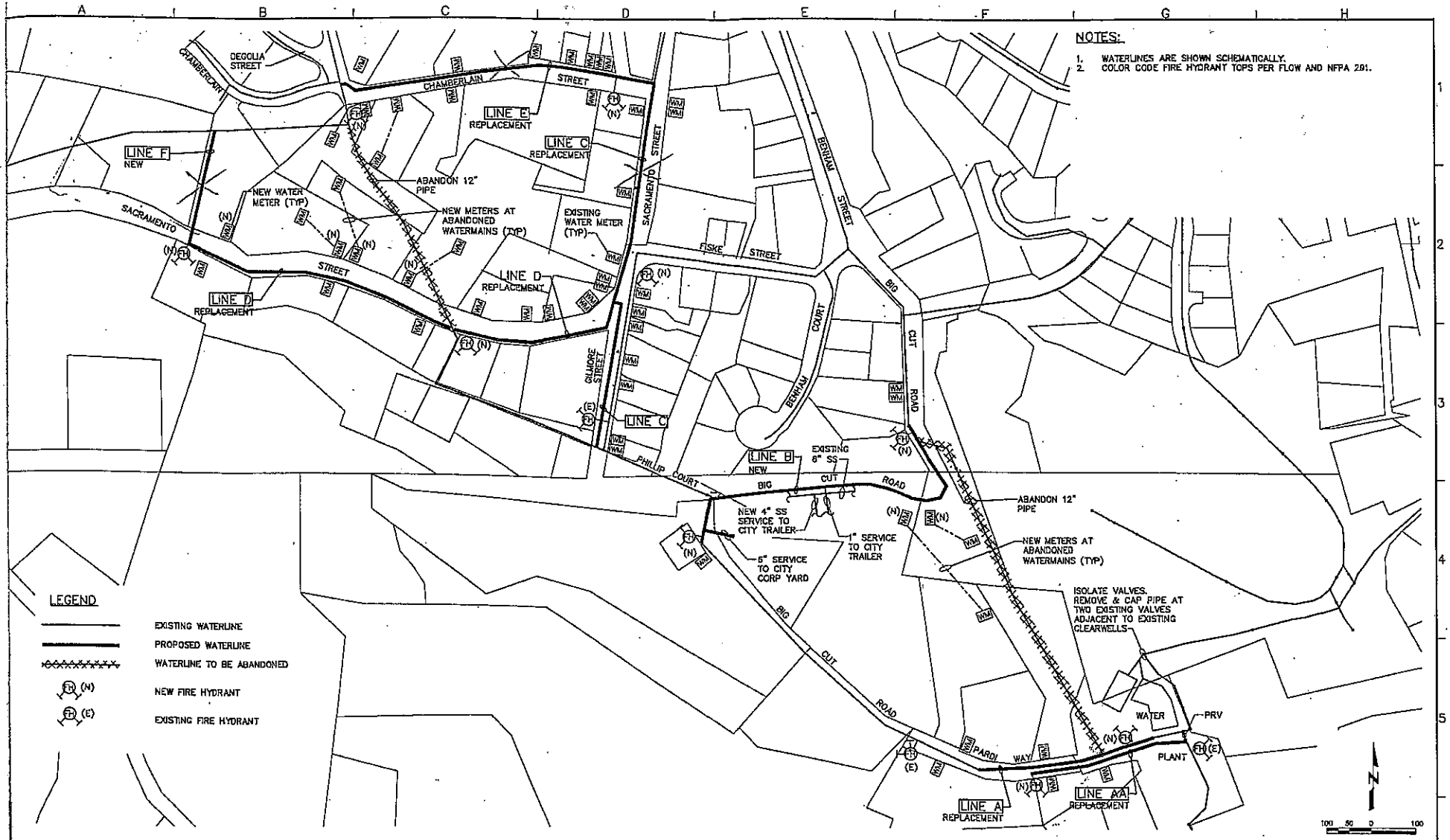
Revised 2005



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City of Placerville
Water Master Plan

13 December 2005

REGISTERED PROFESSIONAL ENGINEER
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COLOR LEGEND

= Existing Facilities

= 2005 Improvements

= 2009 Improvements

= 2015 Improvements

SYMBOLS

= WATER PIPELINE

= EID SERVICE

= VALVE

= RESERVIOR

The Woods Development

Pardi Way/Big Cut Rd/Sacramento St Waterline Replacement

DESCRIPTION:

Replace 1,300 lineal feet (LF) of deteriorated 12-inch cast iron water mains and relocate from existing cross-country locations to the roadways as shown on attached Sheet 4. Construction of new PVC water mains totals 2,650 LF (12-inch), 1,320 LF (8-inch), and 425 LF (6-inch).

COST SUMMARY:	PHASE 1A
Design/Environmental/Right of Way	$ 195,000
Construction	$ 1,650,000
Construction Engineering (Contract Admin/Inspection/Testing)	100,000
Subtotal	$ 1,945,000
Contingency	175,000
Total Estimate	$ 2,120,000

POTENTIAL FUNDING SOURCES:

State Department of Water Resources Water Conservation Grant	*$ 1,585,000*
El Dorado County Water Agency	*110,000*
Water Enterprise Fund	*425,000*

IMPACT ON ANNUAL MAINTENANCE AND OPERATION COSTS:

Replacing old, leaking lines will reduce operations cost by an estimated $20,000 per year and reduce the risk of a catastrophic main break.

ALTERNATIVES:

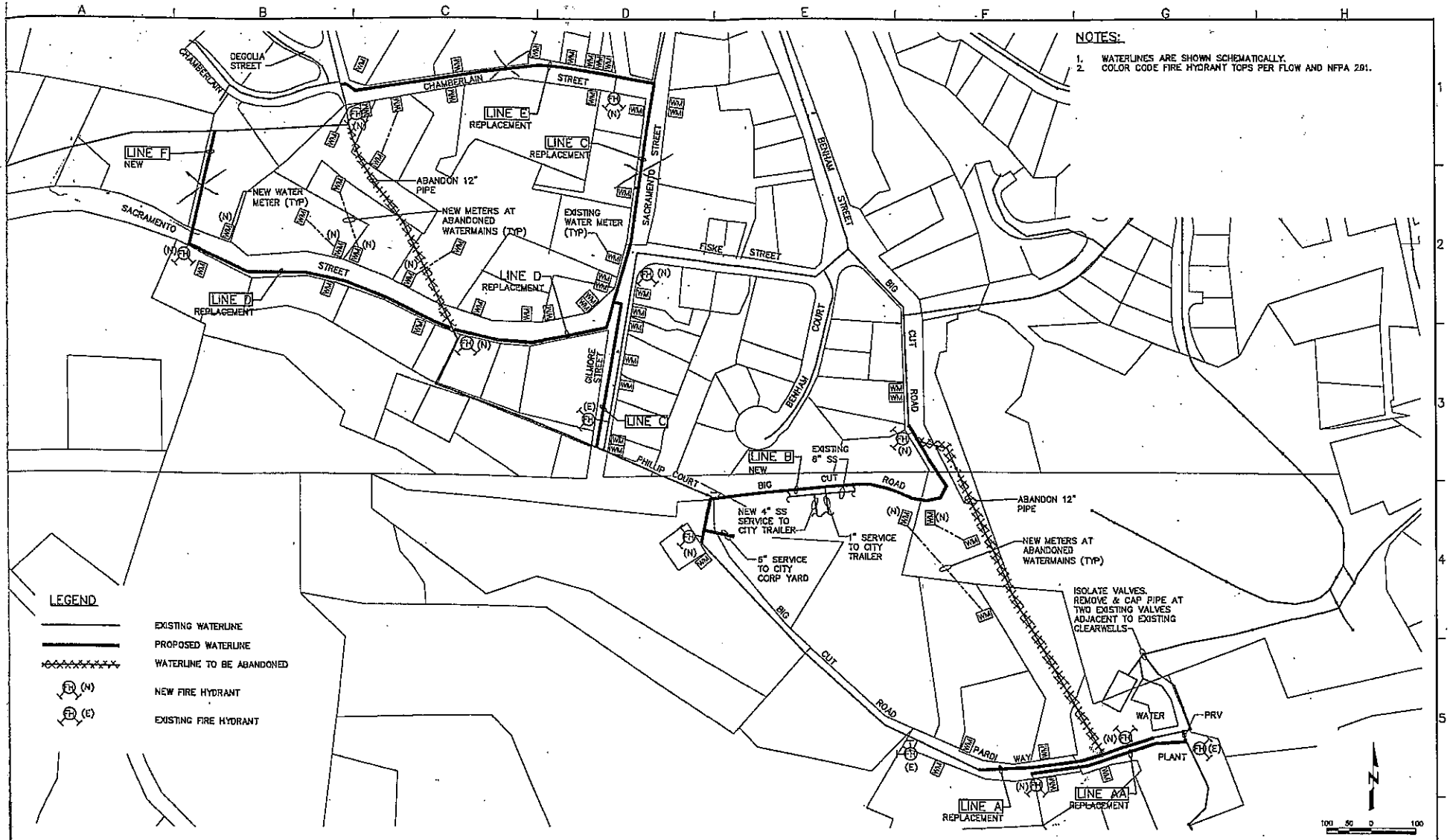
1. *No Project*

CITY OF PLACERVILLE - CAPITAL IMPROVEMENT PROGRAM BUDGET SUMMARY

PROJECT NAME	PROJECT NO.	PROJECT DESCRIPTION	ESTIMATED COST	FUND	PROPOSED FUNDING YEAR							
					2012/13	2013/14	2014/15	2015/16	2016/17	2017-2022	2022-2027	2027-2032
WATER SYSTEM PROJECTS												
Cedar Ravine Pressure Reducing Station	W-1	Replace Existing Pressure Reducing Valve and Associated Equipment on Cedar Ravine near Lyons Park with new Pressure Reducing Station	$100,000	Water	$100,000							
Pardi Lane/Big Cut Rd. Waterline Replacement/Relocation	W-2	Replace approximately 200 LF of deteriorated 12" Cast Iron and install 700 LF new 12" PVC in Big Cut Rd. to eliminate leaking cross country line	$425,000	Water		$200,000	$225,000					
Wiltse Rd. Pressure Reducing Station and Pressure Relief Valve	W-3	Install new Pressure Reducing Station, replace existing pressure relief valves at Wiltse Rd. near Broadway	$100,000	Water				$100,000				
Conrad Street Area Waterline Replacement/Looping	W-4	Replace 900 LF of 1", 3", & 4" water main with 6" PVC plus new service laterals, valves, fittings and fire hydrants	$260,000	Water				$91,000	$169,000			
Cottage Street Area Waterline Replacement	W-5	Replace 900 LF of 1",2",3"& 4" water main with 6" PVC plus new service laterals, valves, fittings and fire hydrants	$260,000	Water					$100,000	$160,000		
Sacramento Street Waterline Replacement	W-6	Replace 750 LF of 2" & 4" water main with 6" PVC plus new service laterals, valves, fittings and fire hydrants	$220,000	Water						$220,000		
Gilmore/Sacramento/Chamberlain Area Water Main Relocation	W-7	Construct 1300 LF 12" PVC main on Gilmore/Sacramento/Chamberlain & eliminate old 12" cross country main plus some existing 4" &6" lines	$490,000	Water						$490,000		
Manor Dr. Waterline Replacement	W-8	Replace 300 LF of 2" water main with new 6" PVC plus new service laterals, valves, fittings and fire hydrants	$90,000	Water						$90,000		
Elm St. Waterline Replacement	W-9	Replace 750 LF of 2" water main with 850 LF of looped 6" PVC plus new service laterals, valves, fittings and fire hydrants	$232,000	Water						$232,000		
School St./Pinecrest Ct. Area Waterline Replacement	W-10	Replace 1800 LF of 2" & 4" main with 2000 LF looped 6" PVC plus new service laterals, valves, fittings and fire hydrants	$580,000	Water						$139,000	$441,000	
Turner St./Corker St. Waterline Replacement	W-11	Replace 2000 LF of 2" & 4" main with new 6" PVC plus new service laterals, valves, fittings and fire hydrants	$580,000	Water							$580,000	
Spanish Ravine/Main St. Waterline Replacement	W-12	Replace 400 LF of 4" water main with new 8" PVC plus new service laterals, valves, fittings and fire hydrants	$128,000	Water							$128,000	
Mosquito Rd. Waterline Replacement	W-13	Replace 600 LF of 1" water main with new 8" PVC plus new service laterals, valves, fittings and fire hydrants	$190,000	Water							$190,000	
Cedar Ravine Waterline Extension	W-14	Extend 8" Water Main 2000 LF from LemonGrass Ct. to 500 Ft west of Country Club Dr. to loop and improve service and flexibility	$616,000	Water							$61,000	$555,000

CITY OF PLACERVILLE - CAPITAL IMPROVEMENT PROGRAM BUDGET SUMMARY

PROJECT NAME	PROJECT NO.	PROJECT DESCRIPTION	ESTIMATED COST	FUND	PROPOSED FUNDING YEAR							
Hickory Lane/Hilltop Dr. Waterline Replacement	W-15	Replace 900 LF of 2" cross country water main with 800 LF of 6" PVC plus new service laterals, valves, fittings and fire hydrants	$224,000	Water								$224,000
Hazzard St. Waterline Replacement	W-16	Replace 550 LF of 2 1/2" cross country main with 700 LF of 6" PVC plus new service laterals, valves, fittings and fire hydrants	$200,000	Water								$200,000
Schnell School Rd. Pressure Reducing Station Upgrades	W-17	Relocate the existing Pressure Reducing station to an area behind SW for safety when valve maintenance and adjustment is required	$100,000	Water								$100,000
Morrene Drive @ Emigrant Ravine Pressure Reducing Station	W-18	Replace existing deteriorated Pressure Reducing Valve and associated equipment with new package Pressure Reducing Station	$100,000	Water					$31,000	$69,000		
Tunnel Street Area Waterline Relocation	W-19	Construct 2100 LF of 6" PVC main in Tunnel St./Tunnel Ct., eliminate 3200 LF cross country main, plus new service laterals, hydrants, etc.	$624,000	Water				$109,000	$215,000	$300,000		
Naomi Ct. Waterline Replacement	W-20	Replace 400 LF of 2" water main with new 6" PVC plus new service laterals, valves, fittings and fire hydrants	$112,000	Water								$112,000
Bing Ct. Waterline Replacement	W-21	Replace 200 LF of 2" water main with new 6" PVC and extend 100 LF to loop system plus new laterals, valves, fittings and fire hydrants	$120,000	Water								$120,000
Simis Way Waterline Replacement and Extension	W-22	Replace 300 LF of 2" water main with new 6" PVC and extend 100 LF to Bee St. to loop plus new laterals, valves, fittings and fire hydrants	$112,000	Water								$112,000
Pressure Control System Replacement Program	W-23	Annual Program to remove, replace, or upgrade deteriorating pressure control systems to maintain service reliability throughout system	$300,000	Water						$100,000	$100,000	$100,000
Bypass Pnematic Tank @ Country Club Drive EID Connection	W-24	Eliminate 800 LF of existing 4" water main, tie customers to existing 6" water main, eliminating need to keep old pressure tank in service	$50,000	Water								$50,000
Total Water Project Costs Per Period			**$6,213,000**		**$100,000**	**$200,000**	**$225,000**	**$300,000**	**$515,000**	**$1,800,000**	**$1,500,000**	**$1,573,000**



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Rev	Date	By	Description

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IF LINE IS NOT 2" SCALE ACCORDINGLY

CITY OF PLACERVILLE
PARDI WY/BIG CUT RD/SACRAMENTO ST WATERLINE REPLACEMENT PROJECT

OVERALL SITE PLAN
PROPOSED WATERLINE IMPROVEMENTS

Scale 1"=100'-0"
Drawing No.
Sheet No. 4 of 17

140

Kennedy/Jenks Consultants

10850 Gold Center Drive
Rancho Cordova, CA 95670
916-858-2700
916-858-2754 (Fax)

City of Placerville
Water Master Plan

13 December 2005

REGISTERED PROFESSIONAL ENGINEER
ROBERT F. YOUNG
No. C 31036
expires 3/31/06
CIVIL
STATE OF CALIFORNIA

Prepared for

City of Placerville
487 Main Street
Placerville, CA 95667

K/J Project No. 012509.00

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= Existing Facilities

= 2005 Improvements

= 2009 Improvements

= 2015 Improvements

SYMBOLS

= WATER PIPELINE

= EID SERVICE

= VALVE

= RESERVIOR

The Woods Development

NOTES:

1. WATERLINES ARE SHOWN SCHEMATICALLY.
2. COLOR CODE FIRE HYDRANT TOPS PER FLOW AND NFPA 291.

LEGEND

- EXISTING WATERLINE
- PROPOSED WATERLINE
- WATERLINE TO BE ABANDONED
- (N) NEW FIRE HYDRANT
- (E) EXISTING FIRE HYDRANT

Install New Hydrant (none existing)

Install New Hydrant (none existing)

Replace 2-inch "Wharf" hydrant, see attached flow test "066-1-P016"

Install New Hydrant

Existing Hydrant (typical)

LINE F NEW

LINE D REPLACEMENT

LINE E REPLACEMENT

LINE C REPLACEMENT

LINE B NEW

LINE A REPLACEMENT

LINE AA REPLACEMENT

NEW WATER METER (TYP)

ABANDON 12" PIPE

NEW METERS AT ABANDONED WATERMAINS (TYP)

EXISTING WATER METER (TYP)

EXISTING 6" SS

NEW 4" SS SERVICE TO CITY TRAILER

1" SERVICE TO CITY TRAILER

6" SERVICE TO CITY CORP YARD

ISOLATE VALVES. REMOVE & CAP PIPE AT TWO EXISTING VALVES ADJACENT TO EXISTING CLEARWELLS

WATER PLANT

PRV

DEGOLIA STREET

CHAMBERLAIN STREET

SACRAMENTO STREET

FISKE STREET

BENHAM STREET

BIG CUT ROAD

BENHAM COURT

GILMORE STREET

PHILLIP COURT

PARDI WAY

100 50 0 100

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Rev	Date	By	Description

Designed DWH
Drawn JAC/DWH
Checked SDH
Job No. 6PLA1530

REGISTERED PROFESSIONAL ENGINEER
RICHARD D. KEARNEY
No. C 25236
Exp. 12/31/13
CIVIL
STATE OF CALIFORNIA

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Cameron Park, Ca. 95682
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Fax (530) 677-5606

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CITY OF PLACERVILLE
PARDI WY/BIG CUT RD/SACRAMENTO ST
WATERLINE REPLACEMENT PROJECT

OVERALL SITE PLAN
PROPOSED WATERLINE IMPROVEMENTS

Scale 1"=100'-0"
Drawing No.
Sheet No. 4 of 17

J:\6PLA1530D City of Pulle - Pardi - Big Cut - Sac St Area Waterline Repl Project\Design\DRAWINGS\Bid Drawings\6PLA1530-Pro Imp.dwg
DARYL.HEIGHER

El Dorado County Fire Protection District

Hydrant Flow Test By Hydrant

Hydrant Number = "066-1-P016 "

i6-1-P016 772 BIG CUT RD & SIERRA DR MUE

te	Static	Residual	Pitot	Pitot 2	GPM	20 PSI	10 PSI	0 PSI
/24/2004	32	14	40.00	0.00	106	85	118	145
05	BALDOCK, GARY							
btotal Flow Tests:		1		Min:	106	85	118	145
				Max:	106	85	118	145
				Avg:	106	85	118	145

tal Flow Tests: 1

Notice of Exemption

Form D

To:

County Clerk
County of El Dorado
360 Fair Lane
Placerville, CA 95667

From: (Public Agency) City of Placerville, Public Works
3101 Center Street
Placerville, CA 95667
(Address)

Project Title: Pardi/Big Cut/Sacramento Street Area Waterlines Replacement Project

Project Location - Specific:

The project is located ~1200 feet South of Highway 50 within the City of Placerville with a latitude/longitude of 38.723 N and 120.803 W. Specific road sections are Pardi Lane, Chamberlain Street, Sacramento Street (Hwy 49), Big Cut Road, and Gilmore Street.

Project Location – City: Placerville Project Location – County: El Dorado

Description of Nature, Purpose and Beneficiaries of Project:

The Project consists of replacing and relocating water distribution pipeline sections that are: 1) deteriorated, 2) undersized, and/or 3) poorly located with maintenance inaccessibility. Approximately 3,700 feet of 8-inch and 12-inch replacement pipeline will be installed within existing road rights-of-way and utility easements.

Name of Public Agency Approving Project: City of Placerville, Public Works Department

Name of Person or Agency Carrying Out Project: City of Placerville, Public Works Department

FILED
JUN 26 2012
WILLIAM E. SCHULTZ, Recorder-Clerk
By

Exempt Status: **(check one)**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☐ Categorical Exemption. State type and section number:
- ☒ Statutory Exemptions. State code number: Public Resources Code, Section 21080.21

Reasons why project is exempt:

The length of pipeline replacement and relocation does not exceed one mile in length and is located within existing public streets/rights-of-way.

Lead Agency Contact Person: Mike Webb Area Code/Telephone/Extension: 530-642-5250

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☒ No

Signature: Date: 6/19/12 Title: Director of Community Development and Engineering

☒ Signed by Lead Agency

☐ Signed by Applicant

Date received for filing at County Clerk's Office:

Revised 2005

Notice of Exemption

Form D

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360 Fair Lane
Placerville, CA 95667

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Revised 2005

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- PROPOSED WATERLINE
- WATERLINE TO BE ABANDONED
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- (E) EXISTING FIRE HYDRANT

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Install New Hydrant (none existing)

Replace 2-inch "Wharf" hydrant, see attached flow test "066-1-P016"

Install New Hydrant

Existing Hydrant (typical)

LINE F NEW

LINE D REPLACEMENT

LINE E REPLACEMENT

LINE C REPLACEMENT

LINE B NEW

LINE A REPLACEMENT

LINE AA REPLACEMENT

NEW WATER METER (TYP)

ABANDON 12" PIPE

NEW METERS AT ABANDONED WATERMAINS (TYP)

EXISTING WATER METER (TYP)

EXISTING 6" SS

NEW 4" SS SERVICE TO CITY TRAILER

1" SERVICE TO CITY TRAILER

6" SERVICE TO CITY CORP YARD

ISOLATE VALVES. REMOVE & CAP PIPE AT TWO EXISTING VALVES ADJACENT TO EXISTING CLEARWELLS

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BENHAM STREET

BIG CUT ROAD

BENHAM COURT

GILMORE STREET

PHILLIP COURT

PARDI WAY

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Drawing No.
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DARYL.HEIGHER

El Dorado County Fire Protection District

Hydrant Flow Test By Hydrant

Hydrant Number = "066-1-P016 "

i6-1-P016 772 BIG CUT RD & SIERRA DR MUE

te	Static	Residual	Pitot	Pitot 2	GPM	20 PSI	10 PSI	0 PSI
/24/2004	32	14	40.00	0.00	106	85	118	145
05	BALDOCK, GARY							
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				Avg:	106	85	118	145

tal Flow Tests: 1

CABY Integrated Regional Water Management Group
2014 IRWM Drought Grant Solicitation

Attachment 3: Project Physical Benefits Table 5-- References

Attached are the references that relate to Table 5 Project Physical Benefits Tables for project:

- El Dorado County Regional Water Conservation Planning – Mode Implementation and Education Programs

20x2020 Water Conservation Plan

February 2010

20x2020
Water Conservation Plan

February 2010

This plan was prepared by:

- California Department of Water Resources
- State Water Resources Control Board
- California Bay-Delta Authority
- California Energy Commission
- California Department of Public Health
- California Public Utilities Commission
- California Air Resources Board

With assistance from:

- California Urban Water Conservation Council
- U. S. Bureau of Reclamation

Preface

In California, water is precious, competition for water is fierce, and conservation is critical. The value that Californians place on water is reflected in a constitutional provision ensuring its reasonable and beneficial use. Article X, section 2 of the California Constitution prohibits the waste and unreasonable use of this precious resource. All water within the state is the property of the state, but the right to use water may be acquired under California law. To manage competition for scarce water supplies, California has an appropriative water right system that provides for the orderly development of the state's water resources while safeguarding against waste and unreasonable use.

Despite constitutional provisions prohibiting waste and a system of water rights to manage allocations, water conservation has always been important. California has a long history of laws, policies and practices that promote water conservation. Conservation and efficiency of water usage are recognized least-cost strategies to help ensure a vital economy, a healthy environment, and a high standard of living.

As our understanding, knowledge and technology improve, we have learned that our use of water for given purposes can also improve. Statutes and policies have been instituted that continually define our evolving abilities to do more with less water and begin to restore the health of the natural water systems on which we so greatly depend. Yet, with a burgeoning population and the movement of that population to drier climates, our overall demand for water has exceeded our reliable developed supply. Without additional action, demand will continue to exceed supply. The Delta is in crisis, drought has depleted our reservoirs and groundwater resources are overdrafted. Our need to pursue conservation and eliminate unnecessary uses of water is more important than ever to ensure the future health of our state.

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Abbreviations and Acronyms

($/AF)	cost per unit of savings
20x2020 Plan	*20x2020 Water Conservation Plan*
AB	Assembly Bill
AF	acre-foot
AFY	acre-feet per year
ARB	Air Resources Board
BMPs	Best Management Practices
CALFED	CALFED Bay-Delta Program
CBDA	California Bay-Delta Authority
CE	cost effective
CEC	California Energy Commission
CII	Commercial, Industrial and Institutional
CIMIS	California Irrigation Management Information System
CO	Colorado
CPUC	California Public Utilities Commission
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
DPH	Department of Public Health
DWR	Department of Water Resources
ET	evapotranspiration
ETo	reference evapotranspiration
GHG	greenhouse gases
GPCD	gallons per capita daily
GWh	gigawatt hour
HCF	hundreds of cubic feet
HETs	high-efficiency toilets
HEUs	high-efficiency urinals
HR	hydrologic region
IRWM	integrated regional water management
LWUP	Land and Water Use Program
MAF	million acre-feet
MG	million gallons
MOU	Memorandum of Understanding
MW	megawatt
PBMPs	Potential Best Management Practices
PWSS	Public Water Systems Survey
SB	Senate Bill
SF	San Francisco
SJ	San Joaquin
SWRCB	State Water Resources Control Board
TM	technical memoranda
ULFT	ultra-low-flush toilet
USBR	United States Bureau of Reclamation
UWMPs	Urban Water Management Plans

Executive Summary

In February 2008, Governor Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. As part of this effort, the Governor directed state agencies to develop a plan to reduce statewide per capita urban water use by 20 percent by the year 2020. This marked the initiation of the *20x2020 Water Conservation Plan (20x2020 Plan)* process.

California's water resources are finite and now require managing for sustainability. Multiple benefits can be realized as a result of more aggressive water conservation including:

- reduced stress on the environment of the beleaguered Sacramento-San Joaquin Delta
- delayed capital cost of new infrastructure to treat and deliver water
- reduced demand for wastewater treatment, including capital costs and ongoing treatment costs
- reduced water-related energy demands and associated greenhouse gas emissions
- improved ability to meet environmental needs
- improvements in the quality of receiving waters related to reduced discharge
- reduced use of fertilizers, pesticides, and herbicides and reduced escape of these chemicals into surface waters through use of native plants and low water using varieties, reduced production of green waste, and improved habitat value of urban landscapes
- enhanced flexibility in water management and delivery systems, especially during dry periods
- better capacity to meet the challenge of California's growing population.

California can reduce its per capita use 20 percent, from the current 192 gallons per capita daily (GPCD) to 154 GPCD. This amounts to an annual savings of about 1.59 million acre-feet based on the savings achieved by California's 2005 population.

20x2020 Plan Scope and Process

The *20x2020 Plan* sets forth a statewide road map to maximize the state's urban water efficiency and conservation opportunities between 2009 and 2020, and beyond. It aims to set in motion a range of activities designed to achieve the 20 percent per capita reduction in urban water demand by 2020. These activities include improving an understanding of the variation in water use across California, promoting legislative initiatives that incentivize water agencies to promote water conservation, and creating evaluation and enforcement mechanisms to assure regional and statewide goals are met. The *20x2020 Plan* discusses these many activities in detail.

This *20x2020 Plan* was developed through the collaborative effort of an Agency Team, which consisted of state and federal agencies including the Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), California Energy Commission (CEC), Department of Public Health (DPH), California Public Utilities Commission (CPUC), Air Resources Board (ARB), California Bay-Delta Authority (CBDA), and the US Bureau of Reclamation (USBR). The Agency Team also developed research papers (Technical Memoranda) and solicited input from water suppliers and organizations through public workshops and conference calls during the planning phase of the *20x2020 Plan*. In addition, the California Urban Water Conservation Council contributed toward the analysis and development of this *20x2020 Plan*.

Comments received through the public review process were used to modify and shape the recommendations of this *20x2020 Plan*.

Establishing a Baseline and Targets

The 2005 statewide baseline urban water use value, expressed in gallons per capita per day (GPCD), is **192 GPCD**. The corresponding statewide targets are:

- **Interim 2015 Statewide Target** = 192 GPCD (Statewide Baseline) minus 10 percent = **173 GPCD**
- **Final 2020 Statewide Target** = 192 GPCD (Statewide Baseline) minus 20 percent = **154 GPCD.**

This represents a statewide savings of 1.59 million acre-feet (MAF) based on a population of 37 million. California can achieve at least a 20 percent reduction in 2005 per capita water use by 2020.

Using ten hydrologic regions as defined by DWR for water resources planning purposes, regional baseline and target values were derived for daily per capita water use.

Table ES-1. Regional Urban Water Use Pattern in 2005

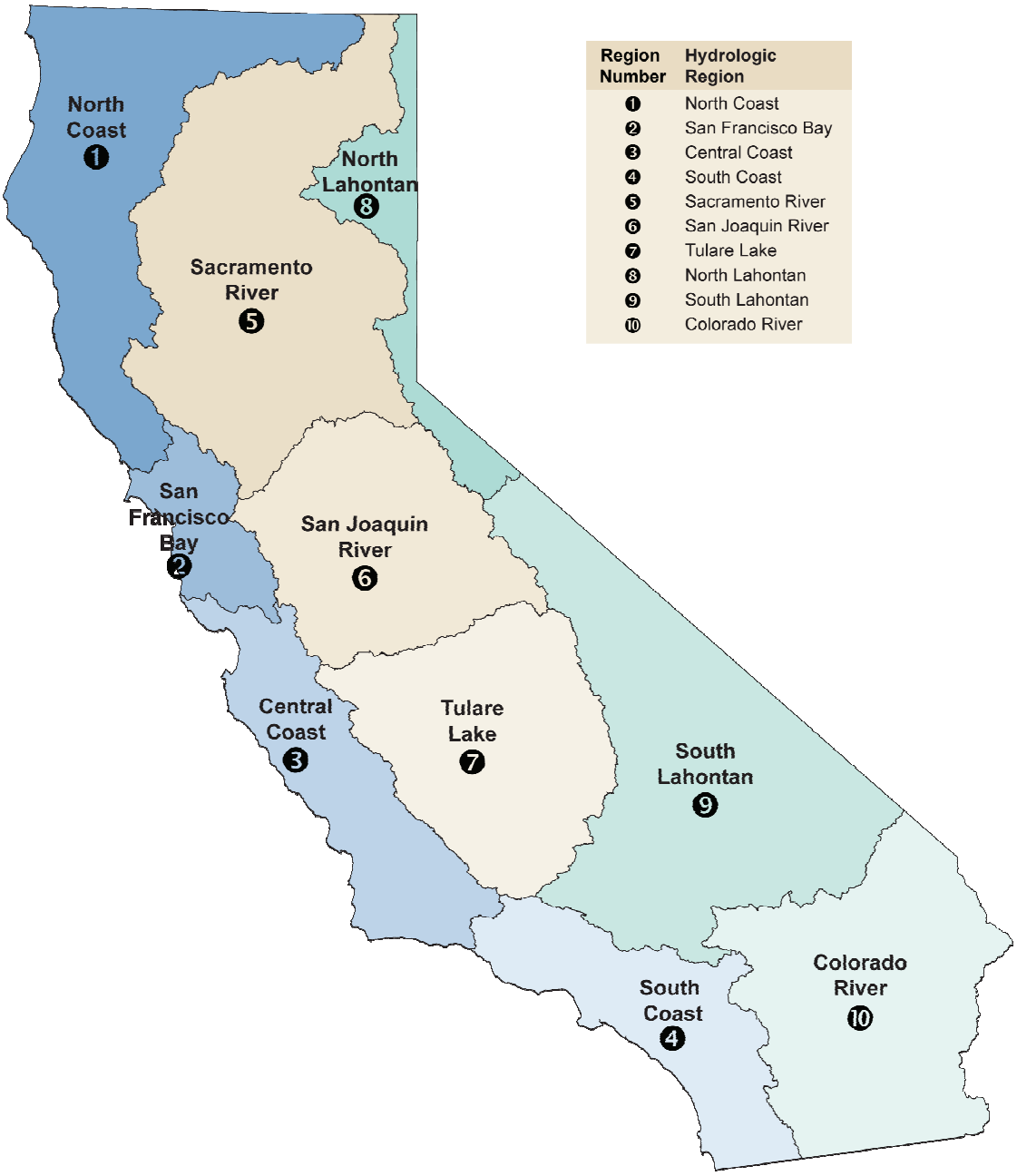
	DWR Hydrologic Region									
Sector Water Use (GPCD)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8***	**9**	**10**
Residential (Single- and Multi-Family)	115	103	109	126	174	159	180		176	255
Commercial and Institutional	18	19	17	23	25	27	23		19	38
Industrial	8	17	8	9	21	32	43		11	3
Un-Reported Water	24	18	20	22	33	30	39		31	50
Total Baseline	165	157	154	180	253	248	285	243	237	346

* Region 8 does not have enough usable data in the Public Water Systems Survey (PWSS) database to compute for baseline values by sector.

Table ES-2. Regional Urban Water Use Targets

	DWR Hydrologic Region Number									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Baseline (1995-2005)	165	157	154	180	253	248	285	243	237	**346**
Interim Targets (2015)	151	144	139	165	215	211	237	208	204	**278**
Targets (2020)	137	131	123	149	176	174	188	173	170	211

Figure ES-1. California Hydrologic Regions



Recommendations

Recommended actions to contribute toward a statewide strategic approach (as described in more detail in Chapter 3) fall into the following categories:

1. Establish a foundation for a statewide Conservation Strategy.
    a. Establish targets and goals in statute.
    b. Establish a state agency leadership and coordination framework.
    c. Provide a forum for stakeholder advice on refinement and implementation.
    d. Mandate uniform data collection and establish a statewide database.
    e. Maintain existing programs and institutions.
2. Reduce landscape irrigation demand.
    a. Require water-efficient landscapes at state-owned properties.
    b. Support the implementation and enforcement of landscape design and irrigation programs and the development of new landscape programs.
    c. Mandate the landscape irrigation Best Management Practices (BMP).
3. Reduce water waste.
    a. Accelerate installation of water meters.
    b. Establish a state standard for water meter accuracy.
    c. Revise the water loss BMP to incorporate improved methodologies and accelerate coverage goals.
4. Reinforce efficiency codes and related BMPs.
    a. Obtain authorization for state standards for high efficiency clothes washers.
    b. Support landscape irrigation equipment standards.
    c. Accelerate replacement of inefficient showerheads, toilets and urinals.
    d. Accelerate adoption of proven water saving technologies in new businesses.
5. Provide financial incentives.
    a. Encourage or mandate conservation water pricing.
    b. Provide grants, loans, and rebates to wholesale and retail water suppliers and customers.
    c. Establish a public goods charge for water.
    d. Fund the installation of water meters.
6. Implement a statewide conservation public information and outreach campaign.
7. Provide new or exercise existing enforcement mechanisms to facilitate water conservation.
    a. Require implementation of water conservation as a condition to receive state financial assistance.
    b. Take enforcement actions to prevent waste and unreasonable use of water.
    c. Provide additional enforcement tools for water suppliers.
8. Investigate potential flexible implementation measures.
    a. Investigate requiring conservation offsets for water demand generated by new development.
    b. Investigate establishment of a cap-and-trade regime.
9. Increase the use of recycled water and non-traditional sources of water.

Implementation

The *20x2020 Plan* will be implemented through three phases, as outlined in Table ES-3. In November 2009, California placed the 20x2020 goal into statute with the enactment of SBX7 7 (Steinberg), as part of an historic package of water reforms.

Table ES-3. *20x2020 Plan* Implementation Outline

Plan Phase	Year	Activities
I. *20x2020 Plan* Completion and Start-up Actions	2009 – 2010	• Finalize *20x2020 Plan* • Establish a lead agency and coordination framework • Convene a stakeholder advisory group • Develop detailed implementation task descriptions for recommended actions • Provide technical assistance in conservation legislation discussions • Evaluate an interim data collection and management mechanism • Collect, manage and validate data • Implement conservation actions • Conduct legislative, regulatory and administrative actions • Provide oversight
II. *20x2020 Plan* Implementation, Monitoring, Evaluation, Adjustments	2011 – 2020	• Establish interim and long-term data collection and management • Implement conservation actions • Monitor implementation progress • Assess and design additional measures such as a conservation offset and a conservation credits trading program as needed • Conduct an Interim Target Assessment and Performance Evaluation in 2015
III. Conclusion	2020	• Conduct a Final Target Assessment and Performance Evaluation • Publish Results and Lessons Learned

Year 2020 and Beyond

Water resources will continue to be scarce beyond 2020. An important factor to the success of this *20x2020 Plan*, from now through 2020 and beyond, relies on the fundamental revolution of the way Californians view water. One of the many goals of this *20x2020 Plan* is to bring Californians to recognize that the water our lives depend on is indeed a very limited resource, and that it must be used wisely, innovatively, responsibly, and efficiently. The success of the *20x2020 Plan* also demands political will to continue to invest and push to capture the full extent of water conservation potential.

In succeeding, this *20x2020 Plan* will not only bring benefits to California but will also allow us to share this leadership and experience in the national and international efforts to mitigate the global crisis of water deficiencies.

Chapter 1. Introduction

In February 2008, Governor Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. The first element of the Governor's Delta plan is water conservation. In the Governor's words, California must have:

> **"A plan to achieve a 20 percent reduction in per capita water use statewide by 2020.** Conservation is one of the key ways to provide water for Californians and protect and improve the Delta ecosystem. A number of efforts are already underway to expand conservation programs, but I plan to direct state agencies to develop this more aggressive plan and implement it to the extent permitted by current law. I would welcome legislation to incorporate this goal into statute."

The Governor's call for greater conservation is reflected in the work of the Delta Vision Blue Ribbon Task Force. The Vision and Strategic Plan of the Task Force call for significantly greater implementation of water use efficiency measures to reduce water export demands on the Delta and its struggling ecosystem and to improve environmental conditions upstream and downstream of the Delta.

Delta protection and restoration are not the only reasons to increase conservation efforts. Global climate change will affect water management in California, and water conservation will help the state not only mitigate climate change by reducing greenhouse gas emissions but also adapt to climate change by reducing water use. Approximately one-fifth of the electricity and one-third of the non-power plant natural gas consumed in the state are associated with water delivery, treatment and use, so efficient use also can reduce water-related energy demands and associated greenhouse gas emissions. Without this program, water-related greenhouse gas emissions in 2020 would be higher than is currently forecast. The Water Energy Subgroup of the Climate Action Team estimates that this plan will reduce emissions by 1.4 million metric tons per year.

Water conservation is also an attractive water management strategy because it can yield multiple benefits. Reduced demand can reduce or delay the capital cost of new infrastructure to treat and deliver water. Reduced use also reduces the demand for wastewater treatment, including capital costs and ongoing treatment costs. There may also be improvements in the quality of receiving waters related to reduced discharge. Landscape water conservation can yield multiple benefits including reduced use of fertilizers, pesticides, and herbicides and reduced escape of these chemicals into surface waters through use of native plants and low water using varieties, reduced production of green waste, and improved habitat value of urban landscapes. These other benefits are particularly important upstream of the Delta, where effluent discharge and over-application of irrigation water often re-enter the natural system and the net water savings from landscape conservation is lower than it is in areas that discharge to the ocean.

The California Water Plan acknowledges the importance of water conservation as an element of statewide water management. The *California Water Plan Update 2005,* as well as the draft *California Water Plan Update 2009,* identifies urban water conservation as the water management strategy that will be most effective at matching supply and demand. California needs a comprehensive plan to increase water use efficiency and achieve the multiple benefits that accompany more efficient use, along with a comprehensive finance plan that supports continuing investment in efficiency.

This *20x2020 Plan* outlines recommendations to the Governor on content and implementation of the requested "more aggressive plan". These recommendations were developed through a collaborative effort of the Agency Team, involving several agencies that are involved in water planning and management. The Agency Team consists of seven state agencies and a federal agency: Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), California Energy Commission (CEC), Department of Public Health (DPH), California Public Utilities Commission (CPUC), Air Resources Board (ARB), California Bay-Delta Authority (CBDA) and the US Bureau of Reclamation (USBR). In addition, the California Urban Water Conservation Council contributed toward the analysis and development of this *20x2020 Plan*. Extensive public input has helped to improve the plan and will be an important part of future refinement and implementation.

Achieving a 20 percent reduction in statewide per capita urban water use is a challenging task. Achieving it by 2020 will require quick and concerted effort throughout the state. However, the urgent threat of water deficiency and overdraft, water needs of the environment, a growing population, and the unknown impact of climate change on water supplies, requires that California move boldly to foster water conservation.

Conservation versus Efficiency

The terms water conservation and water use efficiency are often used interchangeably. As used in this report, *water conservation* is defined as a reduction in water loss, waste, or use. The general term water conservation may include *water use efficiency*, in which more water-related tasks are accomplished with the same or lesser amounts of water.

When widespread conservation programs are implemented, water managers may become concerned about demand hardening. This is the phenomenon in which customers lose the ability to easily institute emergency conservation during drought or other crises because they have already captured all their conservation savings. Although this is a legitimate concern, California will still have ample conservation opportunity even after statewide per capita use is reduced by 20 percent, through additional fixture and appliance replacement, reductions in landscape irrigation, and habit change.

Plan Scale and Scope

To meet the Governor's charge, the Agency Team has worked to develop the *20x2020 Plan* that answers these questions:

- What is per capita urban use now or in some recent base period?
- What would the reduction in per capita use be when the Governor's goal is met?
- How does per capita use vary across the state?
- How does the potential for additional conservation vary across the state?
- Is it feasible to expect that the Governor's goal can be met?
- Will existing measures enable us to achieve the Governor's goal? How does this vary by region?
- Can we expect to achieve the goal with new measures? What would it take to implement them?
- How might implementation (and needed implementation assistance) vary by region?

This *20x2020 Plan* is intended to be part of a comprehensive program to improve water supply reliability, restore ecosystem health, and improve the Delta. California must reduce its per capita water use. Other vital parts of a comprehensive program include

improved Delta conveyance, more water storage, and restoration of ecosystem health in the Sacramento-San Joaquin River Delta.

This *20x2020 Plan* addresses only urban water use and conservation. To achieve a reduction in overall water use while protecting the Delta's ecosystem, it is recognized that both urban and agricultural water use must be more efficient. The Governor's charge was to achieve a 20 percent reduction in *per capita* use, which implies an urban focus. There are many differences between California's urban and agricultural supplies and demands. These differences in water qualities and quantities, delivery systems, and other use characteristics, coupled with different institutional and conservation mechanisms require that separate mechanisms be developed to address the urban and agricultural sectors.

The focus on urban use here does not diminish the relevance of agricultural use to the state's total water use or the potential for significant reductions in overall state water use from the agricultural sector. Urban water suppliers are required by statute to prepare and periodically update urban water management plans. Efficiency programs are built on this planning foundation. No comparable requirement exists for irrigation districts. Legislative bills introduced to place the Governor's 20x2020 goal into statute recognize the importance of this planning foundation. Bills have also proposed new agricultural water management planning requirements for irrigation districts that are parallel to the standards that have been in place for urban suppliers since 1983. This balanced and comprehensive approach is a sound water management strategy.

This *20x2020 Plan* will be implemented consistent with water rights protections in Water Code Section 1011. An appropriative water right holder does not lose the right to water that is conserved. Water Code section 1011 allows an appropriator to retain the right to water to the extent water is not used due to water conservation efforts. Under this provision, "water conservation" is broadly defined to mean the use of less water for the same purpose of use allowed under the appropriative water right. A permittee or licensee who seeks the benefit of section 1011 must file periodic reports with the State Water Resources Control Board describing the extent and amount of the reduction in water use due to water conservation efforts.

This *20x2020 Plan* addresses only potable water use. "Water use efficiency" in some state programs includes both water conservation and water recycling, but this meaning is not used for this plan. Urban potable water use includes all residential, commercial, institutional and industrial users as well as non-revenue water. Non-potable recycled water was excluded while estimating baseline per capita urban water use to give credit to agencies that have promoted recycled water in the past. Additional use of recycled water will be a significant method by which regions can continue to offset baseline potable urban water demand to meet 2020 goals.

This *20x2020 Plan* does not consider processes that convert a non-potable source into a potable source as methods to reduce per capita use, since they are new supply options. Desalination and use of recycled water to recharge aquifers or augment surface supplies are included among these new supply options. Municipal stormwater capture is also a new supply option and is therefore not considered in this plan.

This *20x2020 Plan* does not address water supplied by customers for their own use or consider processes that create new supply on the customer side of the meter. The plan focuses on potable water supplied in municipal distribution systems and does not include quantities of self-supplied water in per capita use calculations. Some water users have access to groundwater or surface water to provide a part or all of their water needs. In addition, alternative sources of water, such as graywater (untreated household waste water

from clothes washers, tubs and showers), rainwater recapture, and on-site diverted stormwater are examples of non-potable sources that may reduce per capita use, but were not included in the analysis at this time.

This *20x2020 Plan* does not address water losses in transmission of water between sources of supply and potable water treatment and distribution systems. An attempt has been made to account for water losses within potable water distribution systems, captured within the categories of "non-revenue water" or "unreported water." In the DWR database that was the primary source of data for this project, "un-reported water" includes "large landscapes" (parks, golf courses, schools)) for which water deliveries may not be measured; "other" (system flushing, fire hydrant testing, etc.); and "non-revenue water" (previously referred to as "un-accounted for water" (i.e., system water losses from leaks, slow meter registers, theft, etc.) Further discussion of data development can be found in Chapter 2.

This *20x2020 Plan* recommends actions that will reduce per capita use, not total urban use, by 20 percent. While this *20x2020 Plan* is being implemented, California's population will continue to grow. Depending on the rate of population growth, total urban water use may never go down and could eventually rise, even if all the recommendations in this *20x2020 Plan* are successfully implemented. Clearly, this *20x2020 Plan* alone will not lead to long-term sustainable water use. Other efforts to balance supply and demand will be needed, including continued reductions in per capita demand. Reduced per capita use is just one part of a comprehensive program to improve water supply reliability and restore ecosystem health.

This *20x2020 Plan* is based on analyses conducted on a regional and statewide basis. The analyses were designed to account for regional differences, including varying levels of past conservation in different regions and varying climate that affects outdoor water use. Two regional approaches to planning were considered – use of hydrologic regions (HR) and reference evapotranspiration (ETo) zones. Hydrologic Regions refer to the 10 regions delineated by DWR based on topographic and hydrologic characteristics (Figure 1). ETo zones refer to the 18 zones delineated by DWR and the University of California based on climate characteristics (Figure 2) related to the consumption of water by well-watered cool season turfgrass species. Analysis at the water supplier level was not carried out because the supplier-level data were inconsistent and incomplete, and such a fine level of detail was not considered necessary to develop the *20x2020 Plan*.

Data analysis and development of conservation targets for planning purposes was conducted by hydrologic region rather than ETo zone for two reasons. First, a large portion of data available for undertaking the analyses presented here were either already collated by hydrologic region, or were easier to collate by hydrologic region than by ETo zones. Second, major funding for integrated regional water management – including water conservation – is structured according to hydrologic region. Regional entities, such as Integrated Regional Water Management consortia, have an important role to play in the success of this *20x2020 Plan* and implementing its recommendations. Nevertheless, climate is a powerful factor affecting water use. Ideal regional targets would reflect the climate variability represented by the ETo zones, would result in irrigation water use substantially lower than ETo amounts, and would be flexible enough to accommodate implementation at the geographic scale of hydrologic region or water supplier service area.

This *20x020 Plan* does not set targets for individual water suppliers. Within each hydrologic region, there are wide variations among water suppliers. Many factors can affect per capita use, including varying climate within a region, varying land use patterns and population density, different kinds of commercial and industrial use, and past conservation

effort. This plan does not provide the guidance needed to move from regional planning targets to supplier-specific targets. Water supplier targets could be developed using a per capita approach like the regional targets, or could account for local differences by establishing reasonable use levels through the calculation of water budgets.

Figure 1. California Hydrologic Regions

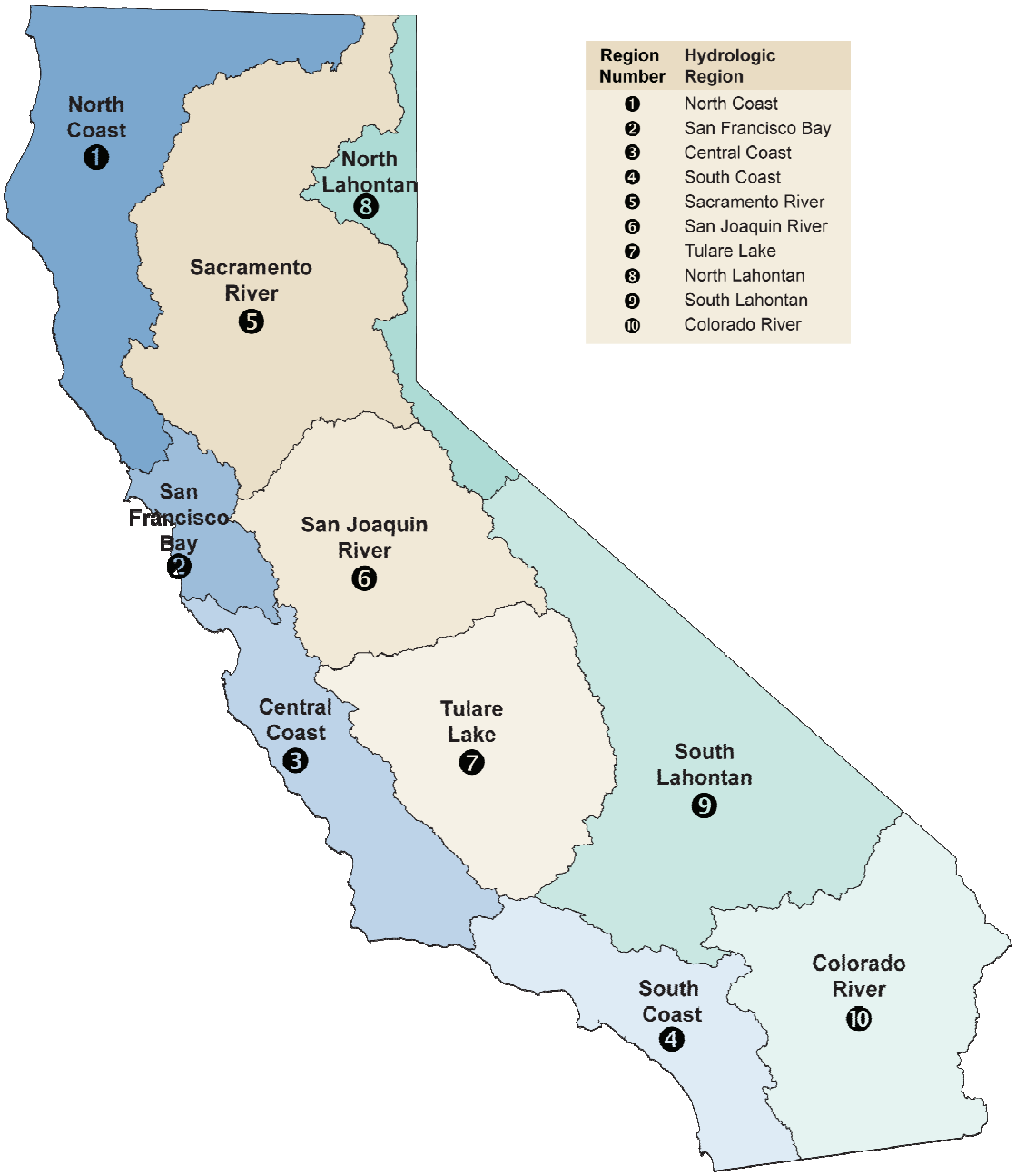
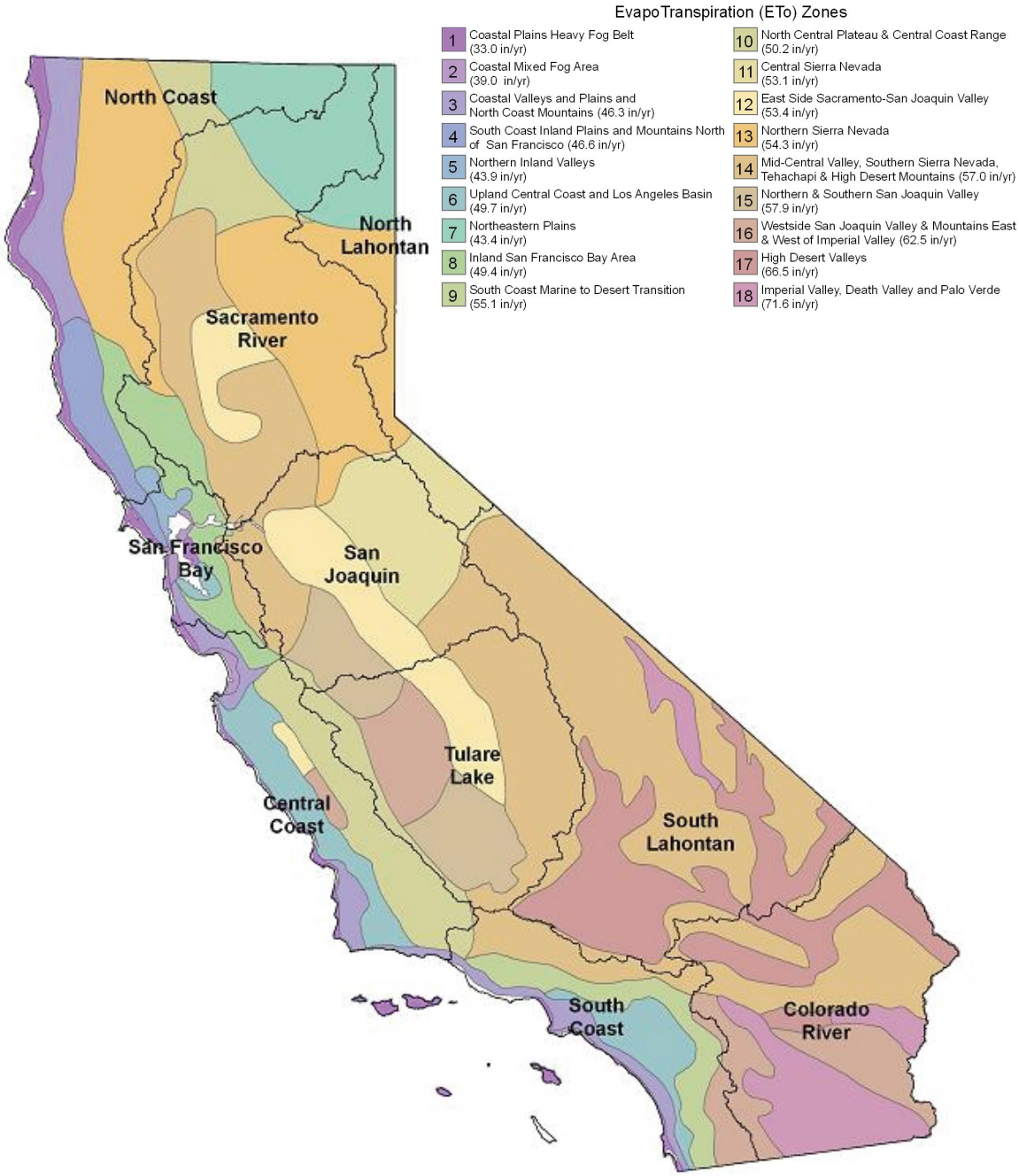


Figure 2. California Reference Evapotranspiration Zones Overlapping Hydrologic Regions



20x2020 Planning Process

The process of developing the *20x2020 Plan* is illustrated in Figure 3 (completed steps are highlighted). There are five steps:

1. Data Analysis
2. Baseline Definition
3. Preliminary Targets Development
4. Conservation Potential Identification
5. Implementation Planning

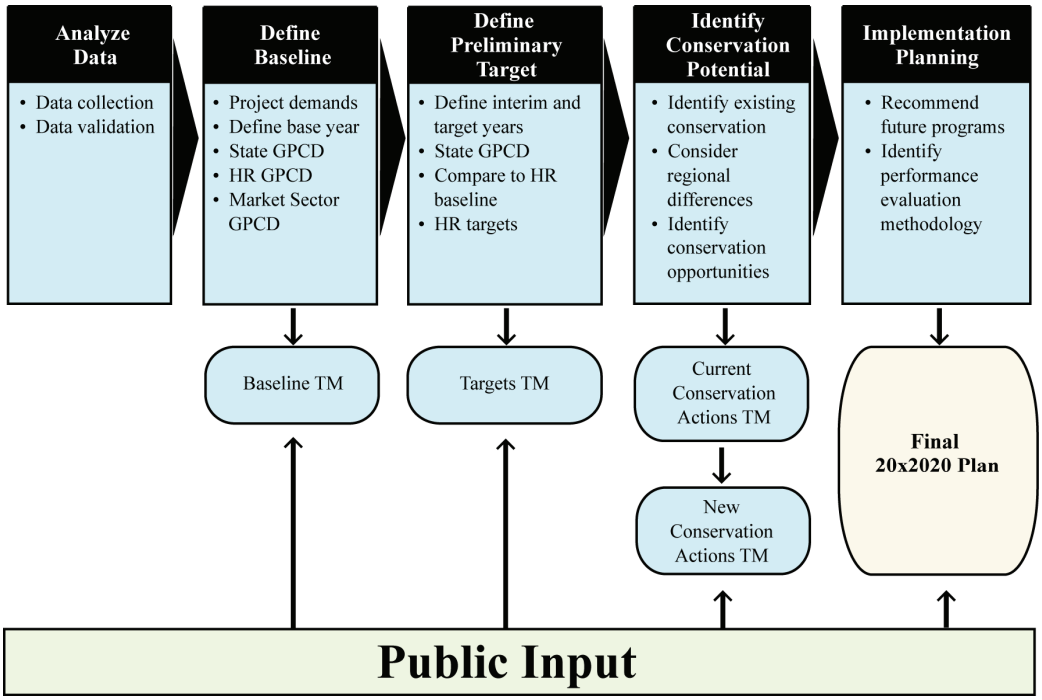
In this *20x2020 Plan,* findings of previous works are summarized, and many tools and activities that the state and local water suppliers could implement to achieve a statewide 20 percent reduction in per capita use are described.

Summary of the Statewide Planning Effort

A significant amount of data collection and technical analysis was conducted to prepare this *20x2020 Plan*. Results of this work are contained in the following technical memoranda (TMs). All of these documents are available at the following website hosted by SWRCB: http://www.swrcb.ca.gov/water_issues/hot_topics/20x2020/index.shtml

These TMs were draft working documents and were not updated to include changes made in response to public comment or further analysis by the agency team. They provided a starting point, with comments and discussion from stakeholders and the team modifying the approach and conclusions of the initial TM findings to produce this document. As such, they provide a historic reference to this *20x2020 Plan*.

Figure 3. *20x2020 Plan* Development Process



TM 1. Establishing Baselines

This TM evaluated the available potable water use data and established baseline per capita water use values for each of the ten hydrologic regions, expressed as gallons per capita daily or GPCD. These baselines were used to determine the target GPCD values.

TM 2. Determining Conservation Targets

Urban water use varies widely among regions, due to the effect of past conservation efforts, community attributes, and climate differences. A uniform statewide 20 percent reduction in water use would fail to properly account for these regional differences. To provide one idea of how regional targets might vary, this TM used the baseline GPCD values determined in TM 1 to set the target GPCD values for each of the ten hydrologic regions. These targets were derived before savings estimates from "current" and "future" conservation programs and actions were fully developed. Considerable public input on target-setting received at public workshops prompted further revision of both the methodology and the targets. The revised targets and methodology discussed in this document supersede what was earlier presented in TM 2. See Chapter 2 of this *20x2020 Plan* for additional discussion.

TM 3 (Performance Metrics) and **TM 6 (Implementation Plan)** were not developed as Technical Memoranda as originally anticipated. They are not posted as Technical Memoranda on the website, but are addressed only in this *20x2020 Plan*, as described in Chapter 4. Because of timing and funding constraints, these topics were not presented for discussion at early workshops but were included for discussion during the final public workshop.

TM 4. Potential Conservation Savings from Current Actions

TM 4 evaluated GPCD savings that each region could likely achieve using existing conservation tools and programs. Measures quantified include the impact of existing plumbing codes; the potential impact of existing regulatory initiatives requiring complete urban metering by 2025; the implementation of Best Management Practices (BMPs) at existing rates (except for high efficiency clothes washers which were considered as a new action); and improving these implementation rates in the future because of recent legislation (AB 1420, Laird 2007), which ties receipt of water-related state grant funding to BMP implementation.

After adopting the California Urban Water Conservation Council's *Memorandum of Understanding Regarding Urban Water Conservation* (MOU) in 1991, many urban water suppliers initiated water conservation programs identified as BMPs in the MOU. These BMPs are listed in Table 1.

A key source for the savings estimates was the CALFED Bay-Delta Program's *Water Use Efficiency Comprehensive Evaluation* (referred to hereinafter as *Comprehensive Evaluation*).[1] This evaluation was conducted by the CALFED Bay-Delta Program to assess water use efficiency progress made during the implementation of the CALFED Program from 2000 to 2004, and to assess the potential for additional efficiency improvements under several different funding and implementation scenarios. To develop the *20x2020 Plan*, these estimates were updated to account for new codes, such as AB 715 (Laird, 2007), that requires only high-efficiency toilets and urinals (HETs and HEUs) to be sold or installed

[1] CALFED Bay-Delta Program Water Use Efficiency Element, "*Water Use Efficiency Comprehensive Evaluation*," August 2006.

after January 1, 2014. The *Comprehensive Evaluation's* savings estimates were also adjusted to 2005, the last year of the 11-year water production data history from which baseline GPCD estimates were derived. The *Comprehensive Evaluation* examines different levels of implementation of the Best Management Practices for Urban Water Conservation (BMPs) as described in the Memorandum of Understanding administered by CUWCC. Although the MOU was revised in December 2008, the list of BMPs presented here is as they existed prior to this revision since that is how the *Comprehensive Evaluation's* analyses were conducted.

Table 1. List of Best Management Practices (BMPs)

BMP	Description
BMP 1	Water survey programs for residential customers
BMP 2	Residential plumbing retrofit
BMP 3	System water audits, leak detection and repair
BMP 4	Metering with commodity rates for all new connections and retrofit of existing unmetered connections
BMP 5	Large landscape conservation programs and incentives
BMP 6	High efficiency clothes-washing machine financial incentive program
BMP 7	Public information programs
BMP 8	School education programs
BMP 9	Conservation programs for commercial, industrial, institutional (CII) accounts
BMP 10	Wholesale agency assistance programs
BMP 11	Retail conservation pricing
BMP 12	Conservation coordinator
BMP 13	Water waste prohibition
BMP 14	Residential ultra-low-flush toilet (ULFT) replacement programs

TM 5. Potential Conservation Savings from New Actions

TM 5 evaluated GPCD savings that each region could likely achieve through new conservation tools and programs. Measures quantified include savings from the retrofit of inefficient clothes washers with more efficient washers, retrofit of large-landscape residences with weather-based irrigation controllers, and several new technologies evaluated by CUWCC as part of its Potential Best Management Practice review. TM 5 also estimated additional savings likely if coverage goals for a select set of BMPs are expanded relative to what is stated in the MOU, if aggressive programs are pursued to reduce unaccounted for water beyond what is required by the MOU, if residential irrigation is restricted to only one or two days per week, and if recycling projects come on line as projected.

Finally, TM 5 presented some placeholder estimates of likely additional savings at an assumed level of investment of grant funds for water conservation. These savings estimates are also drawn from the *Comprehensive Evaluation*. The scenario assumes that $30 million per year would be available between 2005 and 2014, and $7.5 million per year thereafter until 2020. It is important to note that the *Comprehensive Evaluation* followed an elaborate cost-effectiveness criterion to allocate funds across different hydrologic regions, taking into

account an estimate of the marginal cost of water to a region. Under Proposition 84, which allocated $1 billion in grant funds for water management, each region is assured a proportionate share of the total grant funding. This does not assure that regional funds will be used to implement efficiency improvements, and conservation efforts have been more modest in areas such as the Central Valley where the cost of water has been comparatively lower. Therefore, estimates of grant-funded savings should be treated as highly uncertain. Additional incentives or disincentives may be needed to improve water use efficiency in regions where the price of water is furthest from fully reflecting the true costs of the water supply and does not include the costs of extensive conservation programs.

Public Outreach

Information on development of the *20x2020 Plan* is posted on the SWRCB website at: http://www.swrcb.ca.gov/water_issues/hot_topics/20x2020/index.shtml

This website also includes links to all the TMs.

The *20x2020 Plan* effort hosted three public workshops and a toll-free conference call to receive input on the conservation planning effort, and conducted a scoping session in conjunction with a meeting of the Water Plan All Regions forum.

- A Scoping Session was conducted in San Jose on June 2, 2008 in conjunction with an "All Regions Forum," a meeting supporting the update of the California Water Plan. This session focused on gathering input about approach and content of the prospective *20x2020 Plan*.
- Public Workshop #1 was held in Sacramento on September 15, 2008 and included over 100 participants. This first workshop focused on establishing baseline GPCD and targets for the year 2020. The discussion provided an overview of the 20 percent by 2020 process and allowed stakeholders to share ideas and questions directly with the Agency Team. The workshop allowed the Agency Team to get an initial read on the public's concerns and sentiments which were incorporated into the draft *20x2020 Plan*.
- Public Workshop #2 was held in Sacramento on November 20, 2008 and included over 40 stakeholders. The second workshop focused on potential conservation savings from current and new actions. Public comments included an extensive dialogue regarding the treatment of commercial, industrial and institutional target setting. Public comments were addressed and folded into the draft *20x2020 Plan.*
- Stakeholders present at the second workshop requested a conference call be held to provide additional clarification on the method used to establish conservation targets. This conference call was hosted on December 8, 2008 and included over 40 participants.
- Public Workshop #3 was held in Sacramento on May 29, 2009 and focused on the public review draft of the *20x2020 Plan*. Also, written comments on the draft plan were received through the program website and posted on the website for public review. Appendix C of this final plan includes a summary of the major categories of comments received, and a summary of the agency team responses.
- Throughout the *20x2020 Plan* process a public comment e-mail address was active as a mechanism for providing input and a means for posing questions regarding the process. Before each workshop roughly one dozen comments were submitted via email and were addressed by the Agency Team.

Chapter 2. Establishing a Baseline and Targets

Water use depends on various factors such as population, climate, land use patterns, (lot sizes, square footage of irrigated landscape), the age and condition of the water distribution infrastructure (water losses), and industrial and socioeconomic characteristics (the cost of water and income level of residents) of a region. There are significant variations in per capita use across the state reflecting these factors. The analyses in this *20x2020 Plan* are presented by hydrologic region in part to recognize and account for some of this variation.

In order to achieve a savings target, it is essential to first define a baseline. Data from a number of different sources were assessed, as described in following section. However, the data available for this analysis were not complete and accuracy levels vary significantly among water suppliers. Furthermore, through the existing water use data collection systems, there is a considerable lag time between when data are collected and when they are reported to the various entities. With this in mind, the analyses provided in this *20x2020 Plan* should be treated as initial estimates, based on the best available information. An important step in implementing this *20x2020 Plan* will be to standardize and improve the data collection process. This recommendation is discussed in more detail in Chapter Three.

The baseline and target water use levels described in this plan are for hydrologic regions. This plan does not describe methods to calculate targets for individual water suppliers, and the target for a hydrologic region may not be the appropriate target for a particular supplier within that region, because the regional target may be too low or too high. These targets were developed for planning at the statewide and regional level.

Establishing a Baseline

The baseline values for each region represent the starting point of the *20x2020 Plan*, and help to determine the progress achieved toward the Governor's goal. Establishing the baseline is a dynamic process. The methodology used to develop the baseline in the planning effort of this *20x2020 Plan* was based on the data and resources available at this time and is a good first step towards accomplishing the *20x2020 Plan*'s goals. There is ample room, however, for improvement and refinement of the baseline as new information becomes available. Accordingly, this plan recommends improved data collection and management.

Over the years, many agencies and organizations – including DWR, DPH, CPUC and CUWCC – have collected urban water use data depending upon their goals and needs. Each dataset has strengths and limitations, as summarized in Table 2.

Table 2. Dataset Strengths and Limitations

Data Source	Strength	Limitation
DWR – Public Water Systems Survey (PWSS)	• Detailed water production, water delivery, population, and connections data. • Categorized by market sectors (e.g., residential, commercial, industrial, etc.). • Compiled into a central database. • Conducted annually.	• Collected voluntarily, which impacts data completeness and accuracy. • Recent data (2005-present) have not yet been compiled and validated, and are not available for use for this Plan.
DWR – Land and Water Use Program (LWUP)	• An extension from PWSS database, with data validated and modified at a sub-county level and validated using professional judgment. • Every area has a water use value.	• Only three (3) years of data are available (1998, 2000, and 2001).
California Urban Water Conservation Council (CUWCC)	• Detailed water use data by demand sector/customer type • Includes estimates of water saved through conservation Best Management Practices	• Only entered by Signatories of Memorandum of Understanding (approximately 225 of largest urban water suppliers in 2008) • Values expressed in 2006 dollars.
CPUC	• Recent urban water use data readily available. • Mandatory so data set should be complete.	• Limited data points • Only residential data available. • Data for connections and water use only. • Data was reported on annual basis, which limits the analysis for residential indoor/outdoor water use.
DPH	• More complete database since the Safe Drinking Water Act requires water suppliers to report water use data annually.	• Not available electronically. • Has not been compiled into a central database. Stored as hard copies in each DPH office across the state.
Urban Water Management Plans (UWMPs) prepared by Water Suppliers	• Could provide more detail on water use because plans are prepared by individual water suppliers. • Water suppliers serving more than 3,000 connections or more than 3,000 AFY are required by law to develop and submit UWMPs. • Mandatory but compliance is not 100 percent.	• Developed only once every five years. • Not compiled into a central database and therefore not available electronically. • No data from small water suppliers that serve fewer than 3,000 connections or 3,000 AFY.

Supply and Demand Data

Because water production data for any given year includes missing and inconsistent elements, several years of production and delivery data (1995 through 2005) were pooled to derive more stable average estimates of baseline consumption. Based on these data, no discernable trend was observed in the overall statewide and regional per capita water use over this period. Therefore, the most recent year for this period, 2005, has been selected as the baseline year.

Review of the strengths and limitations associated with the available databases revealed that data provided by DWR (both the PWSS and LWUP databases) contain the most relevant information that could be used for this *20x2020 Plan*. There are a number of uncertainties and possible inaccuracies in these data, but they were the best available at this time.

Because data submittal to DWR is voluntary, the completeness and accuracy of these data vary substantially between water suppliers. Some suppliers did not provide data for certain market sectors and/or certain years. Suppliers also used different methods in measuring water production and delivery. It is also evident that water suppliers had different understandings of specific data fields.

Most suppliers did not provide data on recycled water. If recycled water data were provided, they were removed from the demand data used to calculate per capita use. This plan encourages greater use of recycled water by crediting the substitution of recycled water for potable water as a reduction in potable per capita water use.

Water production of private water suppliers (e.g., residents with private water wells) is not captured in the PWSS database and was therefore also excluded from this analysis.

Data Development

Table 3 and Figure 4 below show the variations in average GPCD across the state's 10 hydrologic regions from the data analyzed in the PWSS database. This includes the base sectors of total residential, commercial, industrial and other/non-revenue where data were available.

Review of the compiled data by hydrologic region showed significant variations across the state. As expected, the GPCD values were higher in the more arid areas such as the Colorado Basin (Region 10). The coastal regions (1 through 4) have the lowest GPCD, partly because they have a cooler climate, limited water supplies, and higher cost of water, and because these areas have implemented more water conservation programs than many of the inland areas.

Table 3. Regional Urban Water Use Pattern in 2005

Sector Water Use (GPCD)	Hydrologic Region									
	1	2	3	4	5	6	7	8*	9	10
Residential (Single- and Multi-Family)	115	103	109	126	174	159	180		176	**255**
Commercial and Institutional	18	19	17	23	25	27	23		19	**38**
Industrial	8	17	8	9	21	32	43		11	**3**
Un-Reported Water	24	18	20	22	33	30	39		31	**50**
Total Baseline	165	157	154	180	253	248	285	243	237	346

* Region 8 does not have enough usable data in the PWSS database to compute for baseline values. The LWUP database was used instead. Note that the LWUP database only contains data for 1998, 2000, 2001. The baseline values for this region may not be as reliable as values computed for the other regions.

Figure 4. Regional Urban Water Use Patterns

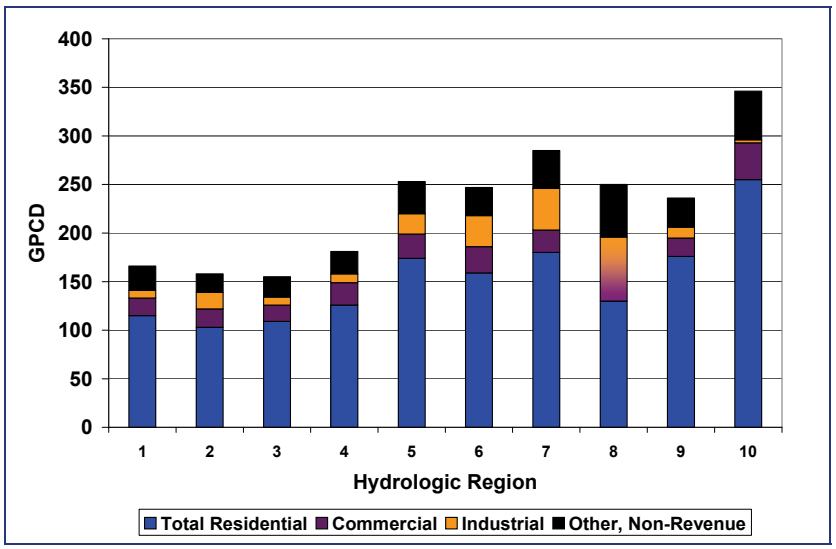
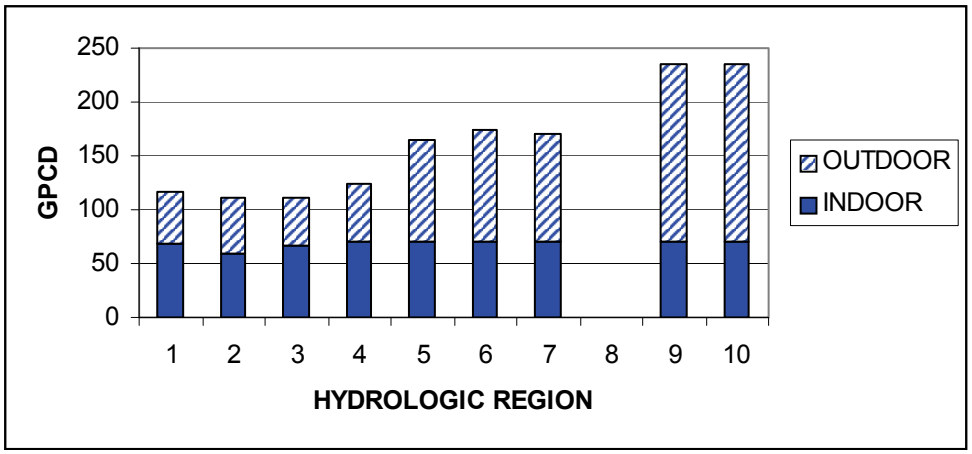


Table 4. Per Capita Urban Water Use in California, 1995-2005

Hydrologic Region	Weighted Average 1995-2005, GPCD	Range, GPCD
Region 1: North Coast	165	141-170
Region 2: San Francisco Bay	157	149-173
Region 3: Central Coast	154	141-177
Region 4: South Coast	180	171-198
Region 5: Sacramento River	253	237-272
Region 6: San Joaquin River	248	236-250
Region 7: Tulare Lake	285	242-341
Region 8: North Lahontan	243	242-385
Region 9: South Lahontan	237	221-286
Region 10: Colorado River	346	272-387

As demonstrated in Table 4, even within hydrologic regions there is significant variation in use, due to climatic, demographic, or economic factors as well as differing levels of conservation implementation. This variation demonstrates the need for flexibility in the design of local conservation programs: no two service areas are identical. As demonstrated in Figure 5 analysis of the baseline data indicated that outdoor water use is a significant part of the demand profile for single family households, and reflects a large part of the differences among regional data. Comparison of the lowest monthly consumption data (which usually represents mostly indoor use) with the rest of the year showed large potential for water savings due to landscape modifications or irrigation restrictions. In all Regions outdoor water consumption exceeds 40 percent of urban consumption. In Regions 5 through 10, it represents more than 50 percent of total demand, and almost 70 percent of demand in Regions 9 and 10. (There was insufficient data to represent HR 8 in Figure 5).

Figure 5. Single Family Residential Indoor/Outdoor Baseline Distribution



There was insufficient data to represent Hydrologic Region 8.

Potential Conservation Savings from Current Actions (Basic Measures)

Retail water suppliers in California have reported per capita water use remaining steady or dropping since the early 1990s in many parts of California, for several reasons. First, after adopting the California Urban Water Conservation Council's MOU in 1991, many urban water suppliers have undertaken water conservation programs identified as Best Management Practices (BMPs) in the MOU.

The state has also undertaken several regulatory initiatives to improve water use efficiency, such as mandating that unmetered connections be metered by 2025; that new construction with significant landscaped areas be subject to plan review to ensure that efficient irrigation systems and low water-using plants are being used (Model Water Efficient Landscape Ordinance); and that there is better coordination between land use and water use planning (SB 221 and SB 610, 2001). Not all of these BMPs, regulatory initiatives, new technologies, or education and outreach activities have easily quantifiable effects, but they are generally acknowledged to affect water use.

However, overall statewide and regional per capita water use trends remained flat in California between 1995 and 2005, as indicated in the available datasets employed by this *20x2020 Plan*. This suggests that other factors have been at play counteracting the effect of BMPs, codes, and the above-mentioned regulatory initiatives or perhaps that progress in reducing GPCDs that have been made in some communities have been offset by increasing GPCDs in other communities.

The effect of the following codes, active programs, and regulatory activities have been considered in quantifying conservation savings from current actions.

1. Regulatory activities
    a. The conversion of unmetered connections served by the Federal Central Valley Project (CVP) to metered connections by 2013, and non-CVP unmetered connections converted by January 1, 2025, as required by state law.

2. Codes related to plumbing and appliance efficiency
    a. The 1992 Federal Energy Policy Act requiring the sale of efficient showerheads and California Code regarding high efficiency toilets, AB 715 (Health and Safety Code section 17921.4), that requires only high-efficiency toilets and urinals (HETs and HEUs) to be sold or installed after January 1, 2014.
3. Best Management Practices
    a. The active conservation programs aimed at retrofit of inefficient fixtures (BMPs 1, 2, 9 and 14), those aimed at improving outdoor water use efficiency in residential (BMP 1) and large landscape settings (BMP 5), those aimed at improving water use efficiency in Commercial, Industrial and Institutional (CII) settings (BMP 9), and those aimed at reducing system leaks (BMP 3). The impact of high-efficiency clothes washer retrofits (BMP 6) is included among future actions because this BMP was not being aggressively implemented during the baseline period, and uncertainty remains about when a waiver of federal pre-emption might be obtained for the state's efficient clothes washer standard. The remaining BMPs have non-quantifiable benefits.
4. New technologies already having an impact
    a. Two new conservation measures that are already being implemented under the auspices of CII programs: (1) pre-rinse spray valves; (2) steam sterilizers.

Table 5 shows potential savings from code and regulation-driven retrofits, and from conversion of unmetered accounts to metered accounts. Codes bring about increased efficiency in two ways. They ensure that fixtures and appliances in new construction are more efficient. Also, they ensure that when old fixtures and appliances in existing construction turn over, they are replaced by the more efficient kind.

Table 6 shows potential savings that result from BMP implementation (except for BMP 6) up to a point that is regionally cost effective. A measure is regionally cost-effective if the cost per unit of savings ($/AF) is less than or equal to the cost of the most expensive supply measure currently in use regionally. The impact of regionally cost-effective retrofits of pre-rinse spray valves, commercial dishwashers, steam sterilizers, CII process water, and efficient residential dishwashers are also included in these estimates. The regionally cost-effective estimates of savings potential come from the *Comprehensive Evaluation*, which provides a complete description of the underlying data, methodology, and models used to develop these estimates.

Four important caveats apply to these estimates. First, savings estimated to result from the cost-effective implementation of BMPs (Table 6) assume both signatories and non-signatories of the CUWCC Memorandum of Understanding implement all BMPs and other measures deemed regionally cost-effective (the row entitled "total savings GPCD @ 100 percent compliance). This level of implementation exceeds what water suppliers have achieved historically through the MOU process. On the other hand, BMP implementation data filed by MOU signatories is also of uneven quality and does not capture conservation by non-signatories. Relying solely on these implementation reports will likely understate achieved conservation. Keeping in mind these data problems, and that only approximately 60 percent of California's population was being served by retail water supplier MOU signatories as of 2006, perhaps only half of the 100 percent compliance savings is likely to be realized if current trends continue. On the other hand, passage of AB 1420 in 2007 (Water Code, section 10631.5) is widely expected to spur water suppliers to increase their efforts to

implement BMPs. It is assumed that enforcement of AB 1420 will result in 80 percent compliance with cost-effective conservation measures. Table 5 shows that efficiency codes can be expected to lower statewide water use by 4 percent and regionally cost-effective programs at 80 percent compliance achieve an additional 6 percent (Table 6) for a total statewide reduction of 10 percent.

Second, estimation of baseline consumption itself involves several uncertainties, which if properly accounted for, could further lower the above reported percent savings estimates. Because water production data for any given year includes missing and inconsistent elements, several years of production data (1995 through 2005) were pooled to derive more stable average estimates of baseline consumption. Production data from 2005 (the most recent year for which statewide water production data are available) was used as the base year for estimating remaining savings potential through 2015 and 2020.

Third, code-driven savings associated with toilets and showerheads are computed using unverified saturation estimates. Small errors in baseline saturation estimates can have significant impacts.

Finally, the regional marginal water supply cost estimates upon which the cost-effectiveness analyses are based are somewhat dated and may not capture changes in the State's water supply situation, particularly as it pertains to the Delta, that have driven up water supply costs in recent years. Economic incentives to invest locally in water use efficiency measures may now be greater than assumed for these analyses.

The savings estimates in this chapter reflect two different approaches to cost-effectiveness. First, certain BMPs are assumed to be implemented to the level of local cost-effectiveness, or 80 percent of the level of local cost-effectiveness.

Second, many conservation measures will be implemented without any local calculation of cost-effectiveness. This implementation is prompted by state or federal law, institutional agreement, and local practice, and there are many examples. Federal and state fixture efficiency standards ensure any replacement toilets, showerhead, or faucets will be highly efficient. California law requires local governments to enact landscape water conservation ordinances that are at least as effective as the state's model ordinance. Hundreds of water suppliers have agreed to implement "non-quantifiable BMPs" such as information and education programs. Finally, local governments routinely prohibit wasteful practices such as gutter flooding, regardless of a customer's cost to prevent such runoff. As described in Chapter 3, grant funding is a means of reducing costs of measures that are cost-effective from a statewide perspective such that the measures become locally cost-effective. Grant funding is not assumed for the estimates in Table 6.

The analyses of current actions yield several important conclusions. Efficiency codes still have considerable potential to further reduce water consumption in California on a per capita basis, even in hydrologic regions with already less than average use. Also, implementation of BMPs to a level that is regionally cost effective can almost double the impact of efficiency codes in certain hydrologic regions, such as San Francisco Bay and South Coast that account for a large share of the state's population, thus also water use.

On the other hand, simply following a BMP strategy, which relies on voluntary implementation of locally cost-effective conservation measures, would fail to ensure implementation of some very reasonable basic conservation measures in many other hydrologic regions. For example, the Sacramento River, San Joaquin River, North and South Lahontan, and Tulare Lake regions are also home to a significant share of California's population, but urban water supply costs remain low relative to other parts of the state. Different mechanisms will need to be devised to incentivize water suppliers in these regions

to aggressively pursue conservation. The AB 1420 requirement for water suppliers to implement conservation measures in order to receive state grant or loan funds already attempts to do this; it will help, but it will not provide sufficient spur for every region to reach its 2020 target.

Table 5. 2020 Efficiency Code Water Savings – GPCD

	Hydrologic Number										
	1	2	3	4	5	6	7	8	9	10	
HR Name ->	North Coast	SF Bay	Cent. Coast	South Coast	Sac. River	SJ	Tulare Lake	North Lahontan	South Lahontan	CO River*	State-wide
Residential - Indoor	5	5	5	4	8	7	6	5	5	5	5
Residential - Outdoor	0	0	0	0	10	9	5	0	0	1	2
CII	1	2	1	1	1	1	1	2	1	1	1
Total savings GPCD	7	7	7	6	19	17	12	7	6	6	8
Baseline GPCD	165	157	154	180	253	248	285	243	237	346	192
Percent of Baseline GPCD	4%	5%	4%	3%	7%	7%	4%	3%	3%	2%	4%
2020 Population (Million)	0.8	7.0	1.7	22.5	3.6	2.8	3.0	0.1	1.4	1.2	44.1

* Savings estimates for CII and landscape measures in HR 10 may have low reliability due to faulty estimates of landscape applied water

Table 6. 2020 Water Savings from Cost-Effective Measures – GPCD

	Hydrologic Region Number										
	1	2	3	4	5	6	7	8	9	10	
HR Name ->	**North Coast**	**SF Bay**	**Cent. Coast**	**South Coast**	**Sac. River**	**San Joaquin**	**Tulare Lake**	**North Lahontan**	**South Lahontan**	**CO River***	**State-wide**
Residential - Indoor	1	1	0	2	0	0	0	0	0	0	**1**
Large landscape (BMP 5)	1	4	2	4	0	3	1	4	7	40	**4**
CII	2	7	5	7	0	1	1	3	2	4	**5**
Non-Revenue Water	0	3	2	4	0	0	0	0	0	0	**2**
Total savings GPCD @ 100% compliance	4	15	9	17	0	3	2	7	9	44	**13**
Total savings GPCD @ 80% compliance	3	12	8	13	0	3	2	6	8	36	**11**
Baseline GPCD	165	157	154	180	253	248	285	243	237	346	**192**
Percent of Baseline GPCD @ 80% compliance	2%	8%	5%	7%	0%	1%	1%	2%	3%	10%	**6%**
2020 Population (Million)	0.8	7.0	1.7	22.5	3.6	2.8	3.0	0.1	1.4	1.2	**44.1**

* Savings estimates for CII and landscape measures in HR 10 may have low reliability due to faulty estimates of landscape applied water.

Potential Conservation Savings from New Actions (Additional Measures)

Current actions alone will not achieve the state's 20 percent reduction goal by 2020. However, the goal can be achieved through a combination of current and new actions. For this *20x2020 Plan*, many potential measures were considered. The following categories of measures are recommended for the initial focus of state action and support based on potential water savings and feasibility of implementation:

- Efficient clothes washers
- Residential weather-based irrigation controllers
- Grant funding
- Accelerated coverage goals for some BMPs
- Aggressive reduction in non-revenue water beyond BMP 3
- Landscape practices
- New technologies
- Recycled water

Table 7 combines all the savings estimates developed for the *20x2020 Plan*. Efficient clothes washers, residential weather-based irrigation controllers and grant funding are considered as "Basic Measures" in Table 7, along with efficiency code changes and cost effective water conservation measures; many water suppliers are already implementing such programs and are expected to continue to support those activities. Accelerated coverage goals, reduction in non-revenue water, landscape practices, new technologies and recycled water are considered "Additional Measures" in Table 7.

Efficient clothes washers

The California Energy Commission (CEC) adopted water efficiency standards for clothes washers in 2004. It is a tiered standard based on the "water factor" of the clothes washer, which is the number of gallons per cubic foot of drum capacity. Conventional washers have a water factor of about 13.3. In 2007, the maximum water factor to be allowed was 8.5. By 2010 the standard would have been further reduced to 6.0. Federal approval is still required, as the Federal Energy Policy Act of 1992 allows only the federal government to regulate residential clothes washers, pre-empting state standards, unless a state waiver is approved. California has requested such a waiver and continues to press for federal approval.

Several MOU signatories since 2005 have begun to promote efficient clothes washers through rebate programs (BMP 6), and market forces are also transforming the appliances retailers are offering to consumers. The impact of all these factors remains uncertain and difficult to model. Savings were estimated in the following way: First, savings were estimated assuming that the above mentioned efficiency code had gone into effect as intended; but then this estimate was halved under the assumption that active rebate programs and natural turnover will produce half the savings efficiency codes would have realized by 2020. This "half" estimate roughly works out to two to three GPCD.

Residential weather-based irrigation controllers

Studies have shown that landscape irrigation is frequently inefficient and, in some cases, a high percentage of residential landscape irrigation is wasted as a result of over-watering, poor design and poor maintenance. The analysis assumed that the top quarter of single-family homes in terms of landscape area can be cost-effectively fitted with weather-

based irrigation controllers that take much of the "guess-work" out of scheduling and determining the needed quantities of water. Many suppliers are experimenting with this measure even though it is not specifically included in any BMP. Savings from this measure are conservatively estimated to be 3 to 4 GPCD by 2020.

Grant funding

Estimates of likely additional savings from grant funding to promote water conservation were included in the analysis, with input from the *Comprehensive Evaluation*. The scenario assumes that $30 million per year would be available between 2005 and 2014, and $7.5 million per year thereafter until 2020. Grant funding savings estimates are based on the assumption in the *Water Use Efficiency Comprehensive Evaluation* that grant funding will induce the implementation of measures that are cost-effective from a statewide perspective but not from a local perspective, and will reimburse the cost increment between local and statewide cost-effectiveness.

Accelerated coverage goals for some BMPs

Instead of implementing BMPs within the existing voluntary framework, all water suppliers or others could be required to implement certain basic conservation measures, regardless of cost-effectiveness, to meet a maximum coverage goal. For example, all residential or commercial buildings could be required to have efficient toilets, urinals, and showerheads by 2020. This would force fixture replacement even in regions where the avoided cost of water is still perceived to be low. This would generate additional savings since active programs and natural turnover are not expected to raise the saturation of these devices to 100 percent by 2020.

For the purpose of quantification, the following measures and corresponding 2020 coverage goals have been included in the list of affected BMPs:

- Saturation of inefficient toilets and urinals in residential and commercial buildings to drop below 5 percent in each hydrologic region.
- Saturation of inefficient showerheads to drop below 5 percent in each region (this is expected to happen due to natural turnover anyway, so including this requirement does not contribute incremental savings, but was included to ensure that such a basic item automatically becomes subject to a field verification program).
- Efficient clothes washer saturation to reach a level it would have in the presence of the State's efficiency code (roughly 85 percent).
- All unmetered urban connections to be converted to metered connections before 2020.
- Non-revenue water is to be brought down to no more than 10 percent of total production where at present it is greater than 10 percent—BMP 3 would be mandatory.

Aggressive reduction in non-revenue water beyond BMP 3

There is significant opportunity for water use reductions related to leak detection and repair in water delivery systems. The new water audit structure promoted by the American Water Works Association and being discussed by the CUWCC includes a more rigorous standard than BMP 3. Most utilities currently use a percentage of production to evaluate losses, but expression of losses as gallons per connection provides a measure that is easier to relate to usage.

BMP 3, which aims to reduce non-revenue water to 10 percent of production, has already been analyzed in previous sections. However, these goals can be exceeded, as other

countries have demonstrated. For example, in the United Kingdom the target for unaccounted water is 30 gallons per connection per day. Many communities in the United Kingdom and Europe are at or below 40 gallons per connection per day. If a similar goal were to be pursued in California, water savings from a low of 2 GPCD for Central Coast to a high of 21 GPCD for the Colorado River regions could be achieved.

Better information on reduction in non-revenue water will become available as more water suppliers use the new AWWA water audit structure.

Landscape practices

There are many actions that may be taken to improve landscape water use efficiency. Professional landscape and irrigation design, proper installation, careful maintenance and management of the site, and the selection of high quality irrigation equipment are some of the factors that can influence the efficient use of water in the landscape. Dedicated landscape meters, establishment of landscape water budgets and associated budget-based rate structures, the performance of irrigation audits, public information programs, technical training for landscape professionals, the use of alternative sources of water in the landscape, and a multitude of rebate programs to support conversion from lawns to water-smart plants and irrigation equipment are examples of actions that can be taken along with or in place of irrigation restrictions.

It is essential for state government to lead a comprehensive suite of programs to improve landscape water use efficiency in California in order to achieve the Governor's water use efficiency goal. Such an effort would yield many other benefits such as improved water quality, reduced energy use and corresponding greenhouse gas emissions, more stormwater capture, and less production of green waste.

For the purposes of this *20x2020 Plan*, landscape water savings are based upon estimates related to irrigation restrictions. Irrigation restrictions can be a very useful tool for reducing water use, especially in the high demand summer months and in the warmer regions of the state. In many areas, water use doubles when customers start to irrigate their landscapes. Many utilities use irrigation restrictions during a prolonged drought or when water reservoirs run low. In practice, restricting irrigation to one day per week would probably require some major changes. In most parts of the state, lawns can do well with twice weekly irrigation, but not as well with once weekly irrigation.

While irrigation restrictions have been used to estimate savings, local water suppliers have many program options for reducing landscape irrigation and conserving water. Irrigation restrictions may result in some landscape maintenance challenges and customer complaints, making implementation more difficult. In some locations, irrigation restrictions have been combined with subsidies for turf removal. This results in some customers reducing irrigation by changing landscape choices from turfgrass to native or other plant species adapted to the California climate of winter rains and a summer dry season. Such "cash for grass" programs have been implemented successfully in California and other states.

Ideally, a water supplier will be able to use a variety of methods—including customer education, incentives, and enforcement—to achieve landscape water savings, rather than a single inflexible tool such as an irrigation restriction. The goal is reasonable use by each customer, and landscapes that are designed, installed, and maintained to be water-efficient.

Using twice weekly watering as a surrogate for a range of landscape conservation programs that could be implemented at the local level, savings are estimated to be between

11 and 40 GPCD depending on the region. If irrigation were restricted to once per week, then the range would be 20 to 73 GPCD.

New technologies

CUWCC screened several new conservation technologies between 2004 and 2007. Savings were estimated for the following:

- On-premise laundries (e.g., hotels, hospitals, universities, prisons, etc.)
- Building cooling systems
- Efficient residential dishwashers for new construction
- Vehicle wash systems
- Residential hot water distribution systems for new construction
- Commercial ice machines
- Waterless urinals

Finally, there are additional technologies, each with small individual impacts that can generate some additional savings. For example, there are savings from replacing inefficient urinals with high-efficiency urinals (HEUs using 0.5 gallons per flush). But if waterless urinals are used as replacements instead of HEUs, savings would roughly increase by an additional 0.2 GPCD by 2020. Savings from other devices, such as pressurized water brooms and dry vacuum pumps, could contribute roughly 0.1 GPCD. Total impact from all these myriad conservation measures can thus be expected to roughly equal 2 GPCD, which is what was used in the final accounting, presented in Table 7.

Recycled water

Data from DWR and SWRCB were used to quantify the amount of recycled water likely to be available in each region for offsetting urban use by 2020. The recently-adopted SWRCB water recycling policy is anticipated to increase the use of recycled water throughout the state. Since only potable water is considered in the GPCD calculations in this *20x2020 Plan*, increasing the use of recycled water will result in lower per capita use when it replaces an otherwise potable demand. Such an approach, if incorporated into statute, would help encourage greater use of recycled water.

Putting it all together

Table 7 combines all the savings estimates developed for this *20x2020 Plan*, including savings from current actions (Basic Measures) as well as savings from future actions (Additional Measures). Basic Measures are those that are already being implemented by water suppliers and could be adopted by those that have not aggressively pursued conservation until now. Basic Measures include the minimum activities expected within each region. Additional Measures are those that can be pursued to meet the regional targets when the Basic Measures alone do not meet the regional targets. The savings estimates from the first group, Basic Measures, were used to derive the regional targets described in the next section.

In the development of Table 7 considerable care was taken to prevent double-counting of savings. For example, savings estimates from code and from cost-effective implementation of BMPs reflect separate increments of savings. Grant-funded savings, while obtained from implementation of existing BMPs, count only the savings that would not already be obtained through codes and implementation of cost-effective measures. Savings attributed to irrigation restrictions only reflect the savings from the single-family residential

sector; large-landscape programs are included separately. Savings from conservation rate structures and the Model Landscape Ordinance are not included in Table 7 to avoid any possibility of double-counting. The only exception is savings attributable to smart irrigation controllers, which is included.

An important conclusion from Table 7 is that a 20 percent reduction in per capita use is achievable. By pursuing more widespread implementation of existing measures, and implementing well-documented new measures, California can reduce its per capita use rate 20 percent by 2020.

Table 7. Summary of 2020 Savings from All Evaluated Measures – GPCD

	Hydrologic Region Number										
	1	2	3	4	5	6	7	8	9	10	
HR Name ->	North Coast	SF Bay	Cent. Coast	South Coast	Sac. River	San Joaquin	Tulare Lake	North Lahontan	South Lahontan	CO River*	State-wide
Savings From Basic Measures											
Code	7	7	7	6	19	17	12	7	6	6	8
80% of local CE	3	12	8	13	0	3	2	6	8	36	11
Grant funded	11	1	12	1	3	8	13	15	24	8	4
Efficient clothes washers	3	2	3	2	3	3	3	3	3	3	3
Residential ET controllers	4	3	3	3	3	3	3	4	3	3	3
TOTAL (basic measures)	**28**	**26**	**32**	**24**	**28**	**33**	**32**	**36**	**43**	**56**	**28**
Savings From Additional Measures											
Accelerated coverage goals	11	8	10	7	17	13	14	14	17	17	9
Recycling	4	7	1	4	3		1			6	3
Water loss control (40 g/conn./day)	3	2	2	4	11	11	15	11	10	21	6
Irrigation restrictions (2 day/week)	11	11	11	13	23	22	25	11	29	40	16
Miscellaneous PBMPs	2	2	2	2	2	2	2	2	2	2	2
TOTAL (additional measures)	**31**	**30**	**26**	**29**	**56**	**48**	**57**	**38**	**58**	**86**	**37**

* Savings estimates for CII and landscape measures in HR 10 may have low reliability due to faulty estimates of landscape applied water.

Statewide Targets

The development of per capita use targets was the most difficult task in this *20x2020 Plan*. This effort yielded insights that may help the Legislature as it works to incorporate the 20 percent reduction goal into statute. These insights are discussed more fully in Chapter 3.

The variations within the data provided, the lack of data from many water suppliers, and the limited scope of this planning effort meant that an analysis of GPCD on an agency-by-agency basis was not possible. However, there was enough information on a regional (hydrologic region) basis to evaluate trends and provide initial target methodologies. The aim is to use these regional targets as an example of how targets might vary by region according to base year water use, past conservation practices, and current per capita use. Any subsequent effort to establish targets for individual suppliers would need to incorporate additional information on factors such as past conservation, customer base, and climate.

The conservation targets for the interim year (2015) are not a linear interpolation between the baseline and the final goal. An interim conservation target, equivalent to 50 percent of the expected savings, would allow time for water suppliers to incorporate the *20x2020 Plan* goals into their conservation program activities. A conservation target of a statewide 20 percent reduction from the baseline was defined for year 2020, by which time all suppliers should be able to implement the conservation programs necessary to achieve the statewide 20 percent reduction goal.

The statewide baseline water use value, expressed in gallons per capita per day (GPCD), is **192 GPCD**. The corresponding statewide targets are:

- I**nterim Statewide Target** = 192 GPCD (Statewide Baseline) minus 10 percent = **173 GPCD**
- **Final Statewide Target** = 192 GPCD (Statewide Baseline) minus 20 percent = **154 GPCD.**

Based on a 2005 population of about 37 million and per capita use of 192 GPCD, total urban use would be about 7.9 MAF per year, and the annual statewide savings would be about 1.59 MAF. According to the *California Water Plan Update 2005*, total urban water use for the most recent normal hydrologic year (2000) was 8.9 MAF. A 20 percent reduction in this level of use would be 1.78 MAF. These amounts are the projected 2020 savings attributable to the 2005 population.

As the population grows between 2005 and 2020, per capita use associated with new growth is expected to be lower than baseline per capita use, even without implementation of this *20x2020 Plan*, because new dwellings will have the latest in efficient fixtures, appliances, and landscapes. Implementation of this plan will further reduce the per capita use of new residents due to measures such as public information and outreach, and conservation pricing. This increment of savings has not been separately estimated, but it is likely the actual 2020 savings would be more than 1.59-1.78 MAF per year.

Figure 6 below summarizes the regional targets. Detailed step-by-step explanation and equation of the methodology used to determine these targets are included in Appendix B.

Table 8. Regional Urban Water Use Targets

	Hydrologic Region Number									
	1	2	3	4	5	6	7	8	9	10
Baseline (1995-2005)	165	157	154	180	253	248	285	243	237	346
Interim Targets (2015)	151	144	139	165	215	211	237	208	204	278
Targets (2020)	137	131	123	149	176	174	188	173	170	211

Figure 6. Regional Urban Water Use Targets

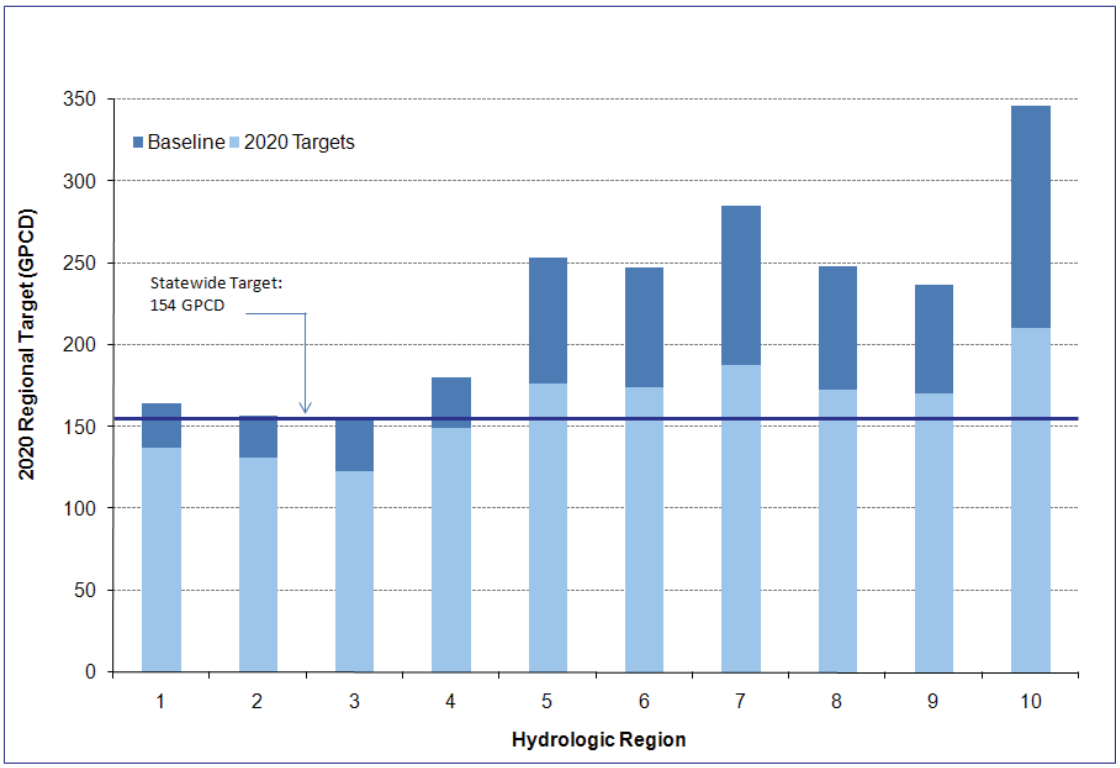


Table 9 shows each region's progress in meeting planning targets with the implementation of basic measures and, if necessary, implementation of additional measures. The statewide column in this table shows the result in 2020. By this time, population growth will have occurred in each region, with a larger share of population growth occurring in regions with higher per capita use. Thus, the no-action baseline would rise from 192 GPCD currently to 199 GPCD in 2020.

By 2020, through prompt aggressive action and sustained effort, California can reduce its per capita use by more than 20 percent. Only one region would be unable to meet its target after implementing the measures described in this plan, the Tulare Lake region. Even though one region is projected to fall short of its target, that shortage will likely be offset by savings in other regions.

Table 9. Achievement of Targets by Region, 2020

	Hydrologic Region Number										Statewide 2020 Result
	1	2	3	4	5	6	7	8	9	10	
Baseline (1995-2005)	165	157	154	180	253	248	285	243	237	346	**199**
Targets (2020)	137	131	123	149	176	174	188	173	170	211	**154**
Desired savings	28	26	31	31	77	74	97	70	67	135	**45**
Total savings (basic measures)	28	26	32	24	28	33	32	36	43	56	**28**
2020 Savings shortfall after implementing basic measures	-	-	-	7	49	41	65	34	24	79	**17**
Total savings available (additional measures)	31	30	26	29	56	48	57	38	58	86	**37**
2020 Shortfall still remaining after implementing additional measures	-	-	-	-	-	-	8	-	-	-	-

Chapter 3. Recommendations

California can achieve at least a 20 percent reduction in per capita water use by 2020. The analyses described in Chapter 2, as summarized in Table 7, show that basic conservation measures including implementation of BMPs, codes, and ordinances will produce significant savings, and in some regions of the state, most of the water savings sought by the 20 percent statewide target. Nevertheless, these actions will be insufficient to achieve the target for most regions. To achieve the Governor's goal, some new actions will be needed. Legislation or additional secure funding will be needed to ensure that these measures are implemented. A long-term statewide strategic approach with conservation targets mandated by statute and an array of new measures available to water suppliers and regions is needed to achieve the goal.

California can achieve this ambitious goal only if state agencies, regions, and local water suppliers take prompt and aggressive action. Recommended actions to contribute toward a statewide strategic approach (as described in more detail in this chapter) fall into the following categories:

1. Establish a foundation for a statewide Conservation Strategy.
    a. Establish targets and goals in statute.
    b. Establish a state agency leadership and coordination framework.
    c. Provide a forum for stakeholder advice on refinement and implementation.
    d. Mandate uniform data collection and establish a statewide database.
    e. Maintain existing programs and institutions.
2. Reduce landscape irrigation demand.
    a. Require water-efficient landscapes at state-owned properties.
    b. Support the implementation and enforcement of landscape design and irrigation programs and the development of new landscape programs.
    c. Mandate the landscape irrigation BMP.
3. Reduce waste.
    a. Accelerate installation of water meters.
    b. Establish a state standard for water meter accuracy.
    c. Revise the water loss BMP to incorporate improved methodologies and accelerate coverage goals.
4. Reinforce efficiency codes and related BMPs.
    a. Obtain authorization for state standards for high efficiency clothes washers.
    b. Support landscape irrigation equipment standards.
    c. Accelerate replacement of inefficient showerheads, toilets and urinals.
    d. Accelerate adoption of proven water saving technologies in new businesses.
5. Provide financial incentives.
    a. Encourage or mandate conservation water pricing.
    b. Provide grants, loans, and rebates to wholesale and retail water suppliers and customers.
    c. Establish a public goods charge for water.
    d. Fund the installation of water meters.

6. Implement a statewide conservation public information and outreach campaign.
7. Provide new or exercise existing enforcement mechanisms to facilitate water conservation.
    a. Require implementation of water conservation as a condition to receive state financial assistance.
    b. Take enforcement actions to prevent waste and unreasonable use of water.
    c. Provide additional enforcement tools for water suppliers.
8. Investigate potential flexible implementation measures.
    a. Investigate requiring conservation offsets for water demand generated by new development.
    b. Investigate establishment of a cap-and-trade regime.
9. Increase the use of recycled water and non-traditional sources of water.

Establish a foundation for a statewide conservation strategy

Establish targets and goals in statute

The 20 percent goal for reducing water consumption by 2020 is achievable. However, without additional work to establish local targets and a firm requirement to achieve the savings, track progress, and define consequences for suppliers or regions that fail to meet targets, California is not likely to achieve the goal set by the Governor.

The Agency Team's efforts to develop a planning approach to target-setting, the public feedback received on this draft approach, and the public discussions regarding AB 2175 (Laird, 2008), which would have established conservation targets, all provide valuable insights into target-setting legislation. The following criteria should guide the structure of legislation to place the Governor's goal into statute:

- All water suppliers should be treated consistently, and targets should be equitable.
- The approach to target-setting should be kept as simple as possible.
- The target-setting approach should take into account past conservation efforts by suppliers or regions.
- Differences in climate should be taken into account.
- The law should allow flexibility in implementation to the greatest extent possible.
- The law should accommodate, encourage and support emerging regional water management entities and allow regional compliance.
- Separate approaches are necessary for residential water use—as opposed to commercial, industrial and institutional water use—to accommodate unique local conditions.
- The legislation should allow and encourage implementation of the most cost-effective measures through mechanisms such as regional compliance that would permit an incremental step toward a cap-and-trade approach.
- Some regions and water suppliers will need to achieve more conservation than others, due to varying levels of past conservation implementation.
- The legislation should establish deadlines for compliance, as well as consequences for failure to comply.

In November 2009 California placed the 20x2020 goal into statute with the enactment of SBX7 7 (Steinberg), part of an historic package of water reforms.

Establish a state agency leadership and coordination framework

Several state agencies have responsibility or authority over different aspects of water management. Better communication and coordination among these agencies, and designation of a lead agency will be important aspects of implementing the *20x2020 Plan* and assuring its success. The lead agency should coordinate and organize a framework for agency implementation efforts; use combined agency data sources to measure progress toward meeting the Governor's goal; seek the advice of a stakeholder panel regarding program refinement and implementation; coordinate assistance programs to help regions and communities achieve targeted savings; communicate implementation success to the public and to stakeholders; alert water suppliers and regions that are not meeting targets; and recommend additional actions that may be needed to meet the goal.

The Agency Team evaluated each agency's ability to lead a specific task under this *20x2020 Plan*, and also identified the expected outcome of such tasks. Some of the tasks are already being performed by certain agencies. It is not anticipated that the existing authorities of different involved agencies will be consolidated into one agency to implement this *20x2020 Plan*. However, it probably will be necessary to appoint one agency with an overall lead and coordination role.

In conjunction with this lead agency, each involved state agency will be responsible for implementing and tracking components of the *20x2020 Plan* that fall within the purview of its authority. For example, the CPUC has regulatory oversight of investor-owned utilities; the SWRCB enforces water rights and constitutional prohibitions on waste and unreasonable use; the CEC has regulatory authority over water use efficiency standards for appliance and equipment; the DPH has authority for enforcement of the Safe Drinking Water Act, which regulates potable water treatment and delivery by all public water systems; and DWR has planning and conservation monitoring authority, as well as influence over the disbursement of grants and loans. Closer state interagency coordination will be needed to facilitate data management, program implementation, and statute enforcement.

The lead agency with the cooperation of participating agencies should:

- Coordinate and organize agency implementation efforts
- Use combined agency data sources to measure progress toward meeting the Governor's goal
- Communicate implementation success to the public and to stakeholders
- Encourage water suppliers to expand and strengthen implementation of water conservation programs and recycled water programs
- Expand state technical assistance programs to help suppliers and regions implement voluntary or elective local programs
- Alert water suppliers and regions that are not meeting targets
- Finalize a measurement and evaluation plan (performance metrics) to assess whether 2015 and 2020 regional targets have been met
- Recommend additional actions that may be needed to meet the goal.

DWR should serve as the lead agency. DWR is currently responsible for updating the California Water Plan, disbursing grants for integrated regional water management, promoting water conservation, and reviewing urban water management plans.

In addition, there is a need for closer coordination with federal agencies, the CUWCC, IRWM Planning Groups and water suppliers, all of whom will play a role in the successful implementation of the *20x2020 Plan*. Where membership organizations such as the CUWCC

provide technical assistance or other program support, these efforts should receive financial support. Table 10 shows potential agency roles for the implementation.

Provide a forum for stakeholder advice on refinement and implementation

One valuable recommendation made during public review of the draft of this plan was to establish a stakeholder advisory group. The Agency Team intends to implement this recommendation by establishing a group that can meet periodically and offer guidance on refinement and implementation of this plan.

Table 10. Agency Roles for Key Implementation Activities

Program Task	Key Agencies	Activities
20x2020 Administration	DWR	Management, coordination, analysis, reporting
Data Management	DWR, SWRCB, DPH, CPUC, CEC, CUWCC	Coordinate with other agencies to ascertain overall data requirements. Design and maintain an electronic data submission system
Design regional strategies for achieving regional targets	DWR, SWRCB, Regional water management entities	Assess baseline GPCD by supplier, conservation programs undertaken to date, and what tools will take the region to its target GPCD
Identify new legislation and regulations required	DWR, SWRCB, CUWCC	Develop proposed text for each legislation and regulation
Appropriate grant funding	DWR, SWRCB	Interact with legislature to generate a reliable revenue stream for promoting water conservation
Landscape water conservation	DWR, SWRCB, CEC, CUWCC	Establish a range of new programs to promote landscape water conservation
Outreach	DWR, SWRCB, CUWCC	Inform water suppliers about the Program's requirements. Obtain feedback from stakeholders
Public education	DWR, CUWCC	Design and implement a general public education campaign emphasizing water conservation
Metering	DWR, SWRCB, DPH, CPUC	Develop and implement programs to expedite metering
Appliance efficiency standards	CEC, DWR	Promote higher appliance efficiency standards.
Other potable water offsets	DWR, SWRCB, DPH	Promote the use of recycled water, storm-water capture, and gray-water
Coordinate with AB 32 Scoping Plan implementation	ARB, DWR, SWRCB, CEC, CPUC	Ensure that conservation implementation is mindful of GHG reductions to comply with AB 32
Improve coordination between water and land use agencies	DWR, SWRCB, ARB	Work with water suppliers and local governments to coordinate actions; recommend improvements.

Mandate uniform data collection and establish a statewide database

California currently lacks a consistent method of collecting water data from local water suppliers. Water data is collected by different state agencies based on their individual program needs, which leads to overlaps and gaps between the databases. This has been an

obstacle in the data analysis and per capita water use calculations during the development of the baseline and target numbers. It is recommended that California mandate submittal of water use and conservation data. Submittal of the data should be coordinated among state agencies to reduce reporting burdens on local water suppliers.

A uniform streamlined data collection process would have multiple advantages: the reporting burden on local agencies would be reduced, data reviews related to state action such as grant disbursement would be expedited, state agencies would have more timely access to water use data, the quality and accuracy of the data would improve, better and more complete data would facilitate better water management; and data management costs would be reduced over time.

At a minimum, suppliers should disaggregate and report usage according to the following sectors:

- Single family residential
- Multi-family residential
- Commercial
- Institutional
- Industrial
- Dedicated irrigation
- System water losses
- Recycled water

As shown in Table 10, data on water supply and demand are managed by five state agencies, as well as CUWCC. Much of the data collected are unique to the needs of each agency or CUWCC, and the reporters of data (mainly water suppliers and water right holders) do not submit data to all agencies or CUWCC. Data submittal to some state agencies such as DWR is voluntary, while submittal to other state agencies such as DPH is mandated by law. Where there is overlap in data needs, common definitions and formats for submittal of data should be established. There is a need to incorporate the data that is collected into electronic databases to make the data available for sharing, analysis, and the administration of the respective programs of the agencies and CUWCC. A centralized database or data entry web portal for the state agencies with data entry forms customized to meet the needs of individual agencies and programs could facilitate data sharing and allow data common to more than one agency to be entered only once by a data reporter. While CUWCC is not a state agency, coordination with CUWCC would assist in common efforts to collect data. The following is recommended:

- Initiate coordination and standardization of data collection
- Evaluate the feasibility of creating a centralized database or portal for water supply and demand data.
- Where there are gaps in the data currently being collected, exercise existing regulatory authority or seek legislation to require the submittal of the needed data.
- Establish cost sharing and funding sources to facilitate development and maintenance of data management systems.

Pursuant to Assembly Bill No. 1404 enacted in 2007, the SWRCB—in collaboration with DWR, DPH, and CALFED—is preparing a report to be submitted to the Legislature in 2009 to evaluate the feasibility, estimated costs, and potential means of financing coordinated water measurement. This report, when it becomes available, may be valuable in fulfilling the recommendations above.

However, this type of costly endeavor is not essential to begin the process of improving data collection and management. Implementation of an improved data collection

and management process can occur incrementally. For example, DWR should automate the submittal of summary information from mandated Urban Water Management Plans and structure data submittal to be consistent with its voluntary Public Water System Survey. DWR could also provide guidance on standardized methods of GPCD calculation. This would provide more timely information from water management plans, encourage submittal of annual water use information, improve the consistency of information received, and expedite DWR grant application review under AB 1420.

Other simple data management tools are available. An example of such tool is the GPCD Calculator that was recently developed for the New Mexico Office of the state Engineer. This calculator introduces a consistent methodology that could standardize data collection and GPCD calculations. Water suppliers can use the calculator to develop or refine service area population estimates, calculate per capita use for various water use sectors, and calculate total system per capita use.

Maintain existing programs and institutions

As new programs, policies, and laws are established to support the achievement of a 20 percent reduction in per capita water use, existing effective programs should continue. Examples of current programs include CEC's appliance efficiency standard setting, DWR's California Irrigation Management Information System (CIMIS), and the Model Water Efficient Landscape Ordinance. Effective institutions such as the CUWCC will also need to continue and expand their role in water use efficiency, with necessary financial support.

Reduce landscape irrigation demand

Support the implementation and enforcement of landscape design and irrigation programs and the development of new landscape efficiency programs

Landscape water use has the greatest potential for reduction of any urban water use sector. According to the *California Water Plan Update 2005*, approximately one-third of all urban water use is dedicated to landscape irrigation. Other sources put the number as high as 50 percent. The recently updated Model Water Efficient Landscape Ordinance, when complied with as written, will reduce irrigation by roughly 12 percent relative to the earlier Ordinance. A recent survey of compliance with the original state law requiring local ordinances showed that many local agencies failed to comply with state law or are only partially in compliance. A much more vigorous information and outreach effort and perhaps other enforcement incentives will be needed to ensure that the new ordinance achieves its potential efficiency improvements. In particular, greater communication and coordination between local governments and local water suppliers is urgently needed.

The revised Model Ordinance will help to ensure that new landscapes are designed to be efficient. Certain provisions of the Model Ordinance also encourage greater efficiency in the irrigation of existing landscapes. However, by itself, the model ordinance may do little to transform existing high-water-using landscapes, or persuade Californians to choose the most efficient new landscape designs. Because landscape water conservation offers so much potential for increased efficiency, a vigorous comprehensive program to improve landscape water use efficiency will be essential to ensure that the governor's efficiency goal is met. Programs based on information, education, additional research, and voluntary changes in landscaping can be effective and are preferable. Enforcement of the new Model Ordinance or its equivalent is expected. Additional mandatory restrictions such as two-day-per-week

irrigation have a higher certainty of effectiveness, but would limit options and reduce flexibility.

Voluntary elements of a comprehensive program should include:

- Working with landscape architecture curriculum programs to ensure that future landscape architects have the knowledge to design landscapes and irrigation systems that are efficient, as well as more suited to California's climate and conditions
- Widespread training programs for professional landscape maintenance contractors on water use efficiency, system maintenance and improvements
- Educational websites for consumers on landscape design, plant selection, irrigation system installation and repair
- Widespread adoption of tiered rates structures or other conservation pricing
- Widespread installation of separate landscape meters for better information and water management
- More irrigation auditor training programs, and more irrigation audit programs provided by local water suppliers
- Better communication and coordination between water suppliers and local governments to ensure consistent policies and programs related to water use efficiency
- Expansion of programs to promote the use of graywater and rainwater
- Support for rebate programs that fund improved landscape plantings, reduction of turf areas, upgrades to irrigation systems and controllers
- Use of public building landscapes as local examples of good design, installation, and maintenance
- Strong local and regional programs to encourage efficient new landscapes, replacement of older inefficient landscapes, and better management of high-water-using plantings such as turf
- Additional research and development of landscape conservation practices and methods.

Implementation of such a comprehensive program is ambitious and would require new funding and program development at the state, regional, and local levels. Without the necessary commitment of resources to successfully implement these voluntary programs, landscape efficiency should be improved through mandates:

- Limit the irrigation of most landscapes to two days per week or less, in order to encourage climate-appropriate landscapes, reduce the use of water for irrigation of landscapes, and reduce the potential for over-irrigation of landscapes. This could be accomplished through local ordinances, or as new state legislation.

Mandate the landscape irrigation BMP

The CUWCC provides a cooperative forum for the development and implementation of BMPs. The BMPs are generally considered to be the minimum level of effort for a credible water conservation program, but these practices are voluntary. AB 1420 (Laird, 2007) requires implementation of conservation measures listed in the Water Code as a prerequisite for access to grant funds, but water suppliers that are not applying for state financial assistance are under no requirement to implement such measures.

In the case of landscape water conservation, implementation of appropriate conservation practices yields so many benefits that it is worthwhile to consider making implementation of such measures mandatory. The flexibility of BMP implementation would not easily translate into mandates in the Water Code. A requirement might take the form of

mandated measures that are "at least as effective as" the landscape BMPs. This is the approach the Legislature has taken in requiring landscape ordinances for new construction.

Require water efficient landscapes at all state-owned properties

Establish a strict policy of low water using landscaping and efficient landscape equipment at all state-owned or occupied buildings except for historic landscapes or plantings that provide erosion control. Use state landscapes as examples and teaching tools for locally-appropriate water-efficient design.

Reduce water waste

Water waste can be reduced by improving water measurement through expedited installation of water meters, establishment of a standard for water meter accuracy, and the improvement of detecting and repairing water delivery systems.

Accelerate installation of water meters

At present, state law requires that unmetered connections served by the CVP be converted to metered connections by 2013, and non-CVP unmetered connections be converted by January 1, 2025. This law applies to community water systems serving 3,000 connections or more.

All progress comes from careful measurement. Metering of water deliveries is essential to obtain valid data about consumption and water waste, and to promote water conservation programs. Communities that do not meter water deliveries will likely find it impossible to meet reasonable consumption targets. Accordingly, it is recommended that the state accelerate meter installation and facilitate more widespread metering of small water systems. It is recommended that California enact legislation to move the state metering deadline from 2025 to 2020.

In addition, the following incentives and disincentive should be considered to accelerate metering:

- Provide incentives such as access to additional grant funds for unmetered suppliers that complete metering before the deadline or suppliers that install improved "smart" meter systems, with particular attention to disadvantaged communities
- Require regions with unmetered connections to dedicate a defined percentage of regional water management funds to metering.
- Pursue economic stimulus funds to accelerate metering.
- Support legislation for additional conservation requirements for suppliers that are not fully metered.

Metering is the foundation for measuring consumption as well as detecting waste. The state must continue to push for near universal metering in its urban water systems which account for the majority of potable water use, and also begin to improve the incidence of metering in smaller systems and rural areas.

Establish a state standard for water meter accuracy

Water meters generally meet a high standard of accuracy when they are manufactured and initially calibrated. However, meters tend to become less accurate over time as they are used and parts begin to wear. Most often, worn meters under-register the volume of water delivered. This reduces revenue for the water supplier and provides faulty information to the consumer.

The American Water Works Association has established voluntary standards for meter accuracy. Some other western states such as Colorado, Idaho, and Texas require minimum standards of accuracy for meters in use. California should consider meter accuracy standards written into code at no less than +/- 2.5 percent.

Revise the water loss BMP to incorporate improved methodologies

In every hydrologic region, well above 10 percent of urban potable water produced is unaccounted for (non-revenue water). This may include system leaks, meter errors, emergency use (e.g., fire fighting), and/or unauthorized use. The high proportion of non-revenue water represents a major potential for reduction in urban water demand.

Leak detection methodologies have improved considerably and water suppliers can reduce non-revenue water beyond levels stated in BMP 3. It is recommended that this BMP be revised such that maximum allowable levels of non-revenue water are expressed in terms of gallons per connection per day, instead of the present format where it is expressed in terms of percentage of produced water. A standard of a maximum of 40 gallons per connection per day is achievable by 2020.

Reinforce Efficiency Codes and related BMPs

As technology advances, water and energy use efficiency codes for appliances and equipment should be established or strengthened.

Obtain authorization for state standards for high efficiency clothes washer

Continue the California appeal of the U.S. Department of Energy's denial for a waiver of federal preemption for the State's water efficiency standards for residential clothes washers. Once the waiver is approved, pursue a waiver to regulate commercial coin-operated clothes washers.

Support landscape Irrigation equipment standards

Support CEC approval of landscape irrigation equipment standards and labeling requirements, and follow with a variety of rebate and outreach programs to accelerate upgrades of irrigation equipment installed in the state. AB 1881 (Laird, 2006) requires that the CEC develop efficiency standards for irrigation equipment including controllers, irrigation heads, valves, and sensors. This effort is underway in 2009.

Accelerate replacement of inefficient toilets, showerheads, and urinals

Older toilets do not meet the 1.6 gallon per flush standard. Toilets with a higher flush volume—those designed to use 3.5 gallons and those installed before the advent of efficiency standards—should be replaced with toilets using 1.6 gallons or toilets that meet the new 1.28 gallon standard.

Support legislation to require replacement of inefficient toilets, showerheads, and urinals in both the residential and commercial/industrial sectors. Potential approaches include:

- Replacement of inefficient fixtures upon resale (responsibility on property seller)
- Replacement of inefficient fixtures upon change of water service (responsibility on new water customer)
- Replacement of all inefficient fixtures by 2020 (implemented in early years by rebate programs and information campaigns)

Accelerate adoption of proven water saving technologies in new businesses

Research and evaluation has been completed by the CUWCC and others on a host of water conservation technologies, including:

- On-premise laundries (e.g., hotels, hospitals, universities, prisons, etc.)
- Building cooling systems
- Efficient residential dishwashers for new construction
- Vehicle wash systems
- Residential hot water distribution systems for new construction
- Commercial ice machines

Continue to support CUWCC research initiatives to develop reliable data on water savings from emerging technologies, promote use of these technologies in the marketplace, and support efficiency standards in law as needed.

Provide financial incentives

Financial incentives can be in the form of financial assistance to implement water conservation measures or pricing signals through appropriate water pricing structures.

Encourage or mandate conservation pricing structures

Water rates that encourage conservation can be powerful tools to reduce per capita use. Three effective conservation rate structures include volumetric pricing with uniform or increasing block rates, seasonal pricing, and allocation-based rates. Increasing block rates charge a higher amount per gallon as usage increases, which provide an incentive to keep use low. Seasonal rates charge a higher amount per gallon during the irrigation season when the water supplier's demands are highest, because the peak demands are generally most expensive for the supplier to meet. Allocation-based rates include higher per-gallon costs for usage exceeding base usage established for each customer according to customer characteristics, such as number of occupants or size of irrigated landscape. Flat rates (generally used by suppliers that do not yet meter water use) and rate structures that reduce the per-gallon price for increased usage (declining block rates) are not considered to be conservation pricing structures.

For any of these rate structures, retail water bills typically include two parts: fixed charges and variable charges that are based on the amount of water used by the customer. Water billing that includes a relatively small fixed portion and a significant volumetric component that increases with volume of water use provides a financial incentive to the consumer to reduce water use. The installation of water meters and billing by volume of use can reduce water use by ten percent. While increasing block rates are generally the most effective, there may be little additional cost incentive to the customer compared to uniform rates if the increase in per-gallon cost is small.

State agencies recognize the complexity and sensitivity of rate-setting. Conservation rate structures—defined within the broad parameters described above—should be required in California. Increasing block rates should be encouraged. However, within the range of conservation rate structures described, local suppliers must continue to have authority for rate setting, because they have responsibility to ensure balanced budgets and fiscal solvency.

Good communication can complement a conservation rate structure and help ensure that customers respond to an effective pricing signal. Billings need to communicate to the customer the amount of water used in commonly understood units such as gallons rather than units that are more commonly used by water suppliers such as hundreds of cubic feet

(HCF). Water suppliers should further reinforce the conservation message by providing customers with comparisons of current and past usage, comparisons to usage by similar customers, and information on how billings are affected by increased use. More frequent billing, that is, monthly, also can be more effective.

A provision added by Proposition 218 in November 1996 to the California Constitution, Articles XIII.C and XIII.D, requires that fees related to property ownership must not exceed the proportional cost of the service attributable to a parcel of property. In subsequent court decisions this provision has been applied to water rates. While many water suppliers have successfully implemented tiered water rates and used revenues from water billings to finance water conservation programs, there is still some legal uncertainty whether these rates or uses of revenue could be challenged under the constitutional provisions. The Legislature addressed this issue in Assembly Bill No. 2882 (2008 Statutes) for one form of tiered water pricing called allocation-based pricing. Pricing tiers can include costs for water conservation, securing dry-year water supplies, and procuring water supplies to satisfy increments of water use in excess of basic use allocations for customers (Water Code section 370-373). It is recommended that similar provisions be added to the Water Code to apply to all forms of tiered water pricing.

Provide grants, loans, and rebates to wholesale and retail water agencies

The relative differences in the cost of water delivery continue to be an impediment to rapid water conservation implementation across the state. DWR and the SWRCB should continue to support accelerated conservation BMP implementation and higher levels of water use efficiency through bond funding, especially Proposition 84, state revolving fund loans, and contractual obligations when funds are made available to water agencies for the implementation of water conservation programs. State funding for water management should be devoted to water use efficiency commensurate with the potential of efficiency measures to make water available.

Regional or wholesale water suppliers should continue existing or implement new rebate or financial assistance programs for retail agencies and customers.

Establish a public goods charge to provide stable funding for water management

California does not have adequate funding mechanisms in place to ensure the needed investment in water management improvements over the long term. In recent years, local communities have relied primarily upon state bond funding to augment local investment in water management and efficiency improvements. Bond funds alone do not provide a steady, reliable source of funding and are subject to “boom and bust” cycles that make it difficult to plan long-term or multi-phase projects. Furthermore, bond funding at current levels is insufficient to meet California’s long-term water infrastructure needs.

Local municipal water agencies face challenges raising the capital to invest in efficiency improvements, and substantial investment in efficiency measures may reduce water use, water sales, and revenue for the water supplier. This can provide a substantial disincentive for suppliers to implement aggressive conservation programs.

Energy utilities have overcome these challenges, reflecting the costs for conservation, efficiency and research programs in their rates. Investor-owned energy utilities have accomplished this in two ways. First, in the 1980’s, the CPUC de-coupled the utilities’ revenues from their volumetric energy sales thereby facilitating utility support for efficiency

programs. These efforts have reduced peak capacity needs by more than 12,000 megawatts and continue to save about 40,000 gigawatt hours per year of electricity. Second, in 2000, a state law was passed approving a public goods charge for energy, to be regulated by the CPUC, with the investor-owned energy utilities allowing a charge per unit of energy sold to finance additional energy efficiency measures by the participating utilities.

Similarly, the CPUC has introduced decoupling mechanisms as part of its water conservation program with investor-owned water utilities. As part of implementing a water conservation program with regulated water utilities, the CPUC has piloted conservation rate designs that decouple revenue from the volume of water sold. Under this program, six participating Class A utilities have increasing block tiered rate structures in place, which provide an incentive for customers to reduce water use. Because changes in water use can cause changes in revenue tied to quantity of use, utilities are allowed to track the difference between actual and expected quantity-based revenues. If the net revenues decline due to conservation, a surcharge can be added to water billings to balance revenue and costs without altering the basic tiered rate structure and if the revenues increase as part of the conservation rate design, the customers will be credited. In this way a utility can remove the risk of declining revenues due to reduced volumetric sales that might accompany successful conservation.

Finally, in California's Climate Action Plan and the California Global Warming Solutions Act of 2006 (AB 32 Scoping Plan), the Air Resources Board recommends a public goods charge for funding investments in water management actions that improve water and energy efficiency and reduce greenhouse gas emissions. The Climate Action Plan proposes a public goods charge on water that can be collected on water bills and then used to fund end-use water efficiency improvements, system-wide efficiency projects, water recycling, and other actions that improve water and energy efficiency and reduce GHG emissions. Depending on the fee schedule, a public goods charge could generate $100 million to $500 million annually. These actions would also have the co-benefit of improving water quality and water supply reliability for customers.

California must have a sustainable, long-term funding source to support water management and water use efficiency. A public goods charge would provide this funding source, but such a charge remains very unpopular among water suppliers. Nevertheless, state agencies recommend a public goods charge as the most stable option for future funding. The agencies will work with the proposed stakeholder advisory panel to consider alternatives to the public goods charge recommended in this plan.

Fund the installation of water meters

Several reasons for accelerating the installation of meters were provided previously in the section titled "**Accelerate installation of water meters**". The ability to induce conservation through price signaling is yet another reason why the state should accelerate the pace of metering efforts. State financial assistance would encourage accelerated installation of meters.

Implement a statewide water conservation public information and outreach campaign

A statewide water conservation campaign can communicate the need for water conservation, explain its importance within the context of the state's overall water supply and demand situation, and help to build a conservation ethic among customers.

In 2009, California is in the midst of a water crisis. Water supplies for many cities, farms, and businesses are being significantly reduced due to drought. Climate change is further compounding the problem.

The Governor has proclaimed a state of emergency due to drought and requested that all Californians reduce their individual water use by 20 percent during the drought. Even when normal rainfall returns, the state will continue to see water supply challenges. To maintain a 20 percent reduction in per capita use over time, Californians need to fundamentally change they way they think about and use water.

The drought and the Governor's proclamation have highlighted the need for an immediate, statewide public education campaign to encourage greater water conservation, similar to the successful "Flex Your Power" public education campaign. On April 21, 2009, California announced the "Save Our Water" campaign. This water conservation campaign will reach out to different demographic and business segments to achieve significant reductions in water use. The first step is to educate members of the public about the drought and what they can do to immediately reduce their water use. Then, California can use the Save Our Water campaign to achieve long-term changes in the way Californians think about and use water as part of a comprehensive solution to the state's water problems.

The Save Our Water campaign will educate Californians about drought, the effects of climate change on the state's water supply, and the many reasons all Californians need to conserve water over the long term. The program will offer consumer-oriented information and tips to increase awareness and understanding of the complexity of the long-term issues facing the state's water delivery and supply system. This outreach campaign will complement other programs and actions by water suppliers and regions.

Provide Enforcement Mechanisms for Water Conservation

Mechanisms are needed to enforce water conservation when agencies fail to fulfill legal requirements or there is evidence of a lack of diligent effort to eliminate excessive water use.

The existing and proposed water conservation framework is a combination of voluntary and mandatory water conservation measures at both the water supplier and consumer levels. At the consumer level, mandatory measures allow only the products in the marketplace that meet certain water efficiency standards and local restrictions imposed by retail water suppliers, such as irrigation restrictions. There are also mandatory design standards for large landscapes in the Water Conservation in Landscaping Act (the Model Water Efficient Landscape Ordinance). Cities and counties are responsible for enforcing the design standards.

Require implementation of water conservation as a condition to receive state financial assistance

Mandates at the water supplier level are primarily for water supply planning in the Urban Water Management Planning Act. Urban Water Management Plans must be submitted every five years and must contain an evaluation of 14 conservation measures. The 14 measures correspond to the BMPs in the CUWCC MOU but there are no established criteria for performance. There is a form of indirect enforcement of these measures as a condition of receiving state financial assistance for water resource projects. Funding applicants must either demonstrate implementation of the 14 measures, provide a schedule for future implementation, or explain why the measures are not planning to be implemented.

Water suppliers cannot be required to sign the CUWCC MOU, but DWR has determined that implementation levels defined in the BMPs will be the initial required standard for implementation, even for non-signatories.

BMPs were designed to be the minimum standard of conservation implementation for virtually all water suppliers, and it is reasonable to expect a higher standard of efficiency from entities that seek state grant funds. In the future, DWR will consider establishing higher levels of efficiency or additional conservation actions as a prerequisite for receipt of bond funds. For example, regional compliance with the state's requirements for landscape water use efficiency ordinances could be a prerequisite for bond funding. This would motivate far better communication and coordination among local governments and water suppliers.

Take enforcement actions to prevent waste and unreasonable use of water

There is broad authority under Water Code section 275 for the State Water Board or DWR to take appropriate proceedings or actions to prevent water waste or violation of the reasonable use standard. There are limited resources for aggressive enforcement activities at the state level. However, this is the strongest enforcement tool available to state government. It is recommended that enforcement action be initiated on water suppliers that have high per capita water use compared to communities of similar climatic and demographic conditions, high water loss rates, or fail to comply with statutory or regulatory conservation mandates.

Provide additional enforcement tools for water suppliers

Communities where the local government is not the water supplier face many unique challenges. One is that water suppliers generally monitor water use for waste, but unlike local governments they do not have the authority to issue citations. It would help water suppliers mount effective waste prevention programs if state law provided clear authority for local governments to transfer citation authority to water suppliers to discourage water waste. Better communication and coordination among local governments and water suppliers is essential, with or without new citation authorities.

Investigate Potential Flexible Implementation Measures

Some proposals appear to have promise to encourage water conservation or allow flexibility in implementing conservation. Conservation offsets and cap-and-trade regimes are two promising ideas. Protection of the environment and consistency with environmental quality standards are necessary components of conservation offsets, cap-and-trade regimes, or other new programs developed to improve water use efficiency.

Investigate requiring total or partial conservation offsets

A conservation offset is a requirement for a developer to partially or fully offset the increased water demand created by a new development. The offset is generally accomplished by the implementation of conservation measures elsewhere in the community, or payment by the developer into a water conservation fund administered by the local water supplier or local government. Conservation offsets can be a useful mechanism for promoting new development with a low-water use foot print.

Conservation offsets can also be controversial. The California Legislature considered but did not pass a bill requiring conservation offsets in 2008 (AB 2153, Krekorian). Total offsets may raise the price of new housing significantly in a state where affordable housing is already an issue. Requiring offsets for projected indoor water use that exceeds what might

be considered "efficient" indoor use, and for all of projected outdoor use could be a possible compromise. On the other hand, plumbing codes are already at work improving indoor water use efficiency, while outdoor water use is subject to the constraints of the Model Landscape Ordinance. Including offsets over and above these existing requirements could prompt alteration of the design of new construction significantly, making new housing even more water efficient. Certainly, requiring offsets could generate a stream of revenues to fund conservation programs in existing construction.

Conservation offsets should be considered as a method of bolstering efficiency programs if water suppliers or regions cannot meet interim targets in 2015.

Investigate a cap-and-trade regime for water conservation

Cap-and-trade regimes have been successfully implemented for the control of industrial air pollutant emissions. They provide a flexible framework where participants can choose between undertaking emission reductions themselves, or paying others to reduce their emissions, depending upon which of the two is cheaper. The net result is that participants in a cap-and-trade regime retain flexibility, while overall goals are achieved at least cost.

California's AB 32 Scoping Plan identifies a cap-and-trade program as one of the main strategies California will employ to reduce the greenhouse gas emissions that cause climate change.

A similar framework could facilitate implementation of the most cost-effective water conservation measures in California. Formal cap-and-trade programs are complex and challenging to establish and administer. However, a modest variation of a cap-and-trade program could easily be created within the context of integrated regional water management. Within a region, water suppliers could work together to meet mandated per capita use targets by funding the most cost-effective efficiency measures within a region. This flexibility should be included in any legislation that places the Governor's efficiency goal into statute.

Increase the use of recycled water and non-traditional sources of water

By increasing the use of recycled water, graywater, rain water and storm water, per capita use of potable water will decrease; agencies, households, and individuals will be better able to cope with times of water shortage.

During development of this plan, two approaches to water conservation and water recycling were considered:

- View recycled water as part of the gross supply and subject to a 20 percent reduction; this would help ensure that recycled water is used efficiently.
- Consider recycling as a means to reduce use of potable supplies; this approach counts recycling as a means to achieve a 20 percent reduction in potable use and provides encouragement for recycled water use

This plan uses and recommends the second approach. Although it is important to use all water sources efficiently, it is essential for California to expand the use of recycled water.

Chapter 4. Implementation

The *20x2020 Plan* will be implemented through three phases, as discussed below and summarized in Table 11. Several key implementation barriers have been identified, for which actions are recommended.

Table 11. *20x2020 Plan* Implementation Outline

Plan Phase	Year	Activities
I. *20x2020 Plan* Completion and Start-up Actions	2009 – 2010	• Finalize *20x2020 Plan* • Establish a lead agency and coordination framework • Convene a stakeholder advisory group • Develop detailed implementation task descriptions for recommended actions • Provide technical assistance in conservation legislation discussions • Evaluate an interim data collection and management mechanism • Collect, manage and validate data • Implement conservation actions • Conduct legislative, regulatory and administrative actions • Provide oversight
II. *20x2020 Plan* Implementation, Monitoring, Evaluation, Adjustments	2011 – 2020	• Establish interim and long-term data collection and management Implement conservation actions • Monitor implementation progress • Assess and design additional measures such as a conservation offset and a conservation credits trading program as needed • Conduct an Interim Target Assessment and Performance Evaluation in 2015
III. Conclusion	2020	• Conduct a Final Target Assessment and Performance Evaluation • Publish Results and Lessons Learned

Phase I. *20x2020 Plan* Completion and Startup Actions

During Phase I the goals are to finalize the *20x2020 Plan,* followed by more detailed implementation task descriptions for each action, including designated responsibilities, schedules, and budget and staff resources. Also, a lead agency must be designated to coordinate the plan implementation and coordination framework. While the *20x2020 Plan* has sought input from multiple state agencies, it does not have an implementation governance structure in place to oversee the remaining phases of the Plan. Chapter 3 proposes a clearer program role for each state agency building upon their existing responsibilities. The goal of this proposed governance framework is to implement the *20x2020 Plan* in a coordinated, consistent, and efficient fashion that acknowledges the different but complementary statutory authorities among state agencies. The coordination framework will include ongoing communication and cooperation by the state agencies and CUWCC, which is expected to be an important partner to interface with water suppliers and other stakeholders.

In addition, a stakeholder group will be convened to provide advice on program refinement and implementation. One topic certain to be addressed by such a group is CII water conservation. It has been challenging to address water conservation in the CII sectors due to a lack of information about how water is used, the wide variety of uses, and concerns that setting conservation targets could result not just in efficiency, but might inadvertently prompt restrictions in production. An advisory group could help articulate a vision and approach toward CII conservation, and help define appropriate practices to encourage efficient water use.

State agencies will provide technical assistance in the development of legislation to incorporate conservation goals or target into law. An interim data collection and management mechanism will be evaluated for implementation until a more long-term comprehensive database can be established.

Phase II. Plan Implementation, Monitoring, Evaluation and Adjustment

Monitoring and Evaluation

Monitoring of the plan will occur at two levels: implementation of the actions specified in the *20x2020 Plan* and measurement of progress in reduction in urban per capita water use. The lead agency will coordinate and monitor the actions of all of the state agencies and CUWCC. Systematic data collection from water suppliers will begin. Regulatory powers may be used or legislation may be sought to require data submittal by suppliers to a state entity. Where existing data reporting processes exist (e.g., to the CUWCC, DPH, or CPUC) these processes should be used or incorporated into a streamlined state water reporting system to reduce reporting burdens on local agencies.

Challenges to Monitoring Progress

A number of factors besides long term reductions in demand will influence variations in per capita consumption from year to year. Annual fluctuations can be related to differences between unusually wet and dry years, as well as what short-term actions water agencies may take in response to such events (such as drought rationing). Drought restrictions, either voluntary or mandatory, preserve human health and safety during years of limited water supply, and typically result in lower per capita consumption rates. When restrictions are lifted, water consumption can return to pre-drought levels. Finally, commercial and industrial uses can also differ widely in the amount of water they use. Unusually strong or weak rates of economic growth can cause GPCD to fluctuate from year to year. Thus, to better account for these factors, GPCD reductions should be monitored on a multiple-year basis instead of single end-point years.

Annual Progress Reports

The lead coordinating state agency should prepare annual reports to chart the progress of the 20x2020 Program. These reports would compile in one place what each state agency has accomplished with respect to this program. At a minimum the progress reports should address the following items:

- Evaluate implementation status of conservation programs by region in coordination with water suppliers, the CUWCC and the regional IRWMPs

- Provide estimates of GPCD by region based upon the latest water usage data submitted by water suppliers
- Report on the status of statewide outreach efforts, and document key feedback received
- Report on the progress of legislative/regulatory/enforcement actions undertaken
- Report on grant funds disbursed
- Report on the progress of studies/analyses commissioned under the auspices of the program
- Report on the adequacy of funds and staff for implementing the program

Adjustments

If the interim targets are not achieved by the water year ending in 2015, the state could consider introducing additional initiatives to promote water conservation. In this phase, the state could:

- Continue to encourage water suppliers to implement conservation programs
- Roll out additional programs such as a conservation offsets program or an expanded conservation credits trading program if it appears the program is lagging the 2015 GPCD targets
- Consider additional legislative or administrative actions if necessary

Implementation Barriers and Recommendations

Implementation of this *20x2020 Plan* faces several barriers that must be surmounted. At the local and regional levels, barriers include:

- Drought-induced revenue reductions and increased costs at the water supplier level, leading to deferment of long term efficiency programs
- Competition for IRWM funds by proponents of water management strategies other than efficiency improvements
- Lack of understanding of the state's water challenges and their effect on the California economy and environment
- Inadequate communication and coordination between water suppliers, local governments, and land planning agencies

At the state level, barriers include:

- Lack of staff within state agencies to devote to this program
- Lack of funds and staff that would monitor the implementation of this program in the lead coordinating agency, uncertainty about the availability of state grant funding
- Lack of enforcement authority to promote compliance with many elements of this program
- Lack of comparable water use data across state water management and regulatory agencies.

Table 12 outlines the key barriers and the general approach that could be taken to overcome these barriers.

Phase III. Conclusion

It is envisioned that upon completion of Phases I and II, the state would be able to achieve the conservation goal of 20 percent reduction of statewide per capita water use by year 2020. In 2020, the state would conduct a final assessment of the program and recommend new or strengthened policies to maintain efficient use.

Table 12. Implementation Barriers and Recommendations

Item	Needed Resources	Recommended Actions
Overall Plan Governance	• Need Staff to oversee the Programs	• Appropriate funding, recruit staff to devote to this Program.
Voluntary nature of existing conservation	• Need legislation to drive some elements of this Program.	• Make some elements of this Program mandatory instead of voluntary. Bolster state agencies' enforcement authority where at present it is insufficient.
Data Reporting and Analysis	• Need technical staff to set up the central database system. • Software to run the analysis. • Experienced staff or analysts. • Data validation and correction.	• Provide for online data submission. • Develop spreadsheets or other software tools for automatic data analysis or at least GPCD calculation. • Work with MOU signatories and CUWCC on coordinated data submittal methods • Make reporting of water usage data mandatory
Funding	• Need a significant and predictable source of revenue to incentivize water suppliers to undertake/accelerate water conservation programs.	• Ensure that sufficient IRWM funds are invested to meet conservation targets. • Institute a public goods charge.
Appliance efficiency codes	• Given the state's water supply challenges, appliance efficiency codes must remain ahead of the rest of the nation	• Continue to pursue waiver of Federal preemption on appliance efficiency codes
Water pricing	• Need near universal metering and conservation oriented rate structures	• Promote/require conservation oriented rate structures that promote efficient use by customers and support agency conservation programs

Appendix A. References

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Appendix B. Determination of Regional Targets

The regional targets developed for this *20x2020 Plan* provide an example of how regional targets might be set, and provide the basis for analysis to determine what conservation measures could be implemented to achieve the Governor's goal. The targets were developed based on the principle that Regions 1 through 4, which are currently below or meeting the statewide target (154 GPCD) are expected to maintain or further reduce their GPCD values. Regions 5 through 10, limited by the high ETo rates, large numbers of unmetered connections, and historically lower levels of conservation programs, may find it more challenging to meet the statewide target. To ensure that the regional targets can be reasonably achieved by all regions such that the state as a whole can meet the 20 percent reduction goal, a "balancing" process was performed to assign each region with an appropriate regional target. The methodology ensures that the state as a whole can meet the 20 percent reduction target, while acknowledging that average consumption in Regions 1 through 4 will end up below the statewide goal and the goals for Regions 5 through 10 can be realistically achieved. A detailed step-by-step process is shown in Table B-1.

Methodology

To describe the procedures we will follow the table structure of Table B-1.

- **Row 1**
  GPCD Baseline 2005
  Taken from Table 3 Row 5
- **Row 2**
  GPCD Reduction with Basic Tools Only
  Taken from Table 7 "Total (Basic Measures)" Row 6
  This is the main change from the initial development of Targets (TM 2) which were calculated prior to the analysis of how much savings were currently available from the basic tools such as code improvements and BMP implementation.
- **Row 3**
  GPCD Target if Use Basic Tools Only
  Row 3= Row 1 – Row 2
  This row is used to determine the Target GPCD level with consideration of Basic Tools GPCD reduction.
- **Row 4**
  GPCD Target if 20% Reduction
  Row 1 x 0.8
- **Row 5**
  GPCD Statewide Average Target
  Based on 20% reduction from the statewide baseline average of 192 GPCD. This is the overall statewide target.
- **Row 6**
  GPCD Exceedance from State Average
  Row 6 = Row 1 – Row 5

This row determines how much each hydrologic region is currently above the 2020 statewide target.

- **Row 7**

  2020 Population

  Taken from California Department of Finance Population Projection Database [See Appendix A references]

  This data for Row 7 is taken directly from Department of Finance statistics. They are partitioned for 2020 on a hydrologic region basis.

- **Row 8**

  Baseline – Basic Tools (row 3)

  Row 8 = Row 1 – Row 3

  This row shows per capita use after application of the basic measures show in Table 7. After review of the initially prepared targets (TM 2), and review of water supplier comments at both the public meeting and teleconference it was determined that a different methodology for calculating targets was needed. If a region could reach below the statewide target of 154 GPCD by implementing all the code improvements and basic tools associated with the current BMPs, then that GPCD value would be used as its target. These regions turn out to be Regions 1-3. Other regions would need to implement further actions. See rows 9 through 16.

- **Row 9**

  Water Use Below State Average, MG

  *Row 9 = (Row 5 – Row 8) * (Row 7*365/1000000)*

  This is a calculation just for Hydrologic Regions 1-3, which are able to reach the state target with basic measures only. It is used to determine how much water (in million gallons per year) that these regions are below the statewide target.

The previous Rows calculated the GPCD Targets for Regions 1 through 3. The following Rows determine the GPCD Targets for Hydrologic Regions 4 through 10.

- **Row 10**

  Baseline - 20% reduction

  Row 10 = Row 1 x 0.8

  This is a calculation just for Hydrologic Regions 4-10, which cannot reach the state average with basic measures only.

- **Row 11**

  With 20% Reduction, GPCD amount above, or below (-) Statewide Target

  Row 11 = Row 5 - Row 10

  Note that Region 4 would be below the statewide average after a 20 percent straight reduction, while other regions would still be above the statewide average.

- **Row 12**

  20% reduction Exceedance from Statewide Reduction Target, MG

  Row 12 = Row 11 x Row 7 x 365/1,000,000

  This row is developed to analyze the amount of water (in million gallons) that Regions 4-10 still exceed the statewide average after a 20% reduction. This is used as an interim step to develop the GPCD reductions for following rows.

- **Row 13**

  Extra savings from high performing regions (1-3) apportioned to other regions (4-10), MG

  Row 13 = (Total of Row 9/Total of Row 12 x Row 12)

  In this row the amount of water saved from Regions 1-3, which are below the statewide average, is apportioned to the Regions 4-10 using a weighted average basis dependent upon their population and exceedance still remaining after the 20% reduction. This is one approach to ease the burden of high water use regions proportionally to their exceedance.

- **Row 14**

  Net Reduction to Reach State Average Target, MG

  Row 14 = Row 12 – Row 13

  This row is the additional volume of water that must be saved in the region for the statewide average to be achieved. Note that because Region 4 is below the statewide average after the 20% reduction, the volume is negative.

- **Row 15**

  Net GPCD reduction to reach State Avg

  *Row 15 =Row 14/Row 7/ 365*1000000*

  This row shows the net reduction in GPCD necessary for Regions 4-10 so that the overall 20% reduction will be achieved after apportionment of the water saved from Regions 1-3. This is apportioned as mentioned before, to make sure that each of the Regions 4-10 reduces their GPCD in proportion to each other.

- **Row 16**

  2020 GPCD Target (Regions 4-10)

  Row 16 =Row 10 – Row 15

  This row calculates the Target GPCD for Regions 4 through 10.

- **Row 17**

  Recommended Regional Targets for 2020

  This is the result of the analysis and presents the calculated GPCD targets for all the hydrologic regions within California using this approach. This represents one way to set regional targets.

Table B-1. Regional Targets

		Hydrologic Region Number										
Row	Process Description	1	2	3	4	5	6	7	8	9	10	Total
1	GPCD Baseline 2005 (Table 2-6)	165	157	154	180	253	248	285	243	237	346	
2	GPCD Reduction With Basic Tools Only (Table 2-5)	28	26	32	24	28	33	32	36	43	56	
3	GPCD Target If Use Basic Tools Only (Row 1-Row 2)	137	131	122	156	225	215	253	207	194	290	
4	GPCD Target if 20% Reduction	132	126	123	144	202	198	228	194	190	277	
5	GPCD State Avg Target	154	154	154	154	154	154	154	154	154	154	
6	GPCD Exceedance from State Avg (Row 1-Row 5)	11	3	0	26	99	94	131	89	83	192	
7	2020 Population	763,296	7,037,805	1,719,563	22,537,558	3,631,063	2,795,598	2,961,357	119,832	1,376,567	1,193,284	
8	Baseline - Basic Tools (Row 3)	137	131	123	156	225	215	253	207	194	290	
9	Water Use Below State Average, MG	4,736	59,082	19,331								83,150
10	Baseline - 20% reduction				144	202	198	228	194	190	277	
11	With 20% Reduction, GPCD amount above, or below (-) Statewide Target				-10	48	44	74	40	36	123	
12	20% reduction Exceedance from Statewide Reduction Target, MG				-82,262	64,146	45,305	79,986	1,767	17,887	53,485	180,316
13	Extra savings from high performing Regions (1-3) apportioned to other Regions (4-10), MG				-37,934	29,580	20,892	36,885	815	8,248	24,664	83,150
14	Net Reduction to reach State Avg Target, MG				-44,328	34,566	24,413	43,102	952	9,639	28,821	141,494
15	Net GPCD reduction to reach State Avg				-5	26	24	40	22	19	66	
16	2020 GPCD Target (Regions 4-10)				149	176	174	188	173	170	211	
17	Recommended Regional Targets for 2020	137	131	123	149	176	174	188	173	170	211	

Appendix C. Summary of Comments on Draft 20x2020 Plan and Responses

The draft *20x2020 Water Conservation Plan* was available for public comment from April 29 to June 5, 2009. Comments were received in writing from 75 commenters. Table C-1 provides a list of entities that provided written comments. Public comment was also solicited at a public workshop held in Sacramento on May 29, 2009, attended by at least 57 members of the public including water suppliers, local governments, environmental organizations, and individuals.

Table C-1. Agencies that Submitted Comments on Draft 20x2020 Water Conservation Plan

Draft 20x2020 Water Conservation Plan: Written Comments Received
Alameda County Flood Control and Water Conservation District, Zone 7
Association of California Water Agencies
Association of California Water Agencies
California Association of Nurseries and Garden Centers
California Public Utilities Commission
California Urban Water Agencies
California Association of Nurseries and Garden Centers
California Landscape Contractors Association, Inc.
California Salmon and Steelhead Association
California Urban Water Agencies
California Water Association
Calleguas Municipal Water District
Carmichael Water District
Casitas Municipal Water District
Castaic Lake Water Agency
City of Santa Maria Utilities Department
City of El Paso de Robles
City of Fairfield
City of Fairfield
City of Pittsburg, Public Works Department
City of Riverside, Public Utilities
City of Roseville
City of San Diego Water Department
City of San Luis Obispo
City of Sonoma
Clean Water Action
Contra Costa Water District
East Bay Municipal Utility District
Eastern Municipal Water District
Environmental Justice Coalition for Water, Clean Water Action
Ewing
Foresthill Public Utility District
General Public
General Public

Draft 20x2020 Water Conservation Plan: Written Comments Received
General Public
General Public
General Public
General Public
General Public
Hi-Desert Water District
Indian Wells Valley Water District
Industrial Environmental Association
Inland Empire Utilities Agency
Irrometer Company
Irvine Ranch Water District
Jim Soules (green building consultant)
KP Public Affairs
Las Virgenes Municipal Water District
Metropolitan Water District of Southern California
Mojave Water Agency
Monterey Peninsula Water Management District
Mountain Counties Water Resources Association
Municipal Water District of Orange County
Natural Resources Defense Council
Newhall County Water District
Orange County Water District
Otay Water District
Pacific Energy Policy Center
Paradise CA
Park Water Company & Apple Valley Ranchos Water Company
Placer County Water Agency
Raymond WA
Regional Council of Rural Communities
Regional Council of Rural Counties
Regional Water Authority
Rose Hills Memorial Park and Mortuary
Sacramento Suburban Water District
San Diego County Water Authority
San Juan Water District
Santa Clara Valley Water District
Solano County Water Agency
Tuolumne Utilities District
Vista Irrigation District
Western States Petroleum Association
Western Municipal Water District

Each comment letter was reviewed, and each distinct comment was noted and tabulated. In this way, the Agency Team could identify the most prevalent comments and focus attention on those.

Table C-2 summarizes the major categories of comments received and summarizes the state agency response. Most comments are further reflected in modifications to the text of the plan itself.

Table C-2. Comment Categories and State Agency Responses

Comment Category	Resolution or Response
Convene a stakeholder process to complete the plan over about six to 12 months time.	A stakeholder group to advise state agencies on refinement and implementation of the plan is a good idea, and the state agencies will work to form and convene this group. It is important to finalize the plan now because California faces a water crisis and completing the plan will allow some actions to proceed more quickly.
The 20x2020 Plan must be part of a comprehensive package.	The state agencies support the Governor's call for a comprehensive package to address water issues, and this plan is part of that package. In the absence of a comprehensive package, conservation will be even more important so it is essential to proceed with conservation efforts regardless of progress on other parts of a package.
Plan should not go forward because it is based on limited data and analysis yet would prompt costly actions.	This plan is a strategic framework for strengthening California's conservation programs. Major elements of the plan will require new legislation or budget deliberations before implementation, and state agencies will seek and welcome public input on these aspects. The plan is an appropriate first step.
Appoint a CII task force to advise on conservation. Involve the CUWCC.	Commercial, industrial, and institutional (CII) water use is a major issue, and additional policy formulation and program development is needed. The stakeholder group that the agencies will convene may address this issue.
Link actions to Delta benefits; upstream users' "waste" returns to the system so less conservation is needed or justified.	The state agencies recognize that in some cases there are return flows from water use, changing the suite of potential benefits. However, there are clearly impacts associated with water use even when return flows are captured (e.g., entrainment of fish, water quality degradation) and these impacts are difficult to value in a benefit/cost analysis. Minimum efficiency standards and waste prohibitions are appropriate in all regions. The effects on the Delta, and on Delta exports, from implementation of the plan are unknown and will depend on many factors, including rate of growth in population and changes in the Delta environmental conditions.
Include agriculture in the Plan.	Agricultural water efficiency is beyond the scope of the plan, and is being addressed in other forums.
Supplier-level requirements should reflect climate, unique CII in the service area, and past conservation.	The state agencies agree that certain local conditions must be considered when translating targets from hydrologic region to individual water supplier. Regional targets in this plan are for planning purposes.
A methodology is needed to translate regional targets to supplier level.	The agencies agree that such a methodology is needed in order to place targets into statute or otherwise regulate the achievement of the Governor's goal.
The goal should be reasonable use by every urban customer	Establishing a "reasonable use" level for customers is a valid alternative to the regional targets described in this plan, particularly if the goal is placed into statute or regulated.
Limit CII actions to control of wasteful practices; do not limit production.	The agencies agree that CII efficiency measures should reduce waste and improve efficiency, not limit production.
Expand discussion of recycled water and give credit for its use.	The agencies acknowledge the importance of recycled water and wants to encourage its use as part of integrated resource management. The plan attempts to encourage use of recycled water without discouraging aggressive pursuit of additional water use efficiency.
The plan should address other strategies such as low impact development, storm water capture, and gray water.	All of these strategies can be important parts of a water management portfolio, and several of the state agencies have programs to encourage these strategies. Inclusion in this plan was beyond the "conservation" scope defined by the Governor.

Comment Category	Resolution or Response
Provide for local flexibility; allow locals to design their own conservation programs.	Local flexibility is vital to successful conservation programs. The state agencies have developed a plan that provides a strong foundation and consistent standards for conservation efforts, while preserving local flexibility.
We support a statewide database.	State agencies will pursue improved data collection and management to reduce the burden on local agencies, improve water data, and make it more timely and accessible.
Rate structures should be established by local agencies not the state.	State agencies recognize the complexity and sensitivity of rate-setting. For this reason, the plan's discussion of water rates describes a foundation – the range of approaches that constitute conservation pricing structures. Rate structures built on this foundation should be set at the local or regional level.
Do not establish a public goods charge.	There is clearly a need for continued investment in water conservation, and a stable funding source. The state agencies acknowledge that a public goods charge is controversial.
Existing water rights must be protected, not threatened by this plan.	The state agencies agree that water rights rules should not discourage conservation or efficient use.

Facilities Capital Improve Plan

Fiscal Year 13/14

El Dorado County

CAO Facilities

October 28th, 2013

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Section 1 - Overview

Overview

Introduction:

The County of El Dorado's government functions operate from both County owned and leased facilities dispersed on the western and eastern slopes, covering from El Dorado Hills to South Lake Tahoe. The County has over 746,000 square feet of owned facilities under its direct operational control. The facilities are comprised of numerous administrative offices, senior centers, community centers, libraries, animal shelters, jails and juvenile halls, psychiatric and health facilities, as well as workshops and storage facilities. The replacement value of these facilities is approximately $250,000,000.

In addition to the owned facilities, the County also leases facilities under specific circumstances. The County has approximately 25 leases totaling 130,000 square feet. The decision to lease a facility rather than to occupy a County owned facility is primarily driven by the nature of the program, the funding sources available, and the duration of the need. The leased space is normally controlled by the lessor but often requires County assistance in maintaining them to the standard needed for County operations.

This Facilities plan is focused on County owned facilities. Although the County has a significant amount of its operations in leased facilities the primary responsibility of care and maintenance of those facilities lies with the landlord.

Owned Facilities:

The County owns over 70 buildings and structures that range from a relatively new South Lake Tahoe Animal Shelter, built in 2008, to the Chamber of Commerce building in Placerville, built in 1923. The average age of all owned buildings is approaching 40 years old. Listed below are the County owned buildings that the Facilities Division of the Chief Administrative Office, provides oversight.

Bldg #	Building / Department	ADDRESS	Gross SF
100	Building A	330 Fair Lane	38,987
110	Building B	360 Fair Lane	45,766
115	Building C	2850 Fairlane Ct.	68,800
116	Facility Services	3000 Fairlane Ct. Ste 1	1,616
117	Facility Services	3000 Fairlane Ct. Ste 2	2,309
118	Facility Services & Maintenance Shed	3000 Fairlane Ct. Ste 3	3,219
120	Sheriff Administration	300 Fair Lane	21,354
122	Old Probation (Juvenile Hall Classroom)	295 Fair Lane	7,308
123	Juvenile Hall	299 Fair Lane	7,308
124	Agriculture Weights/Measures	311 Fair Lane	6,956
125	Ag Annex (UC Extension-Modular)	311 Fair Lane	723
126	Main Jail (Placerville)	300 Forni Road	85,920
160	Main Library	345 Fair Lane	38,292

210	County Chamber of Commerce	542 Main Street	3,840
220	Placerville Main Court House – (State)	495 Main Street	18,463
221	District Attorney	515 Main Street	9,644
226	District Attorney Annex	525 Main Street	2,663
231	Pioneer Park Community Center	6740 Fairplay Road	3,279
240	Greenwood Community Center	4401 Hwy 193	3,609
260	Library - Pollock Pines	6210 Pony Express Trail	1,522
290	Placerville Airport – Terminal Bldg.	3501 Airport Road	1,008
291	Placerville Airport- Office/Restrms/Vehicle storage	3501 Airport Road	1,000
293	Placerville Airport-Hanger	3501 Airport Road	8,000
321	Cameron Park Court House – (State)	3321 Cameron Park Drive	5,908
330	DOT - Administration	2441 Headington Road	21,916
330-4	Fleet Admin Modular	2441 Headington Rd	480
	DOT Pole Shed	2441 Headington Rd	2,400
331	DOT Vehicle Station/Equip Repair Shop	2441 Headington Road	4,250
332	DOT Service Station	2441 Headington Road	2,600
333	DOT Storage	2441 Headington Road	4,160
334	DOT Sign Shop	2441 Headington Road	1,810
338	Paint Storage	2441 Headington Road	550
339	DOT - Greenwood Shop	2145 Ricci Rd., Greenwood	2,170
340	DOT - Greenwood Storage	2145 Ricci Rd., Greenwood	2,400
362	Library - Cameron Park	2500 Country Club Drive	12,574
366	El Dorado Hills Senior Center	990 Lassen Lane	7,534
390	Georgetown Airport	Dry Diggins Rd	3,900
440	Psychiatric Health Facility	935-B Spring Street	13,305
440A	Senior Day Care Center	935 Spring Street	5,671
441	Health Department	931 Spring Street	7,776
443	Health Modular	929 Spring Street	2,880
447	Health Condo # 3	941 Spring Street	960
448	Health Condo #4	941 Spring Street	960
470	Community Services / Senior Nutrition	937 Spring Street	21,775
480	Chile Bar Store	1671 Chile Bar Court	1,169
481	Chile Bar House	1671 Chile Bar Court	2,267
482	Chile Bar Bath & Shower	1671 Chile Bar Court	530
483	Chile Bar (20)Trailer spaces	1671 Chile Bar Court (Grounds)	---
570	Veterans Memorial Building	130 Placerville Drive	11,488
365-1	El Dorado Hills Library	Silva Valley Road	16,100
	West Slope Animal Shelter	6435 Capital Avenue	21,284
	Perks Ct –Residential	6490 Perks Court	1,266
None	Union Mine Centrifuge & Meta Extraction Bldg.	5700 Union Mine Rd	5,000
None	Henningsen Lotus Park (Restrooms & Storage Bldg.)	950 Lotus Rd (Grounds)	1,800
		Subtotal West Slope:	**568,469**
Bldg #	**Building / Department**		**Gross SF**
600	South Lake Tahoe Administration	1360 Johnson Blvd.	22,343

610	South Lake Tahoe El Dorado Center	3368 Lake Tahoe Blvd.	18,543
621	South Lake Tahoe Jail	1051 Al Tahoe Blvd.	14,563
622	South Lake Tahoe Jail - Newer	1051 Al Tahoe Blvd.	48,825
631	South Lake Tahoe Sheriff Sally port	1051 Al Tahoe Blvd.	800
710	South Lake Tahoe Chamber of Commerce	3066 Highway 50	3,500
730	D.O.T. Tahoma Shop	Wilson Way, Tahoma	1,200
744	South Lake Tahoe Vector Control / CSA #3	1170 Rufus Allen	3,392
760	South Lake Tahoe Library	1000 Rufus Allen	12,221
830	D.O.T. Office (Office & Garage SF) Meyers	1121 Shakori Blvd., Meyers	8,582
831	D.O.T. Garage Meyers	1121 Shakori Blvd., Meyers	4,500
849	South Lake Tahoe Animal Control	1121 Shakori Blvd., Meyers	5,148
620	South Lake Tahoe Juvenile Treatment Center	1041 Al Tahoe Blvd.	26,180
902	South Lake Tahoe Senior Center	3050 Lake Tahoe Blvd.	8,455
		Subtotal SLT:	**178,252**
		Total:	**746,721**

Prior Facility Plans:

Over the years the County has invested in the preparation of facility master plans that were space needs oriented. Review of these plans dating back to 1990 reflects that the County was experiencing rapid increases in population and a rising demand for public service. County departments were expanding exponentially and new functions were being added to the organizational structure. The master plans had been developed to guide the development of the County's resources in satisfying its requirements for administrative space.

The master plans studied and quantified existing staffing and space requirements. Space standards were developed for various categories of staff and then the space requirements were calculated. Historical and projected demographics were used to index growth in staff and space needs at intervals over 20 years. The 1990 study substantiated the immediate needs of the County and helped to trigger the eventual construction of Building C and the expansion of Building A.

Subsequent facility space plans from 2003 continued projecting significant growth within the County and the need for increased staffing and facilities. The plan estimated that the County would have almost 2,300 employees by 2010 and 2,500 by 2015. However, caution needs to be taken into consideration when preparing or interpreting these space needs plans. They did not appear to have considered the effects of the 2006-07 down turn in the economy and the significant reduction in revenue to the County. The decline in property tax and sales tax revenues had a major impact on the County's budget requiring action by the Board to make substantial cuts to its budget. A reduction in work force brought the County's employee count down by over 300 staff members. The County's adopted 2013–14 budget reflects that its staffing level is now at 1826 FTE's. The Strategic Investment Plan calls for limiting further growth by creating greater efficiencies in our operations and reporting

systems. Had the County made the investment to build facilities based off of earlier space needs analysis it would have found itself with several unoccupied offices or looking to relocate departments into facilities that were not ideal for that given function.

Facilities Preservation Plan:

This facilities plan addresses the much overdue deferred maintenance required of the County's buildings and structures. Years of underfunding along with the past several years of declining budgets and competing demands for public resources has caused the County's facilities to significantly deteriorate. The County's assets represent the investment of public tax dollars over the years and are critical to the County's quality of life and productive environment. Neglect of maintenance can affect public health and safety, reduce productivity of County employees, and cause long-term financial losses as buildings wear out prematurely and must be replaced.[1]

The County's Strategic Investment Plan specifically identifies its facilities as a critical area of focus. Facilities have become dated and inefficient. Building systems and structures are failing and starting to cost the County more in maintenance, energy, and employee or public morale and good will. Major system failures present serious risk for the County in the form of displaced employees, interruption of County services, damage to facilities and shut down of our 24 hour lock-down facilities. In recent years the County has had several serious incidents as listed below.

- A generator fire in Building B that nearly shut down government services in the entire facility including the operations of central dispatch / 911.
- Boiler failure at a 24 hour lock-down facility that's replacement had to be addressed under an emergency basis in order to prevent the relocation of inmates to other Counties.
- A power and generator failure at the South Lake Tahoe jail that forced the relocation of inmates to the Placerville main jail.
- The delayed replacement of the Uninterrupted Power Supply (UPS) and Computer Room Air Conditioning systems (CRAC's) in the Information Technology Department. An extended power outage could have had a catastrophic effect on the County data systems and 911 services.
- Numerous heating & air conditioning system failures that could have resulted in displacement of employees and disruption of County services, and
- ADA compliance lawsuits that have been brought against the County that is now operating under a consent decree to resolve all issues over the next 5 years.

While maintenance and repairs have been taking place throughout the County annually, the rate of accumulating deferred maintenance has exceeded the investment being made. A backlog has developed and further deterioration has occurred. The ultimate cost of correcting the deferred maintenance will increase unless the backlog is reduced. The resulting accumulation of the deferred maintenance backlog will require several years of an increased investment and County focus to

[1] National Academy of Sciences, Building Research Board, Committing to the Cost of Ownership, 1990

eliminate. This also requires that repair spending must be adequate to outpace the backlog growth that occurs as a cumulative result of past neglect.[2]

The County, in an effort to understand the extent of the deferred maintenance of its buildings directed a formalized condition assessment review be performed on some of its major facilities. This condition assessment was designed to provide the Facilities Division and policy makers with the information necessary to make informed decisions with respect to investment and maintenance of County facilities.

Vanir Construction Management was hired to assist in the preparation of the condition assessment report. Vanir's team of engineers and estimators met with Facilities management and determined the scope of the assessment. The following buildings were selected for review:

	Administration Facilities:		**Gross SF**
100	Building A	330 Fair Lane	38,987
110	Building B	360 Fair Lane	45,766
115	Building C	2850 Fairlane Ct.	68,800
160	Main Library	345 Fair Lane	38,292
221	District Attorney	515 Main Street	9,644
330	DOT - Administration	2441 Headington Road	21,916
362	Library – Cameron Park	2500 Country Club Drive	12,574
440	Psychiatric Health Facility	935 B Spring Street	13,305
440A	Senior Day Care Center	935 Spring Street	5,671
441	Health Department	931 Spring Street	7,776
470	Community Services / Senior Nutrition	937 Spring Street	21,775
600	South Lake Tahoe Administration	1360 Johnson Blvd.	22,343
610	South Lake Tahoe El Dorado Center	3368 Lake Tahoe Blvd.	18,543
760	Library – South Lake Tahoe	1000 Rufus Allen	12,221
		Subtotal Administration Facilities:	**337,613**
	Correctional Facilities:		
120	Sheriff Administration	300 Fair Lane	21,354
123	Juvenile Hall	299 Fair Lane	7,308
126	Main Jail (Placerville)	300 Forni Road	85,920
621	South Lake Tahoe Jail	1051 Al Tahoe Blvd.	14,563
622	South Lake Tahoe Jail - Newer	1051 Al Tahoe Blvd.	48,825
631	South Lake Tahoe Sheriff Sally port	1051 Al Tahoe Blvd.	800
620	SLT Juvenile Treatment Center	1041 Al Tahoe Blvd.	26,180
		Subtotal Correctional Facilities:	**204,950**
		Total:	**542,563**

[2] National Academy of Sciences, Building Research Board, Committing to the Cost of Ownership, 1990

The above selection of buildings represents 542,563 square feet of the 746,721 square feet of County owned and controlled facilities. Approximately 73% of the County facilities square footage is within 21 of its buildings.

The work performed by Vanir entailed the following:

- Data gathering and verification. Meeting with County representatives and gathering information on selected facilities. This included recent major maintenance, hazmat reports, ADA assessment studies and interviews with key maintenance personnel.

- Field assessments. The teams walked each of the selected facilities. Vanir investigated the condition of building systems and documented their findings noting the remaining useful life of each system. The building systems included:

  - Site Utilities
  - Exterior Lighting
  - Paving
  - Landscape and Irrigation
  - Building Structural Systems
  - Roofing
  - Exterior Envelope
  - Interior Systems
  - Plumbing
  - HVAC
  - Electrical
  - Fire & Safety

- Upon completion of the data gathering and observations a report was produced, including digital photographs documenting the findings. This included :

  - Identifying key building systems that represent risk to the County.
  - Narratives describing the key deficiencies.
  - Estimating the life expectancy of all existing, major building systems.
  - Determining the estimated repair/replacement cost of each item identified.
  - Prioritization of repairs/replacement projects with recommended schedule.
  - Establishment of a long term investment strategy.
  - Highlighting facilities that are near the end of its life cycle and should no longer receive County investment.

Facilities Condition Assessment:

The following sections identify the issues and outline those items that, with the appropriate level of effort and investment, can address the backlog of deferred maintenance. This effort will help the County preserve the significant investment it has made in these assets. The County can be more confident in its ability to maintain the level of services provided to the community, preventing potential issues of public health and safety, improving employee morale, and avoid the premature cost of replacing facilities before their time; thereby maximizing the County's return on investment.

Section 2 of this report includes an Executive Summary of the formalized Condition Assessment Report prepared by Vanir Construction Management. These summaries were prepared for each building in order to condense the volume of information provided in the report. Staff has studied the recommendations and prioritization made then developed a plan of implementation. The plan takes into consideration the effects of commencing construction while department operations are in progress. In order to cause the least amount of disruption, tasks that may have been prioritized for later implementation may be brought into a current scope of work in order to achieve economies of scale.

Section 5 of this report is the detailed Conditions Assessment Report. This report contains the individual buildings' narrative of deficiencies and costs, Vanir's recommendations, priorities by category, and strategic pictures that highlight the findings and support the recommendations for each of the County facilities. Where there is a value within the priorities matrix there is a very detailed schedule listing each task assigned to that category.

The sections highlight the magnitude of the issues our County facilities are experiencing and stress the urgency surrounding these issues. As administrators of the public facilities the maintenance and preservation of these assets falls upon County staff.

Section 2 - Executive Summary

Building:	100 - Building A
Address:	330 Fair Lane Road, Placerville
Square Footage:	38,987
Number of Floors:	2
Year Built:	1976/1992 Addition
Occupants:	Board of Supervisors, Chief Administrative Office, County Counsel, Economic Development, Human Resources, 911, OES, Parks and Recreation, Risk
Replacement Cost:	$11,270,000
Alternate Site Replacement Cost:	$13,670,000 *
Deferred Maintenance:	$4,088,424
Deferred Maintenance as % of Replacement Cost:	37.3%

Staff Comments:

The Conditions Assessment Report (CAR) sights numerous building conditions requiring attention. Staff concurs with the report and has prioritized the repairs over 5 years. Priority will be given to the modernization of the Fire and Safety systems and ADA upgrades, followed by critical systems and structural concerns. The timing of certain improvements associated with Building A will be a function of the availability of temporary accommodations for displaced agencies during the process.

Staff Recommendations:

While deferred maintenance as a percentage of replacement value is high, Staff feels an investment to preserve the asset is advisable. Building A serves as a valuable component of the government campus. The unique nature of the Building A use, location and operations would make obtaining a suitable replacement site problematic. The useful life of the asset could extended significantly with proper planning and investment.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Solicit design proposals and initiate the design of the Building A/B Mechanical Renovation Project.
2) Solicit design proposals and initiate the design of the Building A Interior ADA upgrade project.
3) Begin construction for the Building A/B Generator Replacement Project.
4) Solicit design proposals and initiate the design of the Exterior Structural Retrofit project.
5) Begin various exterior ADA upgrades.

* ***Alternate Site Replacement Cost*** *estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

El Dorado County
Staff Supplemental Conditions Report

Item	Implementation Year 1	2	3	4	5	6 - 15	Total
100 Building A							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$12,890						$12,890
Fire Alarm	$12,890	$12,890	$12,890	$12,890			$51,560
Ramps, Stairs & Guardrails	$19,044						$19,044
Stairs and Handrails	$1,058						$1,058
Wet Type System	$25,780	$25,780	$25,780	$25,780			$103,121
2 ADA Enhancements							
Cabinets	$6,084						$6,084
Site Access	$99,188						$99,188
Toilet Rooms		$148,120					$148,120
Windows	$1,389						$1,389
3 Structural							
Structural Framing			$128,547				$128,547
4 Building Integrity							
Access Hatches	$1,984						$1,984
Built-up Roofing						$372,152	$372,152
Doors, frames and hardware	$1,818						$1,818
Fascia			$39,675				$39,675
Windows and Frames						$107,123	$107,123
5 Finishes							
Carpet	$41,328	$41,328	$41,328	$41,328			$165,313
Ceilings	$24,797	$24,797	$24,797	$24,797			$99,188
6 Mechanical							
Air Handlers	$0	$109,106	$54,553	$54,553			$218,213
Controls	$0	$51,560	$25,780	$25,780			$103,121
Diffusers & grills	$6,445	$6,445	$6,445	$6,445			$25,780
Ductwork	$0	$270,692	$135,346	$135,346			$541,383
Electric Water Heater	$25,789						$25,789
Exhaust Fans	$0	$7,274	$3,637	$3,637			$14,548
HVAC Piping	$77,338	$77,338	$77,338	$77,338			$309,354
Package Units	$37,956	$285,925	$161,940	$161,940			$647,761
Piping	$0	$51,560					$51,560
Shower	$2,381						$2,381
Valves	$4,959	$4,959	$4,959	$4,959			$19,838
7 Electrical							
Data and Cabling						$26,450	$26,450
Distribution Boards		$63,480					$63,480
Emergency Power Supply				$51,578			$51,578
Exterior Building Lighting						$13,886	$13,886
General Interior Lighting						$262,958	$262,958
Main Service						$105,800	$105,800
Outlets and Wiremold						$25,780	$25,780
Panel and Breakers						$51,560	$51,560
Telephone						$9,919	$9,919
8 Civil							
Asphalt Paving			$52,073				$52,073
9 Miscellaneous							
Doors, frames and hardware			$39,675				$39,675
Elevators		$31,740					$31,740
Fixed Seating	$35,549						$35,549
Totals:	**$438,666**	**$1,212,995**	**$834,765**	**$626,372**	**$0**	**$975,627**	**$4,088,424**

Building:	110 - Building B
Address:	360 Fair Lane Road, Placerville
Square Footage:	45,766
Number of Floors:	2
Year Built:	1976
Occupants:	Assessor, Auditor-Controller, Grand Jury, Information Technologies, Procurements and Contracts, Recorder-Clerk, Surveyor, Treasurer/Tax Collector
Replacement Cost:	$13,250,000
Alternate Site Replacement Cost:	$16,250,000 *
Deferred and Scheduled Maintenance:	$5,267,225
Deferred Maintenance as % of Replacement Cost:	42.8%

Staff Comments:

The Conditions Assessment Report (CAR) sights numerous building conditions requiring attention. Staff concurs with the report and has prioritized the repairs over 5 years. Priority will be given to the modernization of the Fire and Safety systems and ADA enhancements, followed by critical systems and structural concerns. The timing of certain improvements associated with Building B will be a function of the availability of temporary accommodations for displaced agencies during the rehabilitation process.

Staff Recommendations:

While deferred maintenance as a percentage of replacement value is high, Staff feels an investment to preserve the asset is advisable. Building B serves as a valuable component of the government campus housing many critical government functions. Some of the unique County functions such as IT that are operated out of Building B would be costly to replicate at alternative sites. The useful life of the asset could be extended significantly with proper planning and investment.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Solicit design proposals and initiate the design of the Building A/B Mechanical Renovation Project.
2) Solicit design proposals and initiate the design of the Building B Interior ADA upgrade project.
3) Begin construction for the Building A/B Generator Replacement Project.
4) Solicit design proposals and initiate the design of the Exterior Structural Retrofit project.
5) Begin various exterior ADA upgrades.

* ***Alternate Site Replacement Cost*** *estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

Item	Implementation Year 1	2	3	4	5	6 - 15	Total
110 Building B							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$30,263						$30,263
Fire Alarm	$12,105	$12,105	$12,105	$12,105	$12,105		$60,526
Ramps, Stairs & Guardrails	$25,445						$25,445
Specialty Systems	$19,838						$19,838
Stairs and Handrails	$4,364						$4,364
Wet Type System	$48,420	$48,420	$48,420	$48,420	$48,420		$242,102
2 ADA Enhancements							
Cabinets		$13,225					$13,225
Doors, frames and hardware		$14,548					$14,548
Toilet Rooms	$37,030	$37,030	$37,030	$37,030	$37,030		$185,150
3 Structural							
Structural Framing			$251,804				$251,804
4 Building Integrity							
Built-up Roofing						$259,951	$259,951
Doors, frames and hardware						$11,955	$11,955
Fascia			$59,513				$59,513
Skylights						$385,641	$385,641
5 Finishes							
Carpet	$39,014	$39,014	$39,014	$39,014	$39,014		$195,069
Ceilings	$39,675	$39,675	$39,675	$39,675	$39,675		$198,375
Wall Framing and Finishes	$16,425	$16,425	$16,425	$16,425	$16,425		$82,127
6 Mechanical							
Air Handlers	$66,125	$66,125	$66,125	$66,125	$66,125		$330,625
Boilers	$6,613						$6,613
Chemical Treatment Equipment	$9,919						$9,919
Chillers					$211,600		$211,600
Controls	$24,210	$24,210	$24,210	$24,210	$24,210		$121,051
Cooling Towers	$6,613	$6,613	$6,613	$6,613	$6,613		$33,063
Diffusers & grills	$12,105	$12,105	$12,105	$12,105	$12,105		$60,526
Ductwork	$127,104	$127,104	$127,104	$127,104	$127,104		$635,518
Electric Water Heater	$2,579	$2,579	$2,579	$2,579	$2,579		$12,894
Exhaust Fans	$3,439	$3,439	$3,439	$3,439	$3,439		$17,193
Expansion Tank/Air Separators	$2,645	$2,645	$2,645	$2,645	$2,645		$13,225
HVAC Piping	$108,946	$108,946	$108,946	$108,946	$108,946		$544,730
Piping	$24,210	$24,210	$24,210	$24,210	$24,210		$121,051
Pumps	$13,225	$13,225	$13,225	$13,225	$13,225		$66,125
Valves	$3,968	$3,968	$3,968	$3,968	$3,968		$19,838
7 Electrical							
Data and Cabling	$5,290	$5,290	$5,290	$5,290	$5,290		$26,450
Distribution Boards	$6,348	$6,348	$6,348	$6,348	$6,348		$31,740
Emergency Power Supply							
Exterior Building Lighting						$13,886	$13,886
General Interior Lighting						$514,467	$514,467
Main Service							
Outlets and Wiremold						$60,526	$60,526
Panel and Breakers	$24,210	$24,210	$24,210	$24,210	$24,210		$121,051
Telephone	$1,984	$1,984	$1,984	$1,984	$1,984		$9,919

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
8 Civil							
Asphalt Paving			$214,245				$214,245
Roofing						$7,274	$7,274
9 Miscellaneous							
Doors, frames and hardware		$7,935					$7,935
Elevators		$15,870					$15,870
Totals:	**$722,111**	**$677,249**	**$1,151,234**	**$625,673**	**$837,274**	**$1,253,700**	**$5,267,225**

Building:	115 - Building C
Address:	2850 Fairlane Ct., Placerville
Square Footage:	68,800
Number of Floors:	3
Year Built:	1992
Occupants:	Elections, Superior Court of California, Community Development Agency.
Replacement Cost:	$18,330,000
Alternate Site Replacement Cost:	$24,080,000 *
Deferred and Scheduled Maintenance:	$4,035,427
Deferred Maintenance as % of Replacement Cost:	22%

Staff Comments:

The Conditions Assessment Report (CAR) sights a number of items that should be addressed. Building C, by comparison, is in much better condition than other buildings in the government center. The relatively young age of the facility means that many of the major systems are not at the end of life yet. The bulk of the noted maintenance is scheduled between 6-15 years out. Staff concurs with the report and has prioritized the repairs of the first 5 years. Priority will be given to the modernization of the Fire & Safety systems and ADA upgrades, followed by critical systems and structural concerns.

Staff Recommendations:

Building C offers a good opportunity to properly preserve and maintain an asset in a proactive fashion. The building is in relatively good shape and, with proper planning and maintenance the asset has the ability to serve the County for numerous decades. Staff recommends making proactive investments into the mechanical systems and other key systems as outlined in the Summary Report.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Complete a renovation of the building mechanical controls.
2) Perform improvements to fire and safety systems.
3) Minor ADA improvements.

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
115 Building C							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$3,412					$19,335	$22,747
Fire Alarm						$45,494	$45,494
Ramps, Stairs & Guardrails	$19,705						$19,705
Stairs and Handrails	$1,785						$1,785
Wet Type System						$119,871	$119,871
2 ADA Enhancements							
Cabinets	$7,406						$7,406
4 Building Integrity							
Built-up Roofing						$32,732	$32,732
Metal Roofing						$420,555	$420,555
5 Finishes							
Carpet						$297,563	$297,563
Ceilings						$132,250	$132,250
Soffits and Overhangs			$9,919				$9,919
Stairs and Handrails	$11,903						$11,903
Toilet Partitions	$397						$397
6 Mechanical							
Air Handlers	$12,453	$12,453	$12,453			$425,845	$463,203
Boilers						$49,594	$49,594
Chillers						$132,250	$132,250
Condensing Units						$2,645	$2,645
Controls	$60,659	$60,659	$60,659				$181,976
Diffusers & grills						$45,494	$45,494
Ductwork						$636,916	$636,916
Electric Water Heater						$32,236	$32,236
Exhaust Fans	$8,464						$8,464
Expansion Tank/Air Separators		$13,225					$13,225
Package Units						$2,116	$2,116
Piping						$45,494	$45,494
Pumps		$26,450					$26,450
Valves	$4,408	$4,408	$4,408				$13,225
7 Electrical							
Data and Cabling						$33,063	$33,063
Exterior Building Lighting						$13,886	$13,886
General Interior Lighting						$545,928	$545,928
Main Service						$125,638	$125,638
Outlets and Wiremold						$90,988	$90,988
Panel and Breakers						$181,976	$181,976
8 Civil							
Asphalt Paving		$165,313					$165,313
Benches	$8,927	$8,927					$17,854
Concrete Paving		$26,847					$26,847
Framing						$26,450	$26,450
9 Miscellaneous							
Doors, frames and hardware						$15,870	$15,870
Elevators		$15,870					$15,870
Stairs and Handrails	$132						$132
Totals:	**$139,651**	**$334,151**	**$87,438**	**$0**	**$0**	**$3,474,188**	**$4,035,427**

Building:	120 – Sheriff Administration
Address:	300 Fair Lane, Placerville
Square Footage:	21,354
Number of Floors:	1
Year Built:	1970
Occupants:	Sheriff Administration, Evidence, Patrol, Dispatch.*
Replacement Cost:	$5,090,000
Alternate Site Replacement Cost:	$10,677,000 **
Deferred Maintenance:	$3,091,587
Deferred Maintenance as % of Replacement Cost:	61%

Staff Comments:

The Conditions Assessment Report (CAR) recommends that the County consider replacing this facility. The Facilities Division agrees with the CAR recommendations based on two factors:

1) With a deferred maintenance ratio of 61% of replacement value, further capital investment beyond minimal repairs would be ill-advised.
2) The current use of the facility is much heavier than the facility was designed for 40+ years ago. Staff can work to repair the facility, but many of the underlying programing deficiencies will still exist. The building and site are simply over programmed.

Staff Recommendations:

The County should look to develop a new , appropriately sized and programmed facility that replaces and consolidates Sheriff Operations if possible.

County Facilities Division should perform repairs to the facility with change in mind and not over-invest.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Work to repair Emergency and Exit Lighting.
2) Work to secure deficient outlets and wiremold.

**Many Sheriff Operational functions and divisions have been pushed out to leased facilities due to overcrowding.*

*** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction. This replacement cost does not include consolidation of Sheriff functions and divisions that have been relocated to outside lease arrangements.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Will not be Expended	Total
120 Sheriff Administration								
1 Fire & Safety Modernization								
Emergency and Exit Lighting	$15,532							$15,532
Fire Alarm							$85,428	
Guardrails							$611	
2 ADA Enhancements								
Cabinets							$2,182	
Toilet Rooms							$75,647	
3 Structural								
Structural Framing							$621,295	
4 Building Integrity								
Built-up Roofing		$44,806					$179,225	$44,806
Composition Shingle Roofing							$29,095	
Doors, frames and hardware							$29,531	
Exterior Wall Finishes							$26,549	
Soffits and Overhangs							$14,402	
Windows and Frames							$28,280	
5 Finishes								
Carpet							$36,369	
Ceilings							$87,576	
Wall Framing and Finishes							$54,553	
6 Mechanical								
Controls							$62,129	
Diffusers & grills							$31,065	
Ductwork							$217,453	
Exhaust Fans		$36,369						$36,369
Gas Fired Water Heater			$9,456				$21,821	$9,456
HVAC Piping							$31,065	$0
Package Units		$53,826					$201,556	$53,826
Piping		$43,491					$49,704	$43,491
7 Electrical								
Data and Cabling							$4,364	
Emergency Power Supply							$87,285	
Exterior Building Lighting							$8,729	
General Interior Lighting							$264,050	
Main Service							$116,380	
Outlets and Wiremold	$31,065							$31,065
Panel and Breakers							$62,129	
Site Lighting							$29,095	
Telephone							$5,819	
8 Civil								
Asphalt Paving			$34,827				$313,440	$34,827
Fencing							$8,729	
Ramps, Stairs & Guardrails							$1,746	
Retaining Walls							$291	
9 Miscellaneous								
Countertops							$1,891	
Doors, frames and hardware							$32,732	
Totals:	**$46,597**	**$178,491**	**$44,283**	**$0**	**$0**	**$0**	**$2,822,216**	**$269,371**

Building:	123 – Juvenile Hall
Address:	299 Fair Lane, Placerville
Square Footage:	7,308
Number of Floors:	1
Year Built:	1971
Occupants:	Juvenile Hall
Replacement Cost:	$3,760,000
Alternate Site Replacement Cost:	$4,512,000 *
Deferred and Scheduled Maintenance:	$1,858,637
Deferred Maintenance as % of Replacement Cost:	49%

Staff Comments:

The Conditions Assessment Report (CAR) recommends that the County consider replacing this facility IF the facility is not meeting current needs. The Facilities Division recommends investing and preserving this asset based on the following:

1) The County's current demographics are aging and Juvenile detention numbers may be falling accordingly.
2) Sizable Court investment adjacent to the facility has an impact on operational costs.
3) The cost of properly zoned and entitled land for a Juvenile Detention facility should not be underestimated. The process involves significant development risk.

Staff Recommendations:

The County should look to make a sizable investment into preserving this asset. Major renovations should include: ADA, seismic upgrades, mechanical, electrical and plumbing upgrades. The bulk of these improvements should be addressed in years 2-5.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Emergency and Exit Lighting.
2) Plumbing repairs.
3) Security system upgrades

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction. This replacement cost does not include adjustments for considerable development risk associated with processing a detention facility through CEQA.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
123 Juvenile Hall							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$4,518						$4,518
Fire Alarm		$14,618					$14,618
Gas Fired Water Heater	$145						$145
Wet Type System		$42,525					$42,525
2 ADA Enhancements							
Cabinets			$1,455				$1,455
Shower			$34,914				$34,914
Toilet Rooms			$34,914				$34,914
3 Structural							
Structural Framing			$265,674				$265,674
4 Building Integrity							
Built-up Roofing		$158,859					$158,859
Doors, frames and hardware					$7,056	$4,364	$11,420
Storefront Systems						$26,884	$26,884
Windows and Frames						$59,624	$59,624
5 Finishes							
Carpet	$1,637		$14,911				$16,548
Detention Doors and Hardware			$29,095				$29,095
Doors, frames and hardware			$3,200				$3,200
Epoxy			$25,138				$25,138
6 Mechanical							
Air Handlers		$8,729					$8,729
Combi Unit						$96,014	$96,014
Controls		$26,578					$26,578
Diffusers & grills		$15,947					$15,947
Ductwork		$93,024					$93,024
Evaporative Cooling Units		$8,729					$8,729
Exhaust Fans		$18,621					$18,621
Gas Fired Water Heater							
HVAC Piping		$15,947					$15,947
MAU Units		$31,423					$31,423
Package Units		$180,825					$180,825
Piping	$15,947					$31,894	$47,841
Plumbing Fixtures			$3,055				$3,055
7 Electrical							
Data and Cabling						$3,637	$3,637
Emergency Power Supply				$109,106			$109,106
Exterior Building Lighting					$8,729		$8,729
General Interior Lighting					$119,602		$119,602
Main Service			$72,738				$72,738
Outlets and Wiremold						$15,947	$15,947
Panel and Breakers				$21,263			$21,263
Security System	$33,489						$33,489
Stand Alone PA System						$21,821	$21,821
Telephone						$2,182	$2,182

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
8 Civil							
Asphalt Paving				$133,728			$133,728
Curb and Gutters						$3,764	$3,764
Site Lighting					$14,548		$14,548
9 Miscellaneous							
Walk-ins						$21,821	$21,821
Totals:	**$55,737**	**$615,826**	**$485,097**	**$264,101**	**$149,939**	**$287,952**	**$1,858,637**

Building:	126 – Main Jail
Address:	300 Forni Road, Placerville
Square Footage:	85,920
Number of Floors:	4
Year Built:	1988
Occupants:	Jail
Replacement Cost:	$46,870,000
Alternate Site Replacement Cost:	$56,244,000 *
Deferred and Scheduled Maintenance:	$8,706,159
Deferred Maintenance as % of Replacement Cost:	19%

Staff Comments:

The deferred maintenance as a ratio of replacement value is comparatively low but still sizable. Jail systems are run 24 hours a day, 365 days a year. Many of the larger mechanical, electrical, plumbing and security systems are nearing the end of their useful life cycle. Replacement of key systems should not be done after system failure in a detention facility. Proper planning and coordination must take place in order to maintain jail operations.

Staff Recommendations:

Staff recommends a sizable investment into mechanical, electrical, plumbing and security systems over the next five years. The process of renovating the critical systems of an active jail requires intense planning and design considerations. To best service correctional operations, shut downs in the facility should be minimized and phased. Multiple systems (such as mechanical, plumbing, electrical and security) should be rehabilitated per shut down to avoid costly down time.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Main Jail controls replacement project.
2) Mechanical engineering for phased system upgrade.
3) Jail sewer shredder project.
4) Jail door hardware upgrades (phased).

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction. This replacement cost does not include adjustments for considerable development risk associated with processing a detention facility through CEQA.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
126 Main Jail							
1 Fire & Safety Modernization							
Dishwasher	$8,729						$8,729
Emergency and Exit Lighting		$31,248					$31,248
Fire Alarm				$340,408			$340,408
Ramps, Stairs & Guardrails	$262						$262
Wet Type System				$371,354			$371,354
2 ADA Enhancements							
Cabinets						$1,746	$1,746
Site Access		$109,106					$109,106
3 Structural							
Structural Framing		$2,182					$2,182
4 Building Integrity							
Doors, frames and hardware						$30,724	$30,724
Exterior Wall Finishes	$77,829						$77,829
Single-ply Roofing						$496,433	$496,433
Windows and Frames	$27,058						$27,058
5 Finishes							
Carpet						$25,458	$25,458
Ceilings						$104,742	$104,742
Wall Framing and Finishes						$145,475	$145,475
6 Mechanical							
Air Handlers	$181,844	$181,844	$181,844	$181,844			$727,375
Chillers					$232,760		$232,760
Combi Unit	$54,553	$54,553	$54,553	$54,553	$54,553	$272,766	$545,531
Controls	$62,496	$62,496	$62,496	$62,496			$249,984
Diffusers & grills				$187,488			$187,488
Ductwork	$218,736	$218,736	$218,736	$218,736			$874,945
Exhaust Fans		$19,639		$1,164			$20,803
Expansion Tank/Air Separators			$7,274				$7,274
Furnaces			$32,732				$32,732
HVAC Piping						$524,967	$524,967
MAU Units						$32,732	$32,732
Package Units						$3,491	$3,491
Piping		$174,570					$174,570
Plumbing Fixtures						$1,746	$1,746
Pumps			$18,184	$7,274			$25,458
Showers						$290,950	$290,950
Valves		$38,187					$38,187

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
7 Electrical							
Cameras	$123,785						$123,785
Data and Cabling	$36,369						$36,369
Distribution Boards				$69,828			$69,828
Exterior Building Lighting						$43,643	$43,643
General Interior Lighting						$1,279,358	$1,279,358
Main Service						$167,296	$167,296
Monitoring Equipment							
Outlets and Wiremold						$123,786	$123,786
Panel and Breakers						$247,569	$247,569
Security System							
Site Lighting						$58,190	$58,190
Stand Alone PA System	$123,785						$123,785
Telephone						$7,274	$7,274
8 Civil							
Asphalt Paving			$29,095				$29,095
9 Miscellaneous							
Detention Doors and Hardware	$58,190	$58,190	$104,742	$58,190	$58,190		$337,502
Dishwasher						$29,095	$29,095
Doors, frames and hardware						$13,093	$13,093
Elevators						$174,570	$174,570
Walk-ins	$25,436					$72,738	$98,174
Totals:	**$999,072**	**$950,754**	**$709,659**	**$1,553,339**	**$345,508**	**$4,147,841**	**$8,706,159**

Building:	160 – Main Library
Address:	345 Fair Lane, Placerville
Square Footage:	38,292
Number of Floors:	3
Year Built:	1976
Occupants:	Library
Replacement Cost:	$9,420,000
Alternate Site Replacement Cost:	$11,115,600 *
Deferred and Scheduled Maintenance:	$3,708,162
Deferred Maintenance as % of Replacement Cost:	39%

Staff Comments:

The maintenance as a ratio of replacement value for the Library is relatively high. The building systems are relatively simple and accessible making the facility a good recipient of investment resources.

Staff Recommendations:

Staff recommends an initial investment into Fire & Life Safety, ADA and some select mechanical components of the structure. Larger improvements to major mechanical, electrical and plumbing systems should be scheduled for years 6-15.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Emergency and Exit Lighting, stairs, handrails, kitchen hoods.
2) ADA Restrooms and cabinets.
3) Mechanical controls (phased)
4) Minor concrete paving work.

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
160 Main Library							
1 Fire & Safety Modernization							
Electric Water Heater	$132						$132
Emergency and Exit Lighting	$12,660						$12,660
Fire Alarm						$25,321	$25,321
Guardrail	$2,116						$2,116
Kitchen Hoods	$1,984						$1,984
Ramps, Stairs & Guardrails	$3,968						$3,968
Stairs and Handrails	$5,654						$5,654
Wet Type System						$202,565	$202,565
2 ADA Enhancements							
Cabinets	$2,645						$2,645
Doors, frames and hardware		$4,364					$4,364
Plumbing Fixtures		$6,613					$6,613
Restrooms	$138,201						$138,201
3 Structural							
Structural Framing						$759,618	$759,618
4 Building Integrity							
Built-up Roofing	$38,882					$155,526	$194,408
Doors, frames and hardware	$6,520						$6,520
Fascia	$8,887						$8,887
Gutters						$7,935	$7,935
Windows and Frames						$28,566	$28,566
5 Finishes							
Carpet		$1,323				$141,508	$142,830
Ceilings	$1,323					$174,570	$175,893
Mechanical Screens	$1,521						$1,521
6 Mechanical							
Air Handlers						$5,951	$5,951
Condensing Units						$1,587	$1,587
Controls	$20,256	$20,256	$20,256	$20,256	$20,256		$101,282
Diffusers & grills						$50,641	$50,641
Ductwork						$354,488	$354,488
Electric Water Heater						$8,596	$8,596
Exhaust Fans						$5,555	$5,555
HVAC Piping						$12,660	$12,660
Package Units						$457,519	$457,519
Piping	$75,962						$75,962
Plumbing Fixtures	$4,761					$3,174	$7,935
Unit Heaters						$4,232	$4,232
7 Electrical							
Data and Cabling						$19,838	$19,838
Exterior Building Lighting						$9,919	$9,919
General Interior Lighting						$303,847	$303,847
Main Service						$105,800	$105,800
Outlets and Wiremold						$37,981	$37,981
Panel and Breakers						$101,282	$101,282

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
8 Civil							
Asphalt Paving						$198,375	$198,375
Benches	$992						$992
Concrete Paving	$5,323						$5,323
Framing						$26,450	$26,450
9 Miscellaneous							
Elevators						$79,350	$79,350
Mechanical Screens	$198						$198
Totals:	**$331,985**	**$32,558**	**$20,259**	**$20,260**	**$20,261**	**$3,282,852**	**$3,708,162**

Building:	221 – District Attorney
Address:	515 Main Street, Placerville
Square Footage:	9,644
Number of Floors:	2
Year Built:	1938
Occupants:	District Attorney
Replacement Cost:	$2,520,000
Alternate Site Replacement Cost:	$3,024,000 *
Deferred Maintenance:	$1,410,087
Deferred Maintenance as % of Replacement Cost:	56%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the District Attorney's building is very high. The building age of 75 years has many building systems well beyond practical recovery. County Staff concurs with the CAR's recommendation to develop and implement an exit strategy.

Staff Recommendations:

Staff recommends investment in only those tasks absolutely necessary to preserve the building through end of County use and consistent with an exit strategy.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Asbestos abatement.
2) Emergency and exit lighting.
3) VCT Flooring
4) Mechanical package unit replacement

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction. This replacement cost does not include adjustments for location constraints the DA may have associated with a preference to be near the future courthouse.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Will not be Expended	Total
221 District Attorney								
1 Fire & Safety Modernization								
Asbestos Abatement	$51,017							$51,017
Emergency and Exit Lighting	$3,189							$3,189
Fire Alarm							$35,074	
Stairs and Handrails	$4,001							$4,001
Wet Type System							$51,017	
2 ADA Enhancements								
Cabinets							$8,729	
Elevators							$198,375	
Plumbing Fixtures							$5,687	
Toilet Rooms		$52,900						$52,900
3 Structural								
Structural Framing							$191,313	
4 Building Integrity								
Doors, frames and hardware							$6,084	
Roofing							$52,847	
Windows and Frames							$42,320	
5 Finishes								
Carpet							$39,675	
Ceilings							$42,320	
VCT	$8,729							$8,729
Wall Framing and Finishes							$36,369	
6 Mechanical								
Air Handlers							$13,225	
Condensing Units							$5,290	
Controls							$25,508	
Diffusers & grills							$12,754	
Ductwork							$89,279	
Electric Water Heater							$8,596	
Exhaust Fans							$6,613	
Package Units	$21,160						$61,364	$21,160
Piping							$38,263	
7 Electrical								
Data and Cabling							$13,225	
General Interior Lighting							$108,411	
Main Service							$66,125	
Outlets and Wiremold							$19,131	
Panel and Breakers							$25,508	
Telephone							$1,323	
8 Civil								
Asphalt Paving							$12,233	
Storm Drainage							$18,052	
9 Miscellaneous								
Doors, frames and hardware							$31,740	
Window Blinds							$2,645	
Totals:	**$88,094**	**$52,900**	**$0**	**$0**	**$0**	**$0**	**$1,269,093**	**$140,994**

Building:	330 – 2441 Headington Road
Address:	2441 Headington Rd., Placerville
Square Footage:	9,725
Number of Floors:	2
Year Built:	1965
Occupants:	Department of Transportation
Replacement Cost:	$1,970,000
Alternate Site Replacement Cost:	$2,561,000 *
Deferred and Scheduled Maintenance:	$975,068
Deferred Maintenance as % of Replacement Cost:	49.5%

Staff Comments:

The maintenance as a ratio of replacement value for the Department of Transportation (DOT), Headington facility is very high. The simplicity of the building construction and relative ease of repair makes the facility a better target for investment dollars than the high deferred maintenance % might otherwise indicate. The industrial nature of the pre-engineered building works well with DOT operations and has the potential to serve the County for years into the future with rehabilitation and maintenance.

Staff Recommendations:

Staff recommends continued investment into the facility. The heavier investment would be required in the 6-15 year range. Short term investment would be in the sewer system, minor mechanical and Fire & Life Safety.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Water heater.
2) Plumbing.
3) VCT Flooring
4) Interior and exterior accessibility.

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction. This replacement cost does not include adjustments for unique adjacency with DOT yard.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
330 DOT Administration - Headquarters							
1 Fire & Safety Modernization							
Emergency and Exit Lighting						$3,215	$3,215
Fire Alarm						$35,369	$35,369
Ramps, Stairs & Guardrails	$2,851						$2,851
Stairs and Handrails	$1,323						$1,323
Wet Type System						$51,445	$51,445
2 ADA Enhancements							
Cabinets	$2,645						$2,645
Doors, frames and hardware	$4,761						$4,761
Plumbing Fixtures		$6,613	$2,381				$8,993
Site Access	$3,306						$3,306
3 Structural							
Structural Framing	$794						$794
4 Building Integrity							
Built-up Roofing						$24,466	$24,466
Fascia	$397						$397
Metal Roofing						$81,334	$81,334
Windows and Frames						$54,752	$54,752
5 Finishes							
Carpet						$36,369	$36,369
Sheet Vinyl						$6,110	$6,110
VCT	$3,985						$3,985
6 Mechanical							
Condensing Units						$5,290	$5,290
Controls						$25,723	$25,723
Diffusers & grills						$12,861	$12,861
Ductwork	$9,003					$81,026	$90,029
Electric Water Heater	$17,457						$17,457
Exhaust Fans	$7,406						$7,406
Package Units		$33,856				$81,995	$115,851
Piping	$12,861	$25,723					$38,584
Plumbing Fixtures						$1,587	$1,587
Unit Heaters		$3,174					$3,174
7 Electrical							$0
Data and Cabling						$13,225	$13,225
General Interior Lighting						$31,248	$31,248
Outlets and Wiremold						$12,861	$12,861
Panel and Breakers						$25,723	$25,723
8 Civil							
Asphalt Paving						$208,294	$208,294
Sanitary Sewer		$23,805					$23,805
9 Miscellaneous							
Doors, frames and hardware		$19,838					$19,838
Totals:	**$66,788**	**$113,008**	**$2,381**	**$0**	**$0**	**$792,892**	**$975,068**

Building:	362 – Cameron Park Library
Address:	2500 Country Club Dr., Cameron Park
Square Footage:	12,574
Number of Floors:	1
Year Built:	1994
Occupants:	Cameron Park Library
Replacement Cost:	$3,190,000
Alternate Site Replacement Cost:	$3,828,000 *
Deferred/Scheduled Maintenance:	$686,905
Deferred Maintenance as % of Replacement Cost:	21%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the Cameron Park Library facility is not very high and reflects the relatively new age of the building.

Staff Recommendations:

Staff recommends continued investment into the facility. The heavier investment would be required in the 6-15 year range. Short term investment would be in the flooring, mechanical, skylights and fascia.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Fascia repairs.
2) handrails.
3) Mechanical repairs
4) ADA improvements.

* ***Alternate Site Replacement Cost*** *estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
362 Cameron Park Library							
1 Fire & Safety Modernization							
Ramps, Stairs & Guardrails	$190						$190
2 ADA Enhancements							
Theft Detection	$3,306						$3,306
4 Building Integrity							
Composition Shingle Roofing						$130,928	$130,928
Fascia	$3,306						$3,306
Skylights		$3,571					$3,571
5 Finishes							
Carpet		$60,504					$60,504
Ceilings	$1,389						$1,389
Ramps, Stairs & Guardrails	$1,984						$1,984
6 Mechanical							
Air Handlers						$92,575	$92,575
Boilers						$10,745	$10,745
Controls						$33,258	$33,258
Diffusers & grills						$661	$661
Electric Water Heater						$4,298	$4,298
Expansion Tank/Air Separators	$2,645						$2,645
HVAC Piping	$1,190						$1,190
Package Units			$61,100			$124,718	$185,818
7 Electrical							
General Interior Lighting						$29,101	$29,101
Outlets and Wiremold						$1,323	$1,323
8 Civil							
Asphalt Paving			$38,386			$68,241	$106,627
Concrete Paving			$7,985				$7,985
9 Miscellaneous							
Countertops						$5,502	$5,502
Totals:	**$14,011**	**$64,075**	**$107,470**	**$0**	**$0**	**$501,350**	**$686,905**

Building:	440 – Psychiatric Health Facility (PHF)
Address:	935 B Spring Street, Placerville
Square Footage:	13,305
Number of Floors:	2
Year Built:	1949
Occupants:	Pyschiatric Health Facility
Replacement Cost:	$4,790,000
Alternate Site Replacement Cost:	$5,748,000 *
Deferred/Scheduled Maintenance:	$1,717,645
Deferred Maintenance as % of Replacement Cost:	36%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the PHF is at a level that indicates additional investment is required. The building is old, but well-constructed and very difficult to replace given the use.

Staff Recommendations:

Staff recommends continued investment into the facility. The obstacles associated with a new, ground-up relocation project for PHF are expensive and time consuming. A longer-term rehabilitation of the existing facility could provide a more realistic solution. With this strategy in mind, Facilities recommends near term investment in Fire & Life safety systems, ADA and electrical services. Longer term investments would include structural, major mechanical and additional electrical services.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Fire sprinkler system upgrades.
2) Emergency and exit lighting.
3) Electrical service
4) Sewer system.
5) Door and hardware modifications

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction. Unique challenges associated with CEQA and public approvals for a psychiatric health facility are not factored into the alternate site replacement costs.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
440 PHF							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$3,739						$3,739
Wet Type System	$35,192						$35,192
2 ADA Enhancements							
Cabinets	$1,984						$1,984
Doors, frames and hardware	$4,364						$4,364
Plumbing Fixtures	$1,190						$1,190
Shower			$19,838				$19,838
Toilet Rooms			$72,738				$72,738
3 Structural							
Structural Framing						$527,876	$527,876
4 Building Integrity							
Built-up Roofing						$68,876	$68,876
Doors, frames and hardware						$5,237	$5,237
Exterior Wall Finishes						$89,269	$89,269
Soffits and Overhangs						$2,480	$2,480
Windows and Frames						$52,371	$52,371
5 Finishes							
Carpet						$7,935	$7,935
Wall Framing and Finishes						$13,225	$13,225
6 Mechanical							
Controls						$35,192	$35,192
Diffusers & grills						$17,596	$17,596
Ductwork						$123,171	$123,171
Exhaust Fans						$7,935	$7,935
Gas Fired Water Heater						$17,193	$17,193
MAU Units						$8,332	$8,332
Package Units						$133,308	$133,308
Piping						$26,394	$26,394
7 Electrical							
Data and Cabling						$6,613	$6,613
Emergency Power Supply						$79,350	$79,350
Exterior Building Lighting						$1,984	$1,984
General Interior Lighting						$136,368	$136,368
Main Service	$105,800						$105,800
Outlets and Wiremold	$8,798						$8,798
Panel and Breakers	$35,192						$35,192
Telephone						$3,306	$3,306
8 Civil							
Asphalt Paving	$6,877					$24,070	$30,947
Sanitary Sewer	$12,696						$12,696
Site Lighting						$13,225	$13,225
9 Miscellaneous							
Doors, frames and hardware	$7,935						$7,935
Totals:	**$223,767**	**$0**	**$92,575**	**$0**	**$0**	**$1,401,303**	**$1,717,645**

Building:	440A – Senior Day Care
Address:	935 Spring Street, Placerville
Square Footage:	5,671
Number of Floors:	2
Year Built:	1949
Occupants:	Senior Day Care
Replacement Cost:	$1,620,000
Alternate Site Replacement Cost:	$1,944,000 *
Deferred/Scheduled Maintenance:	$958,091
Deferred Maintenance as % of Replacement Cost:	59%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the Senior Day Care is at a level that indicates additional investment or relocation should be considered. The building is old, but well-constructed. Improvements that are coordinated with PHF improvements may want to be considered.

Staff Recommendations:

Staff recommends continued investment into the facility for the near term. Longer term occupancy may want to be evaluated as major improvements will be required from 6-10 years out.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Fire sprinkler system upgrades.
2) Emergency and exit lighting.
3) Electrical service
4) ADA improvements.
5) Door and hardware modifications

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
440A Sr Day Car Center							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$3,187						$3,187
Fire Alarm	$20,625						$20,625
Wet Type System	$30,000						$30,000
2 ADA Enhancements							
Cabinets	$1,984						$1,984
Countertops	$1,289						$1,289
Doors, frames and hardware	$7,274						$7,274
Plumbing Fixtures	$4,497						$4,497
Toilet Rooms		$63,480					$63,480
3 Structural							
Structural Framing						$224,997	$224,997
4 Building Integrity							
Built-up Roofing						$68,876	$68,876
Doors, frames and hardware						$8,200	$8,200
Exterior Wall Finishes						$79,350	$79,350
5 Finishes							
Carpet						$19,838	$19,838
Ceilings						$40,832	$40,832
Wall Framing and Finishes						$15,870	$15,870
6 Mechanical							
Controls						$15,000	$15,000
Diffusers & grills						$7,500	$7,500
Ductwork						$52,499	$52,499
Exhaust Fans						$6,084	$6,084
Package Units		$78,292					$78,292
Piping						$15,000	$15,000
7 Electrical							
Data and Cabling						$2,645	$2,645
Exterior Building Lighting	$1,984						$1,984
General Interior Lighting						$58,124	$58,124
Outlets and Wiremold	$3,750						$3,750
Panel and Breakers	$15,000						$15,000
Site Lighting						$30,418	$30,418
Telephone						$1,323	$1,323
8 Civil							
Asphalt Paving	$19,011					$53,231	$72,242
9 Miscellaneous							
Doors, frames and hardware	$7,935						$7,935
Totals:	**$116,535**	**$141,772**	**$0**	**$0**	**$0**	**$699,784**	**$958,091**

Building:	441 – Health Department
Address:	931 Spring Street, Placerville
Square Footage:	7,776
Number of Floors:	2
Year Built:	1952
Occupants:	Health Department
Replacement Cost:	$2,250,000
Alternate Site Replacement Cost:	$2,700,000 *
Deferred/Scheduled Maintenance:	$801,385
Deferred Maintenance as % of Replacement Cost:	36%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the Senior Day Care is at a level that indicates additional investment or relocation should be considered. The building is old, but well-constructed. Improvements that are coordinated with PHF improvements may want to be considered.

Staff Recommendations:

Staff recommends continued investment into the facility for the near term. Longer term occupancy may want to be evaluated as major improvements will be required from 6-10 years out.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Fire sprinkler system upgrades.
2) Emergency and exit lighting.
3) Electrical service
4) ADA improvements.

* ***Alternate Site Replacement Cost*** *estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
441 Health Department							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$4,371						$4,371
Fire Alarm	$28,280						$28,280
Ramps, Stairs & Guardrails	$7,861						$7,861
Wet Type System	$41,135						$41,135
2 ADA Enhancements							
Asphalt Paving	$0	$13,225					$13,225
Cabinets	$0	$11,903					$11,903
Countertops	$0	$1,719					$1,719
Doors, frames and hardware	$5,819						$5,819
Plumbing Fixtures	$9,258						$9,258
Retaining Walls		$23,144					$23,144
Toilet Rooms		$23,144					$23,144
4 Building Integrity							
Built-up Roofing						$83,318	$83,318
Doors, frames and hardware						$6,613	$6,613
Exterior Wall Finishes						$11,572	$11,572
Soffits and Overhangs						$5,158	$5,158
Windows and Frames						$56,299	$56,299
5 Finishes							
Carpet						$8,266	$8,266
Wall Framing and Finishes	$1,984						$1,984
6 Mechanical							
Air Handlers		$26,450					$26,450
Controls						$20,568	$20,568
Diffusers & grills						$2,057	$2,057
Ductwork						$35,993	$35,993
Electric Water Heater	$265					$17,193	$17,457
Exhaust Fans						$3,968	$3,968
Package Units	$2,645					$66,654	$69,299
Piping						$30,851	$30,851
7 Electrical							
Data and Cabling						$3,306	$3,306
Exterior Building Lighting						$3,968	$3,968
General Interior Lighting						$79,699	$79,699
Main Service	$66,125						$66,125
Outlets and Wiremold	$5,142						$5,142
Panel and Breakers	$20,568						$20,568
Site Lighting						$13,225	$13,225
Telephone						$1,323	$1,323
8 Civil							
Asphalt Paving		$45,626					$45,626
Sanitary Sewer	$12,696						$12,696
Totals:	**$206,147**	**$145,211**	**$0**	**$0**	**$0**	**$450,027**	**$801,385**

Building:	470 – Community Services/Sr. Nutrition
Address:	937 Spring Street, Placerville
Square Footage:	21,775
Number of Floors:	2
Year Built:	1949
Occupants:	Community Services/Sr. Nutrition
Replacement Cost:	$5,930,000
Alternate Site Replacement Cost:	$7,116,000 *
Deferred/Scheduled Maintenance:	$4,266,002
Deferred Maintenance as % of Replacement Cost:	72%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the Community Services facility is at a level that indicates additional investment or relocation should be considered. The building is old, but well-constructed. Community Services/Sr. Nutrition also houses core infrastructure that services the entire grouping of government buildings on Spring Street. For instance, rehabilitating the boilers and chillers at 937 Spring Street will also rehabilitate the services to the Health Department, Psychiatric Health Facility and other departments. Improvements that are coordinated with PHF improvements may want to be considered.

Staff Recommendations:

Staff recommends continued investment into the facility for the near term. Longer term occupancy may want to be evaluated as major improvements will be required from 6-10 years out.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Fire sprinkler system upgrades.
2) Emergency and exit lighting.
3) Electrical service
4) HVAC Mechanical
5) ADA improvements.
6) Doors, frames and hardware.

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

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Item	Implementation Year 1	2	3	4	5	6 - 15	Total
470 Community Services / Sr Nutrition							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$14,399						$14,399
Fire Alarm	$28,797						$28,797
Telephone						$6,613	$6,613
Wet Type System	$115,190						$115,190
2 ADA Enhancements							
Cabinets	$1,984						$1,984
Countertops	$3,439						$3,439
Doors, frames and hardware	$14,548						$14,548
Plumbing Fixtures						$3,306	$3,306
Toilet Rooms		$105,800					$105,800
Windows	$3,703						$3,703
3 Structural							
Structural Framing						$719,936	$719,936
4 Building Integrity							
Built-up Roofing						$211,071	$211,071
Doors, frames and hardware						$4,761	$4,761
Exterior Wall Finishes						$148,781	$148,781
Windows and Frames						$157,113	$157,113
5 Finishes							
Cabinets						$1,984	$1,984
Carpet						$66,125	$66,125
Ceilings						$71,084	$71,084
Soffits and Overhangs						$9,919	$9,919
VCT						$22,416	$22,416
Wall Framing and Finishes	$3,968					$52,900	$56,868
6 Mechanical							
Air Handlers						$112,413	$112,413
Boilers		$9,919					$9,919
Chemical Treatment Equipment						$6,613	$6,613
Chillers		$31,740				$31,740	$63,480
Controls						$57,595	$57,595
Cooling Towers		$3,306				$3,306	$6,613
Diffusers & grills						$6,131	$6,131
Ductwork						$100,791	$100,791
Exhaust Fans						$18,515	$18,515
Expansion Tank/Air Separators		$3,306				$3,306	$6,613
Gas Fired Water Heater						$8,596	$8,596
HVAC Piping	$12,959					$116,630	$129,588
MAU Units						$11,903	$11,903
Package Units	$87,265					$844,105	$931,371
Piping						$86,392	$86,392
Pumps		$13,225				$13,225	$26,450
Valves	$9,919					$9,919	$19,838

El Dorado County
Staff Supplemental Conditions Report

Item	Implementation Year 1	2	3	4	5	6 - 15	Total
7 Electrical							
Data and Cabling						$13,225	$13,225
Emergency Power Supply						$79,350	$79,350
Exterior Building Lighting						$3,968	$3,968
General Interior Lighting						$244,778	$244,778
Main Service	$105,800						$105,800
Outlets and Wiremold						$28,797	$28,797
Panel and Breakers	$57,595						$57,595
Site Lighting						$50,255	$50,255
8 Civil							
Asphalt Paving	$50,255					$175,893	$226,148
Sanitary Sewer			$12,696				$12,696
9 Miscellaneous							
Doors, frames and hardware	$19,838						$19,838
Walk-ins						$52,900	$52,900
Totals:	**$529,657**	**$167,298**	**$12,699**	**$4**	**$5**	**$3,556,354**	**$4,266,002**

Building:	600 – SLT Administration
Address:	1360 Johnson Blvd., S. Lake Tahoe
Square Footage:	22,343
Number of Floors:	1
Year Built:	1975
Occupants:	Coroner, District Attorney, Mental & Public Health, Probation, Public Defender, Sheriff's Office
Replacement Cost:	$5,820,000
Alternate Site Replacement Cost:	$7,275,000 *
Deferred/Scheduled Maintenance:	$2,127,375
Deferred Maintenance as % of Replacement Cost:	36%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the SLT Administration facility is at a level that indicates additional investment should be considered. The building is middle aged and well-constructed. Coordinated improvements should address multiple systems at a time in order to minimize staff disruption.

Staff Recommendations:

Staff recommends continued investment into the facility for the near term. Investment as outlined in the next five years should preserve the asset well into the future.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Emergency and exit lighting.
2) HVAC Mechanical
3) ADA improvements.
4) Fascia.

* ***Alternate Site Replacement Cost*** *estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

El Dorado County
Staff Supplemental Conditions Report

Item	Implementation Year 1	2	3	4	5	6 - 15	Total
600 South Lake Tahoe Administration							
1 Fire & Safety Modernization							
Emergency and Exit Lighting	$14,774						$14,774
Fire Alarm			$88,646				$88,646
Wet Type System			$88,646				$88,646
2 ADA Enhancements							$0
Cabinets	$4,761						$4,761
Doors, frames and hardware	$1,580	$13,886	$13,886				$29,353
Plumbing Fixtures		$4,959	$4,959				$9,919
Toilet Rooms		$72,738	$72,738				$145,475
3 Structural							
Structural Framing						$3,306	$3,306
4 Building Integrity							
Built-up Roofing						$115,719	$115,719
Doors, frames and hardware						$9,919	$9,919
Fascia	$2,645						$2,645
Metal Roofing						$179,331	$179,331
Windows and Frames						$52,371	$52,371
5 Finishes							
Carpet				$101,833			$101,833
VCT				$873			$873
Wall Framing and Finishes	$661						$661
6 Mechanical							
Air Handlers	$55,545	$55,545	$55,545				$166,635
Condensing Units	$26,662	$26,662	$26,662				$79,985
Controls	$19,699	$19,699	$19,699				$59,097
Diffusers & grills	$12,312	$12,312	$12,312				$36,936
Ductwork	$82,736	$82,736	$82,736				$248,208
Electric Water Heater						$8,596	$8,596
Exhaust Fans	$4,056	$4,056	$4,056				$12,167
Gas Fired Water Heater						$17,193	$17,193
Piping	$4,925	$4,925	$4,925				$14,774
Unit Heaters	$1,587	$1,587	$1,587				$4,761
7 Electrical							
Data and Cabling						$26,450	$26,450
Exterior Building Lighting						$11,903	$11,903
General Interior Lighting						$251,163	$251,163
Main Service		$66,125					$66,125
Outlets and Wiremold		$29,549					$29,549
Panel and Breakers		$59,097					$59,097
Site Lighting						$33,063	$33,063
8 Civil							
Asphalt Paving		$153,443					$153,443
Totals:	**$231,943**	**$607,318**	**$476,396**	**$102,705**	**$0**	**$709,013**	**$2,127,375**

Building:	610 – SLT El Dorado Center
Address:	3368 Lake Tahoe Blvd
Square Footage:	18,453
Number of Floors:	3
Year Built:	1960
Occupants:	Assessor, Child Support Services, Building Services, Environmental Management, Health and Human Services, Recorder-Clerk
Replacement Cost:	$4,960,000
Alternate Site Replacement Cost:	$6,200,000 *
Deferred/Scheduled Maintenance:	$3,898,648
Deferred Maintenance as % of Replacement Cost:	78%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the SLT El Dorado Center is extremely high. Furthermore, the nature of some of the repairs makes the building a problematic real estate asset in the future. Elevators, bathrooms and building skin are inconsistent with current codes and not cost effective to retrofit.

Staff Recommendations:

Staff concurs with the Conditions Assessment Report findings and recommends minimal County investment into this facility while an exit strategy is developed and implemented.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Emergency and exit lighting.
2) Handrails.

* ***Alternate Site Replacement Cost*** *estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

El Dorado County
Staff Supplemental Conditions Report

Item	Implementation Year 1	2	3	4	5	6 - 15	Will not be Expended	Total
610 South Lake Tahoe El Dorado Center								
1 Fire & Safety Modernization								
Emergency and Exit Lighting	$18,392							$18,392
Fire Alarm							$24,404	
Mechanical Screens	$2,222							$2,222
Stairs and Handrails	$3,174							$3,174
Wet Type System							$98,092	
2 ADA Enhancements								
Cabinets							$7,935	
Doors, frames and hardware							$7,274	
Toilet Rooms							$137,540	
3 Structural								
Structural Framing							$670,217	
4 Building Integrity								
Built-up Roofing							$104,425	
Doors, frames and hardware							$17,788	
Storefront Systems							$515,775	
Wood Shake Roof							$13,542	
5 Finishes								
Cabinets							$1,653	
Carpet							$72,738	
Ceilings							$64,009	
Wall Framing and Finishes							$33,724	
6 Mechanical								
Air Handlers							$79,350	
Boilers		$9,919						$9,919
Chillers							$31,740	
Controls							$49,046	
Diffusers & grills							$24,523	
Ductwork							$171,662	
Electric Water Heater							$8,596	
Exhaust Fans							$15,870	
Expansion Tank/Air Separators							$6,613	
Gas Fired Water Heater							$8,596	
HVAC Piping							$110,354	
MAU Units							$11,903	
Package Units							$809,092	
Piping							$78,474	
Pumps							$6,613	
Valves							$19,838	
7 Electrical								
Data and Cabling							$6,613	
Exterior Building Lighting							$3,968	
General Interior Lighting							$208,446	
Main Service							$66,125	
Outlets and Wiremold							$24,523	
Panel and Breakers							$49,046	
Site Lighting							$26,450	
8 Civil								
Asphalt Paving							$208,294	
Storm Drainage							$39,675	
9 Miscellaneous								
Doors, frames and hardware							$14,548	
Elevators							$15,870	
Totals:	**$23,788**	**$9,919**	**$0**	**$0**	**$0**	**$0**	**$3,864,941**	**$33,707**

Building:	620 – SLT Juvenile Treatment Center
Address:	1041 Al Tahoe Blvd.,
Square Footage:	26,180
Number of Floors:	2
Year Built:	2004
Occupants:	Juvenile Treatment Center
Replacement Cost:	$9,440,000
Alternate Site Replacement Cost:	$11,328,000 *
Deferred/Scheduled Maintenance:	$86,252
Deferred Maintenance as % of Replacement Cost:	1%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the SLT Juvenile Treatment Center is low and reflects the relatively new age of the facility. As one of the newest County facilities, the juvenile treatment facility is in good working order and should serve the County well for decades.

Staff Recommendations:

Staff recommends the County continue to invest into the preservation and maintenance of this asset.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Fencing.
2) Countertops.

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

El Dorado County
Staff Supplemental Conditions Report

Item	Implementation Year 1	2	3	4	5	6 - 15	Total
620 South Lake Tahoe Juvenile Treatment							
2 ADA Enhancements							
Dayroom Tables			$2,910				$2,910
5 Finishes							
Carpet						$7,419	$7,419
7 Electrical							
Monitoring Equipment			$23,276				$23,276
Security System			$10,183				$10,183
8 Civil							
Asphalt Paving			$29,459				$29,459
Fencing	$4,582						$4,582
9 Miscellaneous							
Countertops	$567						$567
Doors, frames and hardware						$7,856	$7,856
Totals:	**$5,150**	**$0**	**$65,827**	**$0**	**$0**	**$15,275**	**$86,252**

Building:	621,622 & 631 – SLT Jail
Address:	1051 Al Tahoe Blvd.,
Square Footage:	64,188
Number of Floors:	2
Year Built:	1973/1991 Addition
Occupants:	Jail
Replacement Cost:	$32,900,000
Alternate Site Replacement Cost:	$39,480,000 *
Deferred/Scheduled Maintenance:	$5,348,875
Deferred Maintenance as % of Replacement Cost:	16%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the SLT Jail Complex is comparatively low. The numbers may not accurately reflect the facilities complicated mix of old and new infrastructure. The facility has been expanded over the years and presents a complicated, but worthwhile, challenge for asset preservation.

Staff Recommendations:

Staff recommends the County continue to invest into the preservation and maintenance of this asset. Investment priority should be directed toward modernizing the older areas of the facility. Many systems from the original construction are beyond their useful life cycle and should be replaced.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Doors, frames and hardware.
2) Exterior wall finishes.
3) Ceilings
4) Mechanical units
5) Emergency and exit lighting

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction*

El Dorado County
Staff Supplemental Conditions Report

Item	Implementation Year 1	2	3	4	5	6 - 15	Will not be Expended	Total
621, 622 & 631 South Lake Tahoe Jail								
1 Fire & Safety Modernization								
Fire Alarm						$280,132		$280,132
Stairs and Handrails	$582							$582
Wet Type System						$112,053		$112,053
2 ADA Enhancements								
Casework		$2,619						$2,619
Doors, frames and hardware		$6,001						$6,001
Shower			$32,732					$32,732
Toilet Rooms					$72,738			$72,738
3 Structural								
Structural Framing						$529,638		$529,638
4 Building Integrity								
Built-up Roofing						$43,279		$43,279
Doors, frames and hardware	$5,121							$5,121
Exterior Wall Finishes	$45,825							$45,825
Metal Roofing						$296,769		$296,769
Single-ply Roofing							$22,912	
Skylights			$34,914					$34,914
5 Finishes								
Carpet				$32,732				$32,732
Ceilings	$81,262							$81,262
Wall Framing and Finishes	$1,818					$136,383		$138,201
6 Mechanical								
Air Handlers						$290,950		$290,950
Combi Unit						$65,464		$65,464
Controls						$186,755		$186,755
Diffusers & grills						$46,689		$46,689
Ductwork						$196,093		$196,093
Exhaust Fans		$14,548						$14,548
MAU Units	$16,366							$16,366
Package Units	$26,331				$193,773			$220,104
Piping						$218,213		$218,213
Plumbing Fixtures						$10,038		$10,038
Pumps		$14,548						$14,548
Showers						$14,548		$14,548
Unit Heaters						$2,328		$2,328
Valves						$36,732		$36,732
7 Electrical								
Cameras						$93,377		$93,377
Data and Cabling						$21,821		$21,821
Distribution Boards						$34,914		$34,914
Emergency and Exit Lighting	$46,689							$46,689
Emergency Power Supply				$285,858				$285,858
Exterior Building Lighting						$34,187		$34,187
General Interior Lighting						$466,887		$466,887
Main Service						$138,201		$138,201
Monitoring Equipment						$290,950		$290,950
Outlets and Wiremold						$70,033		$70,033
Panel and Breakers						$140,066		$140,066
Security System						$294,139		$294,139
Site Lighting						$58,190		$58,190
Stand Alone PA System						$93,377		$93,377
Telephone						$7,274		$7,274

El Dorado County
Staff Supplemental Conditions Report

Item	Implementation Year 1	2	3	4	5	6 - 15	Will not be Expended	Total
8 Civil								
Asphalt Paving				$165,078				$165,078
Concrete Paving						$12,220		$12,220
9 Miscellaneous								
Countertops		$2,837						$2,837
Dishwasher						$29,095		$29,095
Doors, frames and hardware					$13,093			$13,093
Gates						$2,619		$2,619
Totals:	**$223,995**	**$40,553**	**$67,649**	**$483,672**	**$279,608**	**$4,253,413**	**$22,912**	**$5,348,875**

Building:	760 – SLT Library
Address:	1000 Rufus Allen
Square Footage:	12,221
Number of Floors:	1
Year Built:	1982
Occupants:	Library
Replacement Cost:	$3,430,000
Alternate Site Replacement Cost:	$4,116,000 *
Deferred/Scheduled Maintenance:	$1,317,496
Deferred Maintenance as % of Replacement Cost:	38%

Staff Comments:

The deferred maintenance as a ratio of replacement value for the SLT Library is high. The building is of sound construction, but heavy use and South Lake Tahoe weather accelerate facility aging. The building is well within the zone that indicates the asset is worth saving and continued investment is warranted.

Staff Recommendations:

Staff recommends the County continue to invest into the preservation and maintenance of this asset in a fashion that is consistent with the CAR report.

2013/2014 Activities:

The list of actions proposed by the Facilities Division for FY 13/14 includes, but is not limited to, the following:

1) Kitchen hood.
2) ADA cabinets and plumbing fixtures.
3) ADA site improvements
4) Plumbing retrofit.
5) Paving and storm drainage.

** **Alternate Site Replacement Cost** estimate assumes a suitable replacement site can be obtained at current market rates without extraordinary offsite construction.*

El Dorado County
Staff Supplemental Conditions Report

Item	Implementation Year 1	2	3	4	5	6 - 15	Total
760 South Lake Tahoe Library							
1 Fire & Safety Modernization							
Fire Alarm			$44,446				$44,446
Gas Fired Water Heater	$132						$132
Kitchen Hoods	$1,984						$1,984
Wet Type System						$64,649	$64,649
2 ADA Enhancements							
Cabinets	$1,587						$1,587
Plumbing Fixtures	$2,381						$2,381
4 Building Integrity							
Built-up Roofing				$154,415			$154,415
Wood Shake Roof			$28,566				$28,566
5 Finishes							
Carpet						$69,431	$69,431
Countertops	$860						$860
6 Mechanical							
Air Handlers						$92,575	$92,575
Controls		$32,325					$32,325
Diffusers & grills						$16,162	$16,162
Ductwork						$113,136	$113,136
Exhaust Fans						$2,645	$2,645
Gas Fired Water Heater						$8,596	$8,596
Package Units			$72,738				$72,738
Piping	$32,325					$16,162	$48,487
Plumbing Fixtures	$3,306					$1,587	$4,893
7 Electrical							
Data and Cabling						$13,225	$13,225
Exterior Building Lighting	$3,968						$3,968
General Interior Lighting						$137,379	$137,379
Main Service						$66,125	$66,125
Outlets and Wiremold						$18,146	$18,146
Panel and Breakers						$32,325	$32,325
Site Lighting						$21,160	$21,160
8 Civil							
Asphalt Paving	$13,886					$238,050	$251,936
Storm Drainage	$13,225						$13,225
Totals:	**$73,653**	**$32,325**	**$145,750**	**$154,415**	**$0**	**$911,354**	**$1,317,496**

Section 3 - Acquisitions / Dispositions

Acquisitions / Dispositions

Facility Acquisition and Disposal

The process of facility acquisition and disposal, commonly referred to as asset management, is the practice of cost effective facility design, construction, commissioning, operating, maintaining, repairing, modifying, replacing, and ultimately the decommissioning or disposing of the facility or asset. In a constrained budget environment this process requires some method of prioritization or strategy.

Certain County facilities, such as the El Dorado Hills Library, are near the beginning of their lifecycle. These facilities require general building maintenance to ensure that the property/asset retains its value and does not deteriorate from its current physical condition.

Three County facilities, the Sheriff Administrative Center on Fair Lane, the District Attorney facility on Main Street, and the El Dorado Center in South Lake Tahoe have been identified as examples of facilities at the very end of their lifecycles. These facilities are in relatively poor condition, have antiquated and inefficient building systems, and may not meet all current codes or facility requirements. The cost to upgrade these facilities and eliminate deficiencies cannot be justified. These facilities need to be considered for replacement.

Finally, there are County facilities, such as Buildings A & B on Fair Lane, that are midway through the facility lifecycle. These facilities are in fair condition however are in need of investment to replace antiquated building systems, to meet current codes, and to eliminate deferred maintenance and other deficiencies. These assets with a combination of building maintenance and reconstruction work, can have their useful lives extended and returned to their original and intended physical condition.

It is important to note that a number of County facilities contain critical infrastructure. Critical infrastructure would be those facilities or systems that if incapacitated or destroyed would have a debilitating impact on security, public health, or safety. For example, a power supply issue, effecting electrical power at the Building A, Sherriff 911/Office of Emergency Services, where a forced shutdown of computerized controls and communication could negatively impact emergency services. This infrastructure is often taken for granted however a failure can have devastating consequences throughout the County. Facilities such as Buildings A 911/Office of Emergency Services, the East & West Slope Juvenile Halls, the East & West Slope Jails, the East & West Slope Sheriffs Department, and the Psychiatric Health Facility are examples of facilities containing critical infrastructure and operations. General facility maintenance and prioritized facility investment is the critical link between managing risk and infrastructure assurance.

End of Life Facility – Sheriff's Administrative Center, Placerville

The Sheriff's Administrative Center was formally the old County Jail. Many of the old jail cells still exist and are primarily used for evidence storage. This facility is at or beyond the end of its life cycle. In December of 1990 the project to build a new $14 million Justice Center (Sheriff, Elections, Grand Jury, District Attorney, and Probation) adjacent to the Main Jail was approved with only partial funding to initiate the Environmental Impact Report and Architectural Design.[1] In May of 2003, TRG Consulting Inc. in association with Carter Goble Associates Inc. recommended the "construction of a new Sheriff's administration building on the Western Slope". The condition of the facility has continued to decline over the years to the point where deferred maintenance costs now exceed 60% of the buildings replacement value. Only basic maintenance, replacement, and repair work is done to ensure the building envelope is secure and the mechanical/electrical/plumbing is kept operational. Only minor project work, that which is necessary to Sheriff operations or asset preservation is generally considered or constructed until a new facility can be acquired. Cooperative efforts are underway between the Sheriff's Department and the Facilities Investment Team in an attempt to develop an exit/disposal plan for the current facility as well as to identify potential relocation possibilities and new facility strategies. A centralized Sheriff's Administrative Center has the potential to not only replace the current facility but could assist in the consolidation of a number of leased facilities into a single location.

End of Life Facility – El Dorado Center, South Lake Tahoe

The El Dorado Center, formally the Tahoe Savings and Loan main facility, was purchased by the County as an interim facility solution, after the Savings and Loan closed a number of years ago. TRG Consulting Inc. in association with Carter Goble Associates Inc. recommended in May of 2003 that the "construction of a new government building in South Lake Tahoe to replace the existing El Dorado Center which will be sold for its commercial value".[1] Similar to the Sheriff's Facility, the El Dorado Center is at or beyond the end of its life cycle. Total deferred maintenance costs are nearly 80% of the replacement value and would necessitate a complete renovation of electrical, mechanical, ADA, and the exterior envelope, making replacement or relocation of County staff the best option.

End of Life Facility – District Attorney's Office

The District Attorney's Office, originally built as the Placerville Post Office in 1938 under Franklin Roosevelt's New Deal program, also has excessive deferred maintenance at 56% of facility replacement value. As discussed, in December of 1990 the project to build a new $14 million Justice Center was introduced and was expected to have replaced the current building.[1] The existing facility has probable building integrity, seismic, and ADA compliance issues, as well, obsolete electrical and mechanical systems. Only basic maintenance, replacement, and repair work should be done to ensure the building envelope is secure and the mechanical/electrical/plumbing is kept operational. Only minor project work, essential to the District Attorney's operations, will be considered. Consideration should be given to replacing this facility in conjunction with the planning of the proposed new Superior Court Facility. A

[1] County of El Dorado, Capital Improvement Plan, December 1990.

new District Attorney facility would consolidate at least 3 owned and leased facilities, on the west slope into a single location.

Near End of Life Facility – Spring Street Complex: Psychiatric Hospital, Senior Day Care, Senior Nutrition, Public Health

The Spring Street complex occupied today by the Health and Human Services Agency was originally built and used as the Main County Hospital in the 1940s. Many of the original patient rooms and bathrooms are used as staff offices while the basement, primarily used for storage, still has brickwork remaining from the old crematorium. This facility has deferred maintenance costs in excess of $7 million or about 50% of the facilities replacement value, including obsolete mechanical, electrical, fire, and sewer systems. Because the facility is currently and has historically has been used for hospital and senior services the Spring Street complex has the development entitlements to continue its operations well into the foreseeable future. Because the entitlement process can be complicated, time consuming, and costly, a phased facility rebuild in the same site location would be recommended. The entitlements could become problematic and ultimately stall the design and construction of a new facility at an alternative location.

Near End of Life Facility – Placerville Juvenile Hall

The Placerville Juvenile Hall, built in 1971, continues to be a fully functional lock-down facility. While a great deal of the electrical, mechanical, plumbing, and the overall building envelope is at the end of its lifecycle, investment is continually made into this facility to ensure that this critical function operation remains effective. The Placerville Juvenile Hall has just under 50% of its replacement value in deferred maintenance expenses. Similar to the Spring Street Complex the Juvenile Hall facility is currently and has historically served the same function in the same location and has the development entitlements to continue its operations well into the foreseeable future. Consideration should be given and evaluation done to determine how the current facility meets both present day mandates and needs.

Facility Acquisition - 344 Placerville Drive

Today most government center buildings are fully utilized and are at or near full occupancy. Buildings A & B on Fair Lane, for example, have an approximate replacement value of approximately $24.5 million and have about $9.8 million in deferred maintenance expenses. These facilities are about midway through the facility lifecycle. To preserve and salvage these assets most building systems will need replacement to address deferred maintenance and other deficiencies. These facilities will be reconstructed in stages or areas. Staff will need to be relocated to an alternative location, such as 344 Placerville Drive, while all mechanical, electrical, flooring, fire systems, restrooms, and necessary exterior envelop systems are constructed. Once an area has been completed staff will be moved back to the newly constructed area as a new area of the facility commences with reconstruction. It is anticipated that the construction period and the need for an interim facility would be approximately 5 to 7 years. At this point the County would reassess its current issues and space needs. The Facilities Team

is in the due diligence phase of assessing the potential purchase of the 344 facility to serve as a temporary home for various agencies during construction.

Facility Acquisition – 6435 Capitol Drive, Animal Control

The Animal Control facility will be the west slope location where Animal Services will perform their primary purpose "to regulate the control and humane treatment of animals within the boundaries of El Dorado County for the protection of the safety and welfare of the public". *Ordinance 6.04.015.* Facilities is currently in the process of designing and constructing interior improvements at 6435 Capitol Drive to meet the needs of Animal Services and Public Health. Upon completion, the new facility will consolidate at least 3 locations into a single site. Site expected to be fully operation by the 3rd quarter of 2014.

Section 4 - Budget

Facilities Plan - Five Year Budget Outlook:

The implementation of this Facilities Plan is the start of a course of action that will take several years. As discussed in the Overview, once this accumulated deferred maintenance backlog exists the County will need to be committed to significant repair spending. The repair spending will need to outpace the backlog growth and cumulative results of past neglect. Continuing with the current level of maintenance is analogous to only washing and waxing your car, but never changing the oil or timing belt. It is only a matter of time before it stops running.

A standard measurement metric used within the industry for determining the required budget to properly maintain public facilities is 2 to 4 percent of their replacement value. Where a backlog of needed repairs exists spending must exceed this minimum level. This cost excludes land and major associated infrastructure. The attached Vanir Condition Assessment Report identifies approximately $55,000,000 of current and future maintenance needs; $20,000,000 of which should be incurred over the next four to five years.

Vanir and Facilities staff have evaluated each building assessment and have identified those buildings that the County should consider as questionable. Certain County buildings are considered at or near the end of their useful life and the cost to repair and maintain would not be justifiable given their replacement values. These buildings were discussed earlier in this report. The attached budget schedule backs out the cost of the identified needs of those facilities. If it's determined that the County wishes to hold on to these facilities and maintain them we will need to consider adding this cost back. We have currently removed almost $8,000,000 from the fifteen year plan.

The plan to accommodate this maintenance and repair program contemplates only the use of current funds and future designations of fund balance for capital projects. The 2013/14 fiscal year has a very aggressive schedule to undertake previous years Capital Projects that have been identified but not yet resolved. Included in this Amended Budget is the following:

CAO 2013-14 Facilities Capital Budget

Descriptions:	Amount:	Funding Source:
West Slope Animal Shelter	$5,674,272	General Fund Contribution (Previously Tobacco Settlement)
Vanir Facilities Assessment – Presented herein	$4,537,340	Designation for Capital Projects
Countywide Maintenance Pool	$2,162,285	Accumulated Capital Outlay Fund
Future Expansion Space – in Due Diligence	$1,125,000	Accumulated Capital Outlay Fund
	$1,125,000	Designation for Capital Projects
Criminal Justice Projects in-progress or planning	$1,305,500	Criminal Justice Special Revenue Fund
Court Construction Projects	$ 415,445	Court Construction Special Revenue Fund
Miscellaneous Insurance & Move Projects	$ 485,000	Miscellaneous reimbursements

Total 2013-14 Facilities Capital Budget	**$16,829,842**	

Funding for the deferred maintenance projects in subsequent years will be addressed through the use of several existing sources. These sources are listed below.

- Current Fund balance remaining is Designation for Capital Projects: $7,115,793
- Accumulated Capital Outlay Fund Balance: $2,011,831
- Accumulated Capital Outlay Fund - annual contribution (45%): $ 500,000
- Criminal Justice Special Revenue Fund Balance: $ 258,628
- Criminal Justice Special Revenue Fund – annual contributions: $ 275,000

From the current fund sources listed above there are sufficient funds to address the identified deferred maintenance projects into year four of the five year plan. The plan will look for future designation of available fund balances attained after each year end. This creates a leap frog affect looking 3 years out for the future needs. As each year passes the Facilities team will have a more in-depth knowledge of the projects and better engineered estimates.

The following table reflects the anticipated shortfalls:

Year	**1**	**2**	**3**	**4**	**5**	**6-15**
Funding required	**$4,537,340**	**$5,376,389**	**$4,303,463**	**$3,830,517**	**$1,632,566**	**$26,712,925**
Designation for CIP	4,537,340	2,330,930	3,528,463	1,256,400	---	---
ACO Fund Balance		2,011,831	---	---	---	---
Criminal Justice FB		258,628	---	---	---	---
Annual Criminal Justice Funds		275,000	275,000	275,000	275,000	2,750,000
45% Annual ACO Funds		500,000	500,000	500,000	500,000	5,000,000
Shortfall	---	---	---	**$1,799,117**	**$857,566**	**$18,962,925**

El Dorado County

Staff Supplemental Conditions Summary Report - Building Summary

Item	Implementation Year 1	2	3	4	5	6~15	Will not be Expended	Total
100 Building A	$438,666	$1,212,995	$834,765	$626,372		$975,627		$4,088,424
110 Building B	$722,110	$677,247	$1,151,231	$625,669	$837,269	$1,253,700		$5,267,225
115 Building C	$139,651	$334,151	$87,438			$3,474,188		$4,035,427
120 Sheriff Administration	$46,597	$178,491	$44,283				$2,822,216	$269,371
123 Juvenile Hall	$55,736	$615,824	$485,094	$264,097	$149,934	$287,952		$1,858,637
126 Main Jail	$999,071	$950,752	$709,656	$1,553,335	$345,503	$4,147,841		$8,706,159
160 Main Library	$331,984	$32,556	$20,256	$20,256	$20,256	$3,282,852		$3,708,162
221 District Attorney	$88,094	$52,900					$1,269,093	$140,994
330 DOT Administration - Headquarters	$66,788	$113,008	$2,381			$792,892		$975,068
362 Cameron Park Library	$14,011	$64,075	$107,470			$501,350		$686,905
440 PHF	$223,767		$92,575			$1,401,303		$1,717,645
440A Sr Day Car Center	$116,535	$141,772				$699,784		$958,091
441 Health Department	$206,147	$145,211				$450,027		$801,385
470 Community Services / Sr Nutrition	$529,656	$167,296	$12,696			$3,556,354		$4,266,002
600 South Lake Tahoe Administration	$231,943	$607,318	$476,396	$102,705		$709,013		$2,127,375
610 South Lake Tahoe El Dorado Center	$23,788	$9,919					$3,864,941	$33,707
620 South Lake Tahoe Juvenile Treatment	$5,150		$65,827			$15,275		$86,252
621, 622 & 631 South Lake Tahoe Jail	$223,994	$40,551	$67,646	$483,668	$279,603	$4,253,413	$22,912	$5,348,875
760 South Lake Tahoe Library	$73,653	$32,325	$145,750	$154,415		$911,354		$1,317,496
Grand Total	**$4,537,340**	**$5,376,389**	**$4,303,463**	**$3,830,517**	**$1,632,566**	**$26,712,925**	**$7,979,163**	**$46,393,200**

El Dorado County
Staff Supplemental Conditions Summary Report

Item	Implementation Year 1	2	3	4	5	6~15	Will not be Expended	Total
100 Building A	$438,666	$1,212,995	$834,765	$626,372		$975,627		$4,088,424
1 Fire & Safety Modernization	$71,662	$38,670	$38,670	$38,670				$187,673
2 ADA Enhancements	$106,660	$148,120						$254,780
3 Structural			$128,547					$128,547
4 Building Integrity	$3,802		$39,675			$479,274		$522,751
5 Finishes	$66,125	$66,125	$66,125	$66,125				$264,500
6 Mechanical	$154,868	$864,860	$469,999	$469,999				$1,959,725
7 Electrical		$63,480		$51,578		$496,353		$611,411
8 Civil			$52,073					$52,073
9 Miscellaneous	$35,549	$31,740	$39,675					$106,964
110 Building B	$722,110	$677,247	$1,151,231	$625,669	$837,269	$1,253,700		$5,267,225
1 Fire & Safety Modernization	$140,435	$60,526	$60,526	$60,526	$60,526			$382,537
2 ADA Enhancements	$37,030	$64,803	$37,030	$37,030	$37,030			$212,923
3 Structural			$251,804					$251,804
4 Building Integrity			$59,513			$657,547		$717,060
5 Finishes	$95,114	$95,114	$95,114	$95,114	$95,114			$475,571
6 Mechanical	$411,699	$395,167	$395,167	$395,167	$606,767			$2,203,969
7 Electrical	$37,832	$37,832	$37,832	$37,832	$37,832	$588,879		$778,039
8 Civil			$214,245			$7,274		$221,519
9 Miscellaneous		$23,805						$23,805
115 Building C	$139,651	$334,151	$87,438			$3,474,188		$4,035,427
1 Fire & Safety Modernization	$24,903					$184,700		$209,603
2 ADA Enhancements	$7,406							$7,406
4 Building Integrity						$453,287		$453,287
5 Finishes	$12,299		$9,919			$429,813		$452,031
6 Mechanical	$85,984	$117,195	$77,520			$1,372,590		$1,653,287
7 Electrical						$991,478		$991,478
8 Civil	$8,927	$201,086				$26,450		$236,463
9 Miscellaneous	$132	$15,870				$15,870		$31,872

El Dorado County
Staff Supplemental Conditions Summary Report

Item	Implementation Year 1	2	3	4	5	6~15	Will not be Expended	Total
120 Sheriff Administration	$46,597	$178,491	$44,283				$2,822,216	$269,371
1 Fire & Safety Modernization	$15,532						$86,039	$15,532
2 ADA Enhancements							$77,829	$0
3 Structural							$621,295	$0
4 Building Integrity		$44,806					$307,083	$44,806
5 Finishes							$178,498	$0
6 Mechanical		$133,685	$9,456				$614,792	$143,141
7 Electrical	$31,065						$577,851	$31,065
8 Civil			$34,827				$324,206	$34,827
9 Miscellaneous							$34,623	$0
123 Juvenile Hall	$55,736	$615,824	$485,094	$264,097	$149,934	$287,952		$1,858,637
1 Fire & Safety Modernization	$4,664	$57,143						$61,807
2 ADA Enhancements			$71,283					$71,283
3 Structural			$265,674					$265,674
4 Building Integrity		$158,859			$7,056	$90,872		$256,787
5 Finishes	$1,637		$72,345					$73,981
6 Mechanical	$15,947	$399,822	$3,055			$127,907		$546,731
7 Electrical	$33,489		$72,738	$130,369	$128,331	$43,587		$408,513
8 Civil				$133,728	$14,548	$3,764		$152,040
9 Miscellaneous						$21,821		$21,821
126 Main Jail	$999,071	$950,752	$709,656	$1,553,335	$345,503	$4,147,841		$8,706,159
1 Fire & Safety Modernization	$8,990	$31,248		$711,762				$752,000
2 ADA Enhancements		$109,106				$1,746		$110,852
4 Building Integrity	$104,887					$527,158		$632,045
5 Finishes						$275,675		$275,675
6 Mechanical	$517,629	$750,025	$575,819	$713,555	$287,313	$1,126,652		$3,970,993
7 Electrical	$283,938			$69,828		$1,927,116		$2,280,882
8 Civil			$29,095					$29,095
9 Miscellaneous	$83,626	$58,190	$104,742	$58,190	$58,190	$289,495		$652,434

El Dorado County
Staff Supplemental Conditions Summary Report

Item	Implementation Year 1	2	3	4	5	6~15	Will not be Expended	Total
160 Main Library	$331,984	$32,556	$20,256	$20,256	$20,256	$3,282,852		$3,708,162
1 Fire & Safety Modernization	$26,513					$227,885		$254,399
2 ADA Enhancements	$140,846	$10,977						$151,823
3 Structural						$759,618		$759,618
4 Building Integrity	$54,289					$192,027		$246,316
5 Finishes	$2,843	$1,323				$316,078		$320,243
6 Mechanical	$100,979	$20,256	$20,256	$20,256	$20,256	$904,404		$1,086,409
7 Electrical						$578,666		$578,666
8 Civil	$6,315					$224,825		$231,140
9 Miscellaneous	$198					$79,350		$79,548
221 District Attorney	$88,094	$52,900					$1,269,093	$140,994
1 Fire & Safety Modernization	$58,206						$86,091	$58,206
2 ADA Enhancements		$52,900					$212,790	$52,900
3 Structural							$191,313	$0
4 Building Integrity							$101,251	$0
5 Finishes	$8,729						$118,364	$8,729
6 Mechanical	$21,160						$260,892	$21,160
7 Electrical							$233,723	$0
8 Civil							$30,285	$0
9 Miscellaneous							$34,385	$0
330 DOT Administration - Headquarters	$66,788	$113,008	$2,381			$792,892		$975,068
1 Fire & Safety Modernization	$4,174					$90,029		$94,203
2 ADA Enhancements	$10,712	$6,613	$2,381					$19,705
3 Structural	$794							$794
4 Building Integrity	$397					$160,552		$160,948
5 Finishes	$3,985					$42,479		$46,463
6 Mechanical	$46,727	$62,753				$208,482		$317,962
7 Electrical						$83,057		$83,057
8 Civil		$23,805				$208,294		$232,099
9 Miscellaneous		$19,838						$19,838

El Dorado County
Staff Supplemental Conditions Summary Report

Item	Implementation Year 1	2	3	4	5	6~15	Will not be Expended	Total
362 Cameron Park Library	$14,011	$64,075	$107,470			$501,350		$686,905
1 Fire & Safety Modernization	$190							$190
2 ADA Enhancements	$3,306							$3,306
4 Building Integrity	$3,306	$3,571				$130,928		$137,805
5 Finishes	$3,372	$60,504						$63,877
6 Mechanical	$3,835		$61,100			$266,256		$331,191
7 Electrical						$30,423		$30,423
8 Civil			$46,370			$68,241		$114,611
9 Miscellaneous						$5,502		$5,502
440 PHF	$223,767		$92,575			$1,401,303		$1,717,645
1 Fire & Safety Modernization	$38,931							$38,931
2 ADA Enhancements	$7,538		$92,575					$100,113
3 Structural						$527,876		$527,876
4 Building Integrity						$218,232		$218,232
5 Finishes						$21,160		$21,160
6 Mechanical						$369,120		$369,120
7 Electrical	$149,790					$227,620		$377,410
8 Civil	$19,573					$37,295		$56,868
9 Miscellaneous	$7,935							$7,935
440A Sr Day Car Center	$116,535	$141,772				$699,784		$958,091
1 Fire & Safety Modernization	$53,812							$53,812
2 ADA Enhancements	$15,043	$63,480						$78,523
3 Structural						$224,997		$224,997
4 Building Integrity						$156,425		$156,425
5 Finishes						$76,540		$76,540
6 Mechanical		$78,292				$96,082		$174,374
7 Electrical	$20,733					$92,509		$113,243
8 Civil	$19,011					$53,231		$72,242
9 Miscellaneous	$7,935							$7,935

El Dorado County
Staff Supplemental Conditions Summary Report

Item	Implementation Year 1	2	3	4	5	6~15	Will not be Expended	Total
441 Health Department	$206,147	$145,211				$450,027		$801,385
1 Fire & Safety Modernization	$81,647							$81,647
2 ADA Enhancements	$15,077	$73,134						$88,211
4 Building Integrity						$162,958		$162,958
5 Finishes	$1,984					$8,266		$10,249
6 Mechanical	$2,910	$26,450				$177,283		$206,642
7 Electrical	$91,834					$101,520		$193,355
8 Civil	$12,696	$45,626						$58,322
470 Community Services / Sr Nutrition	$529,656	$167,296	$12,696			$3,556,354		$4,266,002
1 Fire & Safety Modernization	$158,386					$6,613		$164,998
2 ADA Enhancements	$23,673	$105,800				$3,306		$132,779
3 Structural						$719,936		$719,936
4 Building Integrity						$521,726		$521,726
5 Finishes	$3,968					$224,428		$228,396
6 Mechanical	$110,143	$61,496				$1,431,179		$1,602,818
7 Electrical	$163,395					$420,373		$583,768
8 Civil	$50,255		$12,696			$175,893		$238,844
9 Miscellaneous	$19,838					$52,900		$72,738
600 South Lake Tahoe Administration	$231,943	$607,318	$476,396	$102,705		$709,013		$2,127,375
1 Fire & Safety Modernization	$14,774		$177,292					$192,066
2 ADA Enhancements	$6,341	$91,583	$91,583					$189,508
3 Structural						$3,306		$3,306
4 Building Integrity	$2,645					$357,340		$359,985
5 Finishes	$661			$102,705				$103,367
6 Mechanical	$207,521	$207,521	$207,521			$25,789		$648,352
7 Electrical		$154,771				$322,578		$477,349
8 Civil		$153,443						$153,443

El Dorado County
Staff Supplemental Conditions Summary Report

Item	Implementation Year 1	2	3	4	5	6~15	Will not be Expended	Total
610 South Lake Tahoe El Dorado Center	$23,788	$9,919					$3,864,941	$33,707
1 Fire & Safety Modernization	$23,788						$122,497	$23,788
2 ADA Enhancements							$152,749	$0
3 Structural							$670,217	$0
4 Building Integrity							$651,530	$0
5 Finishes							$172,123	$0
6 Mechanical		$9,919					$1,432,269	$9,919
7 Electrical							$385,171	$0
8 Civil							$247,969	$0
9 Miscellaneous							$30,418	$0
620 South Lake Tahoe Juvenile Treatment	$5,150		$65,827			$15,275		$86,252
2 ADA Enhancements			$2,910					$2,910
5 Finishes						$7,419		$7,419
7 Electrical			$33,459					$33,459
8 Civil	$4,582		$29,459					$34,041
9 Miscellaneous	$567					$7,856		$8,423
621, 622 & 631 South Lake Tahoe Jail	$223,994	$40,551	$67,646	$483,668	$279,603	$4,253,413	$22,912	$5,348,875
1 Fire & Safety Modernization	$582					$392,185		$392,767
2 ADA Enhancements		$8,619	$32,732		$72,738			$114,089
3 Structural						$529,638		$529,638
4 Building Integrity	$50,945		$34,914			$340,048	$22,912	$425,907
5 Finishes	$83,081			$32,732		$136,383		$252,195
6 Mechanical	$42,697	$29,095			$193,773	$1,067,808		$1,333,373
7 Electrical	$46,689			$285,858		$1,743,418		$2,075,965
8 Civil				$165,078		$12,220		$177,298
9 Miscellaneous		$2,837			$13,093	$31,714		$47,643
760 South Lake Tahoe Library	$73,653	$32,325	$145,750	$154,415		$911,354		$1,317,496
1 Fire & Safety Modernization	$2,116		$44,446			$64,649		$111,211
2 ADA Enhancements	$3,968							$3,968
4 Building Integrity			$28,566	$154,415				$182,981
5 Finishes	$860					$69,431		$70,291

El Dorado County
Staff Supplemental Conditions Summary Report

Item	Implementation Year 1	2	3	4	5	6~15	Will not be Expended	Total
6 Mechanical	$35,631	$32,325	$72,738			$250,864		$391,557
7 Electrical	$3,968					$288,360		$292,327
8 Civil	$27,111					$238,050		$265,161
Grand Total	**$4,537,340**	**$5,376,389**	**$4,303,463**	**$3,830,517**	**$1,632,566**	**$26,712,925**	**$7,979,163**	**$46,393,200**

Section 5 - Vanir Assessment

El Dorado County
Conditions Assessment Report

June 2013

FINAL

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100 Building A – 330 Fair Lane Road, Placerville, CA - Deficiencies and Cost

Square Footage	38,987
Number of Floors	2
Year Built	1976
Replacement Cost	$11,270,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Emergency and exit lighting is inadequate. The fire alarm system in place needs updating. Any building modernization would require an upgrade. Fire sprinkler system is at the end of its life expectancy in the older section of building constructed in 1976. Stairs do not have contrasting stripe. The second floor balcony railing has dry-rot issues and spacing of vertical members requires alterations be made.	$187,673
2	ADA Enhancement	HC parking spaces not satisfactory due to side slope issues. Public restrooms on both levels are not ADA suitable. Doors with public access have ADA levers, however many of the others do not. Break room does not have accessible sink and cabinet. The transaction window at the administration area is not acceptable. Speaker hole is too high. Elevators lack ADA controls.	$254,780
3	Structural	Exterior columns and beams have cracks, woodpecker and dry-rot issues.	$128,547
4	Building Integrity	Roofing is problematic. There are alligator cracks in the cap sheet and evidence of water ponding. Fascia boards are sun damaged and cracked/warped. Windows are non energy efficient single glazed. Exterior doors are mostly fair, except one door which is difficult to close.	$522,751
5	Finishes	No major issues. Carpet has normal wear. Shower in men's staff restroom does not have proper pan, resultant leak caused water stains on ceiling below.	$264,500
6	Mechanical	The building is partially served by a central plant that is covered in Building 110 (Bldg. B). Packaged rooftop and split system units serve the BOS addition and Annex which are end of useful life. The 911 center does not have outside fresh air intake. The air handlers served from the central plant, as well as the associated diffusers, valves, piping and ductwork is original and at end of expected life. Ducts require maintenance and are not properly sized for building reconfigurations that have occurred over time. Hot	$1,959,725

100 Building A – 330 Fair Lane Road, Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
		water heaters are nearly 20 years old. Water pressure in the building is suspect, indicating buildup within pipes have restricted flow. Controls are obsolete with no energy management capabilities.	
7	Electrical	Exterior building lighting levels low due to discolored and dirty diffusers. Exterior soffit lighting is difficult to maintain in operation due to height above ground and inefficient lamps. Interior lighting has been retrofitted, however lighting levels have not been adjusted and are uneven. The data cable installation is sloppy and haphazard. Wall and ceiling penetrations not properly sealed. Abandoned cabling, power circuits, and ductwork clutter the space above ceilings. The emergency generator is inadequate to serve entire building which impacts some departments. Original panels and breakers have limited ability serve loads and lack expansion capability. Issues with main service to building. Part of building served by main panel in Building B, other parts served by 1000 amp panel installed during 1991 expansion. Difficult to isolate problems.	$730,436
8	Civil	Parking lot paving has minor cracking. Concrete is generally good, but some ADA issues.	$52,073
9	Miscellaneous	No major issues. Seating in board meeting room near end of expected lifecycle.	$106,964

100 Building A - 330 Fair Lane Road, Placerville, CA - Recommendations

- Fire and safety modernization should be addressed. Install new emergency and exit lighting. Replace second floor balcony railings. Add contrasting stripes at stairs. Have the fire sprinkler system tested to determine if and where corrosion has occurred in the piping from air pockets or microbiologically Influenced corrosion (MIC) from the water quality. Replace piping and sprinkler heads that are determined to be sufficiently corroded to maintain the integrity of the system in place to reduce the cost for complete replacement of the system. Provide combination fire/smoke dampers tied to the fire alarm system at all ducts passing through fire rated walls. Seal all openings through fire rated wall with fire rated materials.

- Remodel public restrooms on both levels. Replace the water and waste lines concurrently. Replace door hardware to meet access requirements. Modify break room cabinets and sinks for ADA.

- Have a structural engineer look at the exterior wood columns and beams to determine structural integrity. The cost associated with the deficiency is for structural assessment only.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Replacing the windows will provide an energy savings. Suggest an energy audit to determine cost benefit. Seal all wall and floor penetrations to mitigate rodent intrusion.

- Remodel shower in men’s restroom. Install new shower pan.

- Replace deficient HVAC system equipment and components to separate service from Building B antiquated system. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Remove abandoned equipment and ductwork.

- Provide complete separate electrical service to the building with a dedicated emergency generator sized to back-up all required loads. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Install additional receptacles and signal outlets with concealed raceway or wiremold. Paint parking lot poles to protect metal for prolonged life in conjunction with the replaced LED lights. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits.

100 Building A - 330 Fair Lane Road, Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
100 Building A						
1 Fire & Safety Modernization	**$187,673**					**$187,673**
Emergency and Exit Lighting	$12,890					$12,890
Fire Alarm	$51,560					$51,560
Ramps, Stairs & Guardrails	$19,044					$19,044
Stairs and Handrails	$1,058					$1,058
Wet Type System	$103,121					$103,121
2 ADA Enhancements		**$254,780**				**$254,780**
Cabinets		$6,084				$6,084
Site Access		$99,188				$99,188
Toilet Rooms		$148,120				$148,120
Windows		$1,389				$1,389
3 Structural		**$42,849**	**$85,698**			**$128,547**
Structural Framing		$42,849	$85,698			$128,547
4 Building Integrity		**$373,970**	**$39,675**	**$109,106**		**$522,751**
Access Hatches				$1,984		$1,984
Built-up Roofing		$372,152				$372,152
Doors, Frames and Hardware		$1,818				$1,818
Fascia			$39,675			$39,675
Windows and Frames				$107,123		$107,123
5 Finishes				**$264,500**		**$264,500**
Carpet				$165,313		$165,313
Ceilings				$99,188		$99,188
6 Mechanical	**$2,381**	**$900,358**	**$25,789**	**$1,031,198**		**$1,959,725**
Air Handlers		$218,213				$218,213
Controls				$103,121		$103,121
Diffusers & Grills				$25,780		$25,780
Ductwork				$541,383		$541,383
Electric Water Heater			$25,789			$25,789
Exhaust Fans		$14,548				$14,548
HVAC Piping				$309,354		$309,354
Package Units		$647,761				$647,761
Piping				$51,560		$51,560
Shower	$2,381					$2,381
Valves		$19,838				$19,838
7 Electrical		**$170,603**	**$314,518**	**$208,946**	**$36,369**	**$730,436**
Data and Cabling					$26,450	$26,450
Distribution Boards				$63,480		$63,480
Emergency Power Supply		$170,603				$170,603
Exterior Building Lighting				$13,886		$13,886
General Interior Lighting			$262,958			$262,958
Main Service				$105,800		$105,800
Outlets and Wiremold				$25,780		$25,780
Panel and Breakers			$51,560			$51,560
Telephone					$9,919	$9,919
8 Civil			**$52,073**			**$52,073**
Asphalt Paving			$52,073			$52,073
9 Miscellaneous		**$31,740**		**$39,675**	**$35,549**	**$106,964**
Doors,Frames and Hardware				$39,675		$39,675
Elevators		$31,740				$31,740
Fixed Seating					$35,549	$35,549

100 - Building A - 330 Fair Lane Road, Placerville, CA - Photos

BEAMS

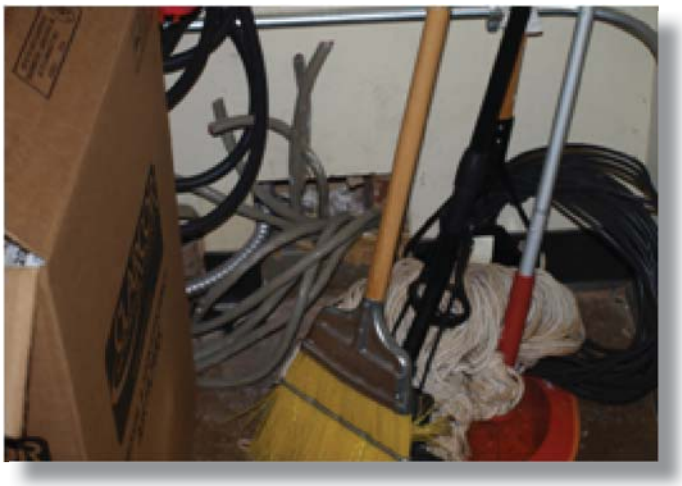
Beam repaired in 2005. The wood has vertical splitting.

BEAMS

Woodpecker damage to end of beams. Wood damage to ends of beam with splitting and cracking.

CABLING

Abandoned cabling and unsealed wall penetration.



100 - Building A - 330 Fair Lane Road, Placerville, CA - Photos

CABLING

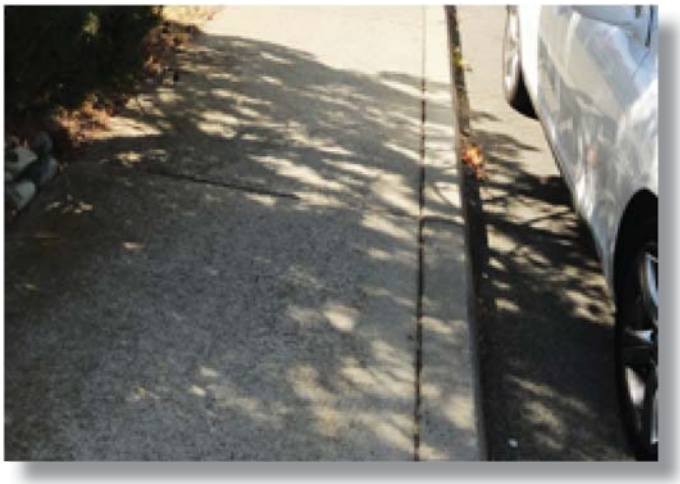
Close-up of corridor wall penetration.

COLUMN

Sun damaged wood column. Wood is splitting and cracking.

CONCRETE

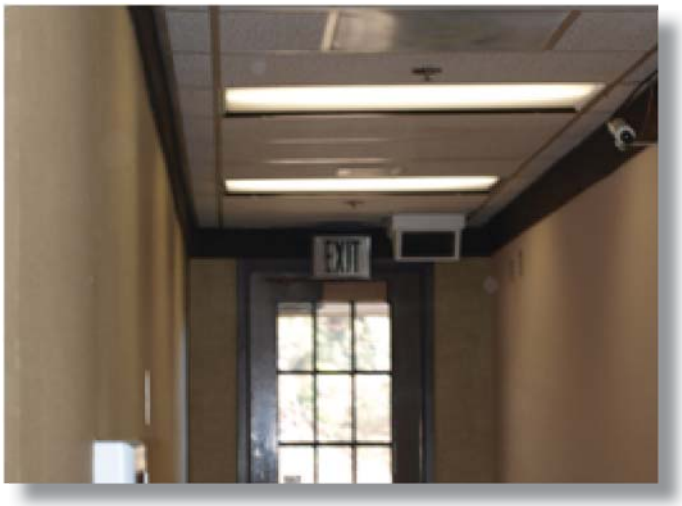
Parking lot sidewalk. Minor surface deterioration requires ADA updates slope.



100 - Building A - 330 Fair Lane Road, Placerville, CA - Photos

EXIT LIGHT

Non working exit light at 911 corridor.



EXTERIOR

Non ADA locksets.

FASCIA

Sun damaged fascia. Wood cupping, dry rot damage and nails popping.

100 - Building A - 330 Fair Lane Road, Placerville, CA - Photos

FASCIA

Woodpecker damage to fascia.

GROUT

Grout missing at brick veneer joint.

HVAC

20 year old roof top HVAC units.

100 - Building A - 330 Fair Lane Road, Placerville, CA - Photos

PARKING

Cracking in asphalt paving.

ROOF

Alligator cracking in roofing membrane.

SINK

Non accessible sink in break room.

100 - Building A - 330 Fair Lane Road, Placerville, CA - Photos

TRANSACTION WINDOW

Counter does not provide wheelchair access and speaker hole is located too high on the window.

WALL PENETRATION

Refrigerant line penetration through fire rated wall not sealed.

WATERCLOSET

Grab bars have been added to sides of toilet, but compartment is not ADA accessible.

100 - Building A - 330 Fair Lane Road, Placerville, CA - Photos

WATERCLOSET

Outdated fixture at search and rescue.

110 - Building B - 360 Fair Lane Road, Placerville, CA - Deficiencies and Cost

Square Footage	45,766
Number of Floors	2
Year Built	1976
Replacement Cost	$13,250,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Emergency and exit lighting is inadequate. The fire alarm system in place needs updating. Any building modernization would require an upgrade. Fire sprinkler system is at the end of its life expectancy. Stairs do not have contrasting stripe. The second floor balcony railing has dry-rot issues and spacing of vertical members requires alterations. The Inergen fire suppression system was not reconfigured for new data room layout. No emergency shut-off in room and room not properly sealed to contain released agent.	$382,537
2	ADA Enhancement	Public restrooms on both levels are not ADA suitable. Doors with public access have ADA levers, however many of the others do not. Break room does not have accessible sink and cabinet. Public counters do not have ADA stations. Elevator lacks ADA controls.	$212,923
3	Structural	Exterior columns and beams have cracks, woodpecker and dry-rot issues. Interior columns in atrium cracked.	$251,804
4	Building Integrity	17 year old roofing near end of expected life. There are alligator cracks in the cap sheet and evidence of water ponding. Fascia boards are sun damaged and cracked/warped. Windows are non energy efficient single glazed. Water and air leakage at atrium skylights.	$717,060
5	Finishes	Carpets in high traffic areas worn. Some damaged wall covering.	$475,571
6	Mechanical	Original 1976 cooling tower and chiller near end of useful life. The air handlers, diffusers, valves, piping and ductwork are original and at end of expected life. Ducts in a state of disrepair and are not properly sized for building reconfigurations that have occurred over time. Ceilings are littered with abandoned data cabling, power circuits, flex duct and heater coils. Hot water heaters are nearly 20 years old. Water pressure in the building is suspect, indicating buildup within pipes have restricted flow. Controls are obsolete with no energy management capabilities.	$2,203,969

110 - Building B - 360 Fair Lane Road, Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Exterior building lighting levels low due to discolored and dirty diffusers. Exterior soffit lighting is difficult to maintain in operation due to height above ground and inefficient lamps. Interior lighting has been retrofitted; however lighting levels have not been adjusted and are uneven. Lighting controls are outdated and don't comply with current TL24 standards. The data cable installation is sloppy and haphazard. Data identification is poor, making troubleshooting difficult. Wall and ceiling penetrations not properly sealed. The emergency generator is inadequate to serve loads at both Buildings A & B. Original panels and breakers have limited ability to serve loads and lack expansion capability. Issues with main service to building due to the damage to the switchboard bus when room was flooded. Part of building A is served by main panel in Building B. Difficult to isolate problems.	$1,181,401
8	Civil	Parking lot paving has minor cracking. Concrete is generally good, but some ADA issues.	$221,519
9	Miscellaneous	Roofing at covered walkway between building A and B in poor condition.	$23,805

110 - Building B - 360 Fair Lane Road, Placerville, CA - Recommendations

- Fire and safety modernization should be addressed. Install new emergency and exit lighting. Reconfigure and modify data room Inergen system to comply with fire codes. Have the fire sprinkler system tested to determine if and where corrosion has occurred in the piping from air pockets or microbiologically Influenced corrosion (MIC) from the water quality. Replace piping and sprinkler heads that are determined to be sufficiently corroded to maintain the integrity of the system in place to reduce the cost for complete replacement of the system. Provide combination fire/smoke dampers tied to the fire alarm system at all ducts passing through fire rated walls. Seal all openings through fire rated wall with fire rated materials.

- Remodel public restrooms on both levels. Replace the water and waste lines concurrently. Replace door hardware to meet access requirements. Modify break room cabinets and sinks for ADA.

- Have a structural engineer look at the exterior and atrium wood columns and beams to determine structural integrity. The cost associated with this deficiency is for structural assessment only.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Replacing the windows will provide an energy savings. Suggest an energy audit to determine cost benefit. Seal all wall and floor penetrations to mitigate rodent intrusion.

- Replace deficient antiquated HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Remove abandoned equipment and ductwork.

- Replace damaged MSB service along with downstream deficient panels, transformer and feeders to a system dedicated to this building. Provide building dedicated emergency generator within a permanent enclosure. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Install additional receptacles and signal outlets with concealed raceway or wiremold. Paint parking lot poles to protect metal for prolonged life in conjunction with the replaced LED lights. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits.

110 - Building B - 360 Fair Lane Road, Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
110 Building B						
1 Fire & Safety Modernization	**$382,537**					**$382,537**
Emergency and Exit Lighting	$30,263					$30,263
Fire Alarm	$60,526					$60,526
Ramps, Stairs & Guardrails	$25,445					$25,445
Specialty Systems	$19,838					$19,838
Stairs and Handrails	$4,364					$4,364
Wet Type System	$242,102					$242,102
2 ADA Enhancements		**$212,923**				**$212,923**
Cabinets		$13,225				$13,225
Doors, Frames and Hardware		$14,548				$14,548
Toilet Rooms		$185,150				$185,150
3 Structural		**$107,387**	**$144,417**			**$251,804**
Structural Framing		$107,387	$144,417			$251,804
4 Building Integrity		**$259,951**	**$59,513**	**$397,596**		**$717,060**
Built-up Roofing		$259,951				$259,951
Doors, Frames and Hardware				$11,955		$11,955
Fascia			$59,513			$59,513
Skylights				$385,641		$385,641
5 Finishes				**$475,571**		**$475,571**
Carpet				$195,069		$195,069
Ceilings				$198,375		$198,375
Wall Framing and Finishes				$82,127		$82,127
6 Mechanical		**$12,894**	**$605,044**	**$1,579,418**	**$6,613**	**$2,203,969**
Air Handlers			$330,625			$330,625
Boilers					$6,613	$6,613
Chemical Treatment Equipment			$9,919			$9,919
Chillers			$211,600			$211,600
Controls				$121,051		$121,051
Cooling Towers			$33,063			$33,063
Diffusers & Grills				$60,526		$60,526
Ductwork				$635,518		$635,518
Electric Water Heater		$12,894				$12,894
Exhaust Fans				$17,193		$17,193
Expansion Tank/Air Separators				$13,225		$13,225
HVAC Piping				$544,730		$544,730
Piping				$121,051		$121,051
Pumps				$66,125		$66,125
Valves			$19,838			$19,838
7 Electrical		**$125,638**	**$823,932**	**$195,463**	**$36,369**	**$1,181,401**
Data and Cabling					$26,450	$26,450
Distribution Boards			$31,740			$31,740
Emergency Power Supply			$277,725			$277,725
Exterior Building Lighting				$13,886		$13,886
General Interior Lighting			$514,467			$514,467
Main Service		$125,638				$125,638
Outlets and Wiremold				$60,526		$60,526
Panel and Breakers				$121,051		$121,051
Telephone					$9,919	$9,919

110 - Building B - 360 Fair Lane Road, Placerville, CA - Priorities

Priority						
Item	**1**	**2**	**3**	**4**	**5**	**Total**
110 Building B						
8 Civil				**$221,519**		**$221,519**
Asphalt Paving				$214,245		$214,245
Roofing				$7,274		$7,274
9 Miscellaneous		**$15,870**	**$7,935**			**$23,805**
Doors, Frames and Hardware			$7,935			$7,935
Elevators		$15,870				$15,870

110 - Building B - 360 Fair Lane Rd., Placerville, CA - Photos

WALL COVERING

Wall covering finish worn and stained.

BALCONY

Wood on balcony has dry-rot issues and splitting. The spacing on the vertical steel members requires alterations be made.

BEAM

Damage to wood beam. Glu-lam beam is de-laminating, connection to column compromised.

110 - Building B - 360 Fair Lane Road, Placerville, CA - Photos

COLUMN - INTERIOR

Vertical crack in column should be evaluated by structural engineer.

COLUMN

The column has a vertical crack and the sheet metal cover is not securely attached to the beam.

COLUMN

Dry-rot damage at base of exterior column.

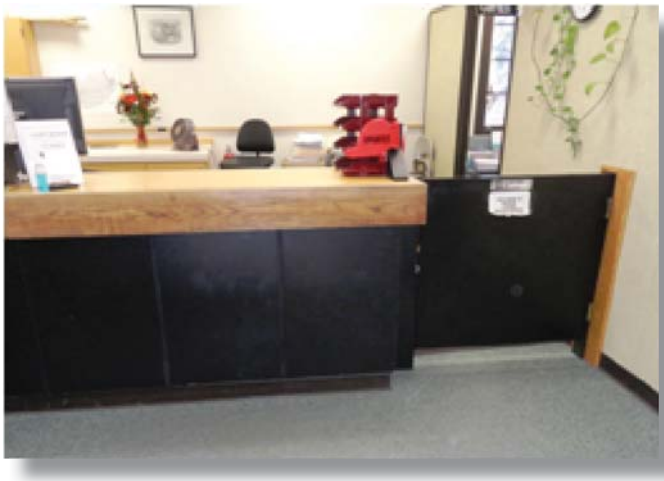
110 - Building B - 360 Fair Lane Road, Placerville, CA - Photos

COOLING TOWER

Cooling tower has visual sediment and debris in water.

COUNTER

Typical interior public counter in office. There is no ADA accessible station.



EXTERIOR DOOR

Door does not have ADA lockset and threshold is not accessible.

110 - Building B - 360 Fair Lane Road, Placerville, CA - Photos

FASCIA

Fascia boards are warped causing nails to pop. There is also wood splitting due to sun damage.

FLASHING

Attempt made to seal roof flashing to prevent water infiltration.

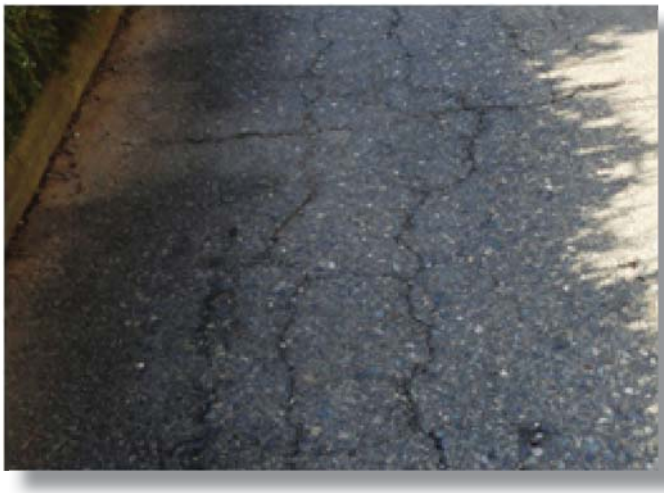
MAIN SWITCHBOARD

Main switchboard has overhead water piping and only 1 rear exit door which is not allowed by code.

110 - Building B - 360 Fair Lane Road, Placerville, CA - Photos

PAVEMENT – EAST DRIVEWAY

Asphalt paving in poor condition due to cracking. Complete failure will follow if remedial action not taken.



PUMP

Original pump at air handler is past useful life. Insulation on piping kept together with duct tape.

RESTROOM

Restroom interior - no ADA compliant urinal.

110 - Building B - 360 Fair Lane Road, Placerville, CA - Photos

RESTROOM 2

Grab bars have been added to sides of toilet, but compartment is not ADA accessible.

ROOF

The roof has drainage problems. Staining due to standing water which contributes to shortened life cycle for roofing material.

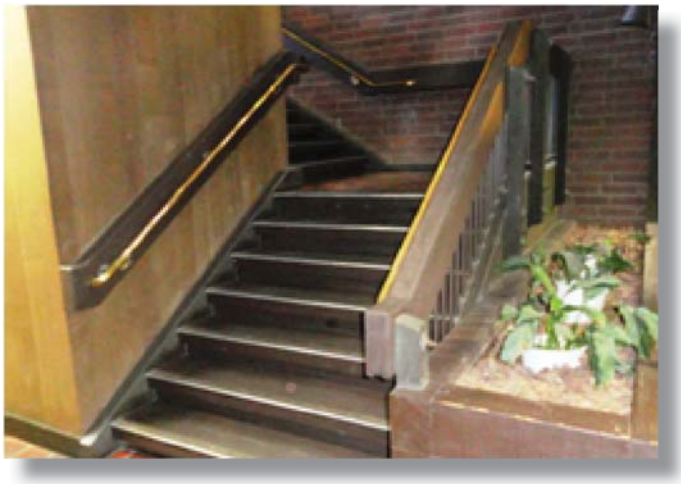
SKYLIGHTS

Skylights leak due to deterioration of the sealants. The skylights rely on caulking rather than flashing to prevent moisture penetration which is a poor design.

110 - Building B - 360 Fair Lane Road, Placerville, CA - Photos

STAIRS

Stairs do not have contrasting stripe and handrails do not extend 12” past last step.



115 - Building C - 2850 Fairlane Ct., Placerville, CA - Deficiencies and Cost

115 Building C – 2850 Fair Lane Court, Placerville, CA

Square Footage	68,800
Number of Floors	3
Year Built	1992
Replacement Cost	$18,330,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Emergency and exit lighting is inadequate. The fire alarm system in place needs updating. Any building modernization would require an upgrade. Stairs do not have contrasting stripe. The railing at south end of building has dry-rot issues and spacing of vertical members require alterations be made.	$209,603
2	ADA Enhancement	Restrooms are mostly ADA compliant, may have minor issues with toilet seat height and distance from wall. Break room sink and cabinet may need ADA improvements. Public counter at the DOT does not have ADA station. Elevator lacks ADA controls.	$7,406
3	Structural	No issues of note with building structure, but the framing at the shade structure has cracking and dry-rot damage.	$0
4	Building Integrity	The built-up and gravel roof is original to the building and at end of expected lifecycle. Metal roofing has no issues noted. No issues with doors and windows.	$453,287
5	Finishes	Carpets in high traffic areas worn with some staining. Carpet damaged by door near courtroom.	$452,031
6	Mechanical	The R22 refrigerant chiller is near end of useful life with repairs made frequently to maintain its operation. The boilers and pumps are 20 years old and approaching end of useful life. The split system which serves the courts is at end of useful life. The majority of the ductwork, VAV boxes and diffusers are original. VAV's are operating under failure mode for motors. Remodels of offices have been completed without proper sizing of ductwork and balancing of the system. Controls are outdated and lack monitoring capabilities off-site.	$1,653,290

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Exterior building lighting levels low due to discolored and dirty diffusers. Exterior soffit lighting is difficult to maintain in operation due to height above ground and inefficient lamps. Interior lighting has been retrofitted, however lighting levels have not been adjusted and are uneven. Lighting controls are outdated and don't comply with current TL24 standards. Building does not have an emergency generator to provide back-up power to the Elections or Court Departments. Main switchboard installed is not structured to isolate loads which would require emergency backup. Original panels and breakers have limited ability to serve loads and lack expansion capability. LV cabling above ceilings is not routed in cable tray or in bundled j-hook support. Sloppy cabling terminations and identification at IDF equipment result in poor troubleshooting when issues occur. Not all penetrations through walls are sealed. Abandoned unused cabling reported to remain in ceiling spaces.	$991,478
8	Civil	Parking lot paving has mostly minor cracking, but a few areas with failure to base. Concrete is generally fair, but issues with uneven and cracked pavement due to tree roots.	$236,463
9	Miscellaneous	Exterior wood benches have deterioration. The handrail at one of the stairs is not secure to wall. Records stored in basement would be damaged if fire sprinkler system ever triggered. Historical documents and records are stored at the lower level under a wet type fire sprinkler system that has the potential to damage them.	$31,872

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Recommendations

- Fire and safety modernization should be addressed. Install new emergency and exit lighting. Have the fire sprinkler system tested to determine if and where corrosion has occurred in the piping from air pockets or Microbiologically Influenced Corrosion (MIC) from the water quality. Replace piping and sprinkler heads that are determined to be sufficiently corroded to maintain the integrity of the system in place to reduce the cost for complete replacement of the system. Provide appropriate storage for historical documents and records to prevent damage from wet pipe fire sprinklers or provide appropriate fire protection system in areas which will not damage records. Provide combination fire/smoke dampers tied to the fire alarm system at all ducts passing through fire rated walls. Seal all openings through fire rated wall with fire rated materials. Railing at south entrance to building should be replaced.

- Modify public counters to provide ADA access

- Seal all wall and floor penetrations to mitigate rodent intrusion.

- Replace deficient obsolete HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building.

- Replace or modify MSB and power distribution service to allow separation of normal and emergency loads to allow installation of an automatic transfer switch. Provide building dedicated emergency generator within a permanent enclosure to support County Departments required to remain in operation. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Install additional receptacles and signal outlets with concealed raceway or wiremold. Paint parking lot poles to protect metal for prolonged life in conjunction with the replaced LED lights. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits.

- Replace deteriorated exterior wood benches. Remove and replace exterior concrete walks where damaged by tree roots.

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
115 Building C						
1 Fire & Safety Modernization	**$209,603**					**$209,603**
Emergency and Exit Lighting	$22,747					$22,747
Fire Alarm	$45,494					$45,494
Ramps, Stairs & Guardrails	$19,705					$19,705
Stairs and Handrails	$1,785					$1,785
Wet Type System	$119,871					$119,871
2 ADA Enhancements		**$7,406**				**$7,406**
Cabinets		$7,406				$7,406
4 Building Integrity			**$32,732**	**$420,555**		**$453,287**
Built-up Roofing			$32,732			$32,732
Metal Roofing				$420,555		$420,555
5 Finishes	**$11,903**			**$439,731**	**$397**	**$452,031**
Carpet				$297,563		$297,563
Ceilings				$132,250		$132,250
Soffits and Overhangs				$9,919		$9,919
Stairs and Handrails	$11,903					$11,903
Toilet Partitions					$397	$397
6 Mechanical			**$61,364**	**$1,591,926**		**$1,653,290**
Air Handlers				$463,206		$463,206
Boilers				$49,594		$49,594
Chillers				$132,250		$132,250
Condensing Units				$2,645		$2,645
Controls				$181,976		$181,976
Diffusers & Grills				$45,494		$45,494
Ductwork				$636,916		$636,916
Electric Water Heater				$32,236		$32,236
Exhaust Fans			$8,464			$8,464
Expansion Tank/Air Separators			$13,225			$13,225
Package Units				$2,116		$2,116
Piping				$45,494		$45,494
Pumps			$26,450			$26,450
Valves			$13,225			$13,225
7 Electrical			**$545,928**	**$412,488**	**$33,063**	**$991,478**
Data and Cabling					$33,063	$33,063
Exterior Building Lighting				$13,886		$13,886
General Interior Lighting			$545,928			$545,928
Main Service				$125,638		$125,638
Outlets and Wiremold				$90,988		$90,988
Panel and Breakers				$181,976		$181,976
8 Civil		**$16,664**	**$193,350**	**$26,450**		**$236,463**
Asphalt Paving			$165,313			$165,313
Benches			$17,854			$17,854
Concrete Paving		$16,664	$10,183			$26,847
Framing				$26,450		$26,450
9 Miscellaneous	**$132**	**$15,870**		**$15,870**		**$31,872**
Doors, Frames and Hardware				$15,870		$15,870
Elevators		$15,870				$15,870
Stairs and Handrails	$132					$132

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Photos

ASPHALT

Cracking in asphalt pavement.

ASPHALT

Cracking in asphalt pavement, vegetation growing in crack.

BULL HORN

Lower level does not have operating PA system, so bull horn used for announcements.

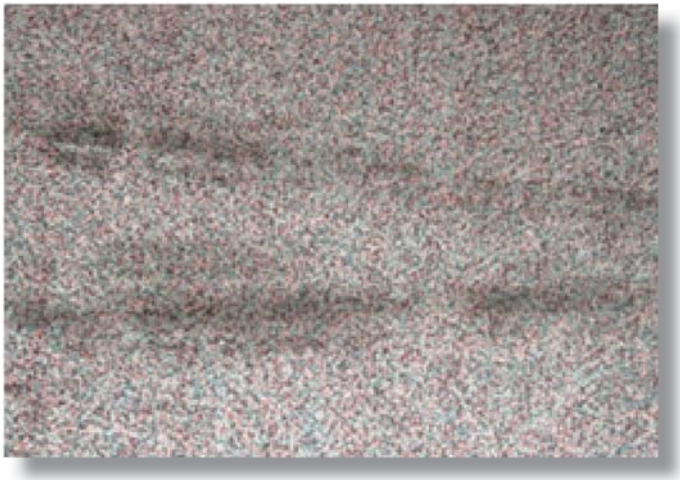
115 - Building C - 2850 Fairlane Ct., Placerville, CA - Photos

CARPET

Carpet damaged by door rubbing on material.

CARPET

Stained carpeting.



CONCRETE CRACKING

Cracking in concrete walkway.

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Photos

CONCRETE GROUND

Uneven surface on concrete. Concrete was ground so adjacent sections are even, but movement has continued and surfaces are still not aligned.

RECORDS

Historical records kept in basement. Wet type fire alarm system would destroy these books if activated.

CONCRETE TREE ROOT

Tree root has lifted up concrete pavement resulting in crack and uneven surface.

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Photos

CONCRETE

Coring for installation of handrail results in cracked concrete.

CONDUIT

Conduit penetrations through wall not properly sealed.

CONTROLS

Controls for HVAC system are obsolete.

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Photos

WORKSTATION

Typical workstation. There are not enough power outlets. Extension cords present possible fire and tripping hazard.

EXIT

Exit light does not work.

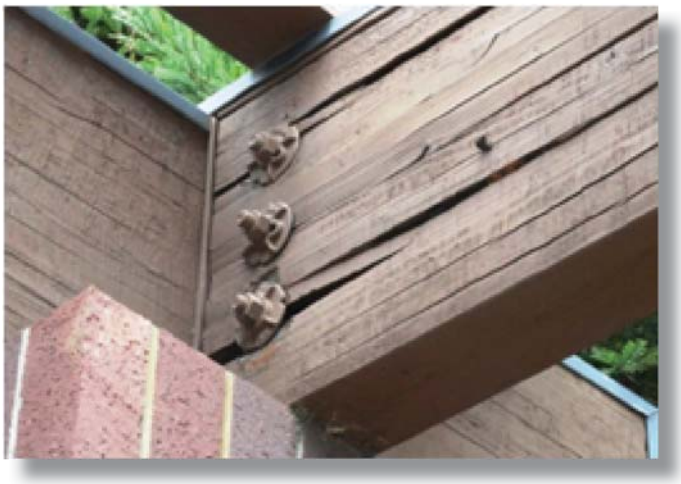
EXTERIOR BENCH

Wood at exterior benches is deteriorating. Maintenance has added screws to keep bench from coming apart.

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Photos

FRAMING

Sun damaged wood beam at entrance pergola. The beam is split and the connection via the lowest bolt compromised.



RAILING -WEST

The sun damaged wood rail is split and rough.

STAIRS

Rubber at stair riser held substrate with duct tape.

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Photos

ROOF DRAIN

Water leak at roof drain.

ROOF LEAK

Ceiling damage in traffic court break room roof leak.

SINK

Non accessible sink in break room. Cabinet does not provide wheelchair access.

115 - Building C - 2850 Fairlane Ct., Placerville, CA - Photos

STAIR HAND RIAL

The hand rail at stairs is not secure to wall.

RAILING

The sun damaged wood rail is split and rough.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Deficiencies and Cost

Square Footage	21,354
Number of Floors	1
Year Built	1970
Replacement Cost	$5,090,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Abandon piping from plumbing fixtures in old cell area not properly capped. No fire alarm system installed in evidence portion of building. The fire sprinkler system does not cover entire building and wet type system could destroy evidence if activated. There is no guardrail to protect against falls at the end of the retaining wall south of the building. Several large potholes in the asphalt paving present tripping hazards. The ramp on the west side of the building does not have required handrails.	$101,571
2	ADA Enhancement	The restrooms in the locker room are not ADA compliant. The evidence window does not have ADA access. Many doors lack ADA lever locksets.	$77,829
3	Structural	Building likely does not meet current seismic requirements. The major renovation required to modernize the building would trigger a code required upgrade.	$621,295
4	Building Integrity	Roof in poor condition. Gravel ballast does not completely cover membrane any longer. Composition shingles on mansard roof is in need of replacement. One spot damaged by delivery vehicle. Plywood siding and trim in poor condition. Trim coming loose from plywood. Single pane windows at end of useful life and lack energy efficiency. Doors and hardware obsolete.	$351,889
5	Finishes	Carpet has areas in very poor condition. Some damaged ceiling tiles. Walls have holes where rats have infiltrated. The entire area where evidence is stored needs to be refinished.	$178,498
6	Mechanical	HVAC system including ducts, registers, controls, refrigerant piping and package units are obsolete. Two of the package units are about 5 years old, the rest over 10 years. Exhaust system does not effectively ventilate the building. Ductwork in poor condition, has not been maintained and has air leaks. Air distribution to spaces is poor due to lack of design and controls. Plumbing piping in poor condition. Problems occur regularly with the waste and water	$757,933

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
		piping for backflow issues, low water pressure and failing valves.	
7	Electrical	The 60 KW emergency generator is undersized for the main switchboard which was designed to handle 100 KW. Panels and breakers are obsolete. Issues with blown circuits if too many officers working at same time. Light fixtures are fair to poor condition. Inadequate receptacles to support power requirements of staff. Light levels are low with ineffective switching control. Abandoned LV cabling throughout facility.	$608,916
8	Civil	Paving in very poor condition. Areas with complete failure. Privacy slats in fencing broken, deteriorating or missing. There are missing or loose stones in the retaining wall. Site lighting is substandard.	$359,032
9	Miscellaneous	No issues.	$34,623

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Recommendations

- County should consider replacing this facility. The cost to upgrade this facility including ADA requirements is not justified.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Deficiencies and Cost

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
120 Sheriff Administration						
1 Fire & Safety Modernization	**$101,571**					**$101,571**
Emergency and Exit Lighting	$15,532					$15,532
Fire Alarm	$85,428					$85,428
Guardrails	$611					$611
2 ADA Enhancements		**$77,829**				**$77,829**
Cabinets		$2,182				$2,182
Toilet Rooms		$75,647				$75,647
3 Structural		**$621,295**				**$621,295**
Structural Framing		$621,295				$621,295
4 Building Integrity		**$250,581**	**$73,028**	**$28,280**		**$351,889**
Built-up Roofing		$224,032				$224,032
Composition Shingle Roofing			$29,095			$29,095
Doors, Frames and Hardware			$29,531			$29,531
Exterior Wall Finishes		$26,549				$26,549
Soffits and Overhangs			$14,402			$14,402
Windows and Frames				$28,280		$28,280
5 Finishes				**$123,945**	**$54,553**	**$178,498**
Carpet				$36,369		$36,369
Ceilings				$87,576		$87,576
Wall Framing and Finishes					$54,553	$54,553
6 Mechanical			**$386,507**	**$346,405**	**$25,022**	**$757,933**
Controls			$62,129			$62,129
Diffusers & Grills				$31,065		$31,065
Ductwork			$217,453			$217,453
Exhaust Fans			$36,369			$36,369
Gas Fired Water Heater			$31,277			$31,277
HVAC Piping				$31,065		$31,065
Package Units			$39,278	$191,081	$25,022	$255,381
Piping				$93,194		$93,194
7 Electrical		**$178,509**	**$382,400**	**$37,824**	**$10,183**	**$608,916**
Data and Cabling					$4,364	$4,364
Emergency Power Supply			$87,285			$87,285
Exterior Building Lighting				$8,729		$8,729
General Interior Lighting			$264,050			$264,050
Main Service		$116,380				$116,380
Outlets and Wiremold			$31,065			$31,065
Panel and Breakers		$62,129				$62,129
Site Lighting				$29,095		$29,095
Telephone					$5,819	$5,819
8 Civil	**$1,746**	**$348,267**			**$9,019**	**$359,032**
Asphalt Paving		$348,267				$348,267
Fencing					$8,729	$8,729
Ramps, Stairs & Guardrails	$1,746					$1,746
Retaining Walls					$291	$291
9 Miscellaneous		**$14,984**		**$19,639**		**$34,623**
Countertops		$1,891				$1,891
Doors, Frames and Hardware		$13,093		$19,639		$32,732

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

ABANDONED

Hole from abandoned piping was never in-filled.

ABANDONED

Abandoned water heater was left in place.

ADAPTIVE

Adaptive use for conduit and cabling not per code.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

CARPET

Water stained carpet.

CEILING

2 X 4 ceiling panel missing.

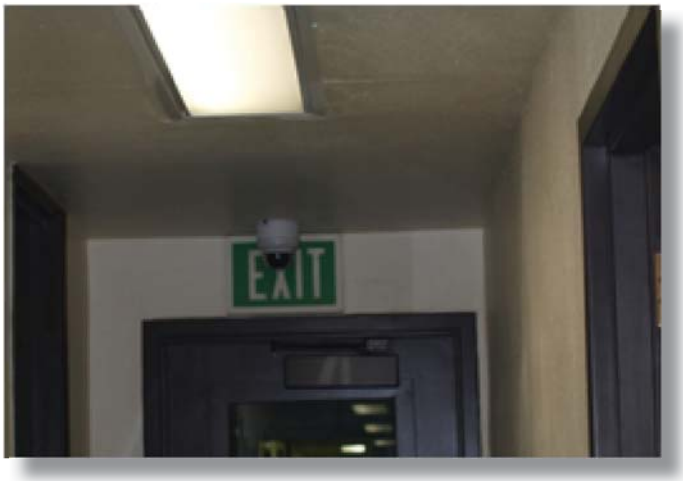
DUCT

Ductwork used for electrical conduit chase to power light fixture.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

EXIT

Exit light does not work.



CONDUIT

Conduit penetrations through ceiling not properly sealed.

COUNTER

Damage to plastic laminate at restroom counter.

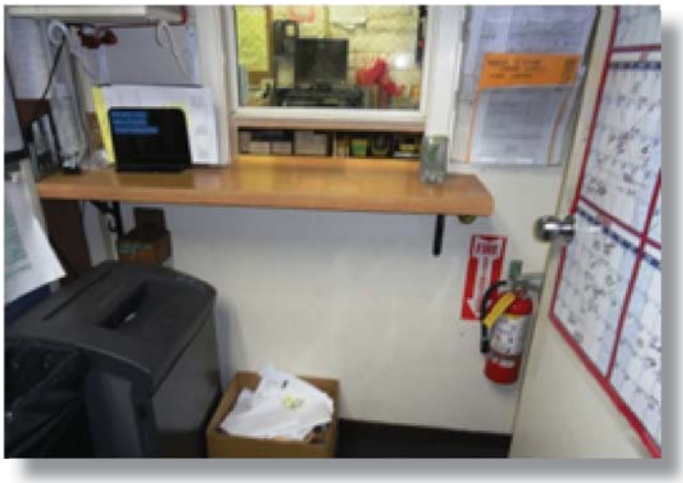
120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

DOOR

Door lock does not work. Padlock used to secure evidence.

EVIDENCE WINDOW

No ADA access at evidence window and door does not have ADA lockset.



EXTERIOR DOOR

Exterior door and closer rusted. Doors and hardware at exterior typically should be replaced.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

FENCING

Privacy slats in fencing damaged or missing.

GROUT SEPARATION

Building settlement has created separation in the block.

FENCING

Fencing ends before retaining wall. There is no fall protection which could lead to liability issues.

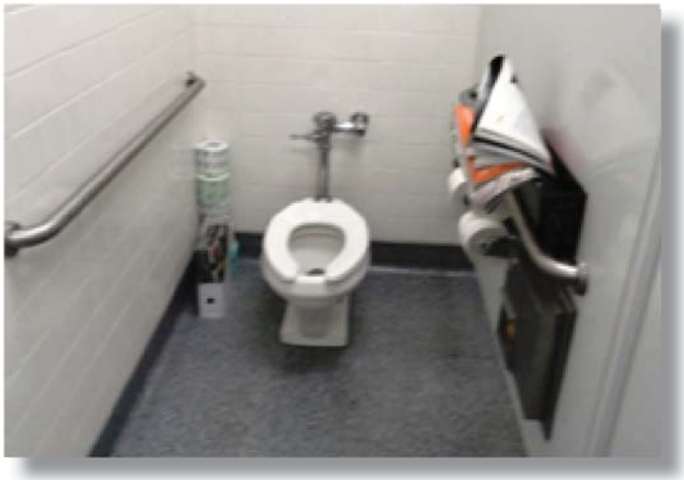
120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

MANSARD DAMAGE

Corner of building appears to have been damaged by a delivery truck.

NON ADA TOILET

Grab bars have been added to sides of toilet, but compartment is not ADA accessible.



RESTROOM COUNTER

De-lamination in restroom counter. Mold growth occurring.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

PACKAGED UNIT

Old package unit at end of useful life.

PANEL

Electrical panel is blocked by file cabinet and boxes.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

PANEL

Electrical panel is blocked by added partition wall.

PAVING

Paving in poor condition.

RAMP

No handrail at ramp with slope of greater than 1:20 as per code.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

WORKSTATION

Typical workstation. There are not enough power outlets. Extension cords present, possible fire and tripping hazard.

ROOF

Gravel ballast does not cover roof membrane to protect from sun damage.

ROOF

Cracking and repair work in membrane on parapet.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

SHOWER

There are no ADA showers in locker room.

STONE WALL

Stones are loose and missing in the rear retaining.

TRANSACTION

Main transaction window is not ADA compliant.

120 - Sheriff's Administration - 300 Fair Lane, Placerville, CA - Photos

TRIM BOARDS

Trim boards at plywood siding have sun damage and separating from the wall.

PAVING

Complete paving failure has created tripping hazard.

PLASTER DAMAGE

Plaster cracking in exterior wall and soffit.

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Deficiencies and Cost

Square Footage	7,308
Number of Floors	1
Year Built	1971
Replacement Cost	$3,760,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	The fire alarm system will require modifications with any building renovations. No earthquake strap on the water heater. No fire sprinkler system in the building. Kitchen exhaust hood does not have fire suppression system.	$61,807
2	ADA Enhancement	Parking spaces and path of travel to building not ADA suitable due to slope issues. The inmate showers and restrooms may require updating. ADA access to sinks in classrooms may require upgrades. Many doors lack ADA lever locksets.	$71,283
3	Structural	Building likely does not meet current seismic requirements. The major renovation required to modernize the building would trigger a code required upgrade.	$265,674
4	Building Integrity	Roof in poor condition. Ponding of water and blistering in cap sheet. Exterior doors and windows at end of lifecycle.	$256,787
5	Finishes	Carpet in control room is in very poor condition, in classrooms, marginal. The epoxy floor in cells has blistering, which is then popped by inmates and picked at to worsen problem. Stainless steel wall panels in showers dented and separation at junction with ceramic floor tiles provide place for mold to grow.	$73,981
6	Mechanical	The plumbing fixtures in the public restroom and group showers are not ADA accessible. The combination WC/LAV's in cells are within 6 years of remaining useful life. No ADA accessible combination WC/LAV's in either the boy's or girl's cells. HVAC system including ducts, registers, controls, piping, package units and exhausts are in poor condition and beyond useful life expectancy.	$546,731

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Service and majority of panels are over 40 years old and at end of useful life. The emergency generator is 18 years old and approaching end of useful life. The PA system was reported to be of poor quality in communications to cells. The access control system is in poor condition and needs to be replaced. Lighting at the exterior was reported to be poor in some areas which effects the security of the building.	$408,513
8	Civil	Sewer system has issues with inmates clogging lines. No other major issues except ADA access from parking lot to building.	$152,040
9	Miscellaneous	The walk-in door seals and threshold along with the floor are in poor condition. Locks for non-cell doors have operational issues.	$21,821

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Recommendations

- County should evaluate how this facility currently meets needs. If the building is not meeting current and future needs, then the county should look to relocating or replacing this building.

- Recommendations if replacement or relocation is not an option: Fire and life safety issues should be addressed. Install new emergency and exit lighting. Modify/replace fire alarm system to incorporate HVAC system and kitchen fire suppression system for alarm and shutdown. Install fire sprinkler system. Provide dedicated exhaust system for the laundry room.

- Remodel public restroom. Replace the water and waste lines concurrently. Install ADA accessible shower at group showers and install combination WC/LAV's at boy's and girl's cells.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Replace exterior doors and windows.

- Replace carpeting in control room and classrooms. Replace remote access locksets. Remove epoxy coating in cells and seal concrete floors.

- Replace deficient obsolete HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building.

- Replace electrical service, panels, feeders and generator near or at end of lifecycle. Replace existing lighting with energy efficient fixtures with appropriate security housings. Provide additional lighting at the perimeter to improve security. Replace security access control, control station and intercom system.

- ADA parking spaces need to be provided in the parking lot. Will likely require removing paving, re-grading lot and installation of new retaining wall.

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA -Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
123 Juvenile Hall						
1 Fire & Safety Modernization	**$47,189**		**$14,618**			**$61,807**
Emergency and Exit Lighting	$4,518					$4,518
Fire Alarm			$14,618			$14,618
Gas Fired Water Heater	$145					$145
Wet Type System	$42,525					$42,525
2 ADA Enhancements		**$71,283**				**$71,283**
Cabinets		$1,455				$1,455
Shower		$34,914				$34,914
Toilet Rooms		$34,914				$34,914
3 Structural		**$265,674**				**$265,674**
Structural Framing		$265,674				$265,674
4 Building Integrity			**$170,278**	**$86,508**		**$256,787**
Built-up Roofing			$158,859			$158,859
Doors, Frames and Hardware			$11,420			$11,420
Storefront Systems				$26,884		$26,884
Windows and Frames				$59,624		$59,624
5 Finishes		**$33,932**		**$40,049**		**$73,981**
Carpet		$1,637		$14,911		$16,548
Detention Doors and Hardware		$29,095				$29,095
Doors, Frames and Hardware		$3,200				$3,200
Epoxy				$25,138		$25,138
6 Mechanical		**$245,652**	**$141,213**	**$159,867**		**$546,731**
Air Handlers		$8,729				$8,729
Combi Unit			$96,014			$96,014
Controls			$26,578			$26,578
Diffusers & Grills				$15,947		$15,947
Ductwork				$93,024		$93,024
Evaporative Cooling Units		$8,729				$8,729
Exhaust Fans			$18,621			$18,621
Gas Fired Water Heater				$0		$0
HVAC Piping		$15,947				$15,947
MAU Units		$31,423				$31,423
Package Units		$180,825				$180,825
Piping				$47,841		$47,841
Plumbing Fixtures				$3,055		$3,055
7 Electrical		**$215,332**	**$119,602**	**$67,759**	**$5,819**	**$408,513**
Data and Cabling					$3,637	$3,637
Emergency Power Supply		$109,106				$109,106
Exterior Building Lighting				$8,729		$8,729
General Interior Lighting			$119,602			$119,602
Main Service		$72,738				$72,738
Outlets and Wiremold				$15,947		$15,947
Panel and Breakers				$21,263		$21,263
Security System		$33,489				$33,489
Stand Alone PA System				$21,821		$21,821
Telephone					$2,182	$2,182
8 Civil		**$41,897**	**$8,310**	**$101,833**		**$152,040**
Asphalt Paving		$41,897	$4,546	$87,285		$133,728
Curb and Gutters			$3,764			$3,764
Site Lighting				$14,548		$14,548
9 Miscellaneous				**$21,821**		**$21,821**
Walk-ins				$21,821		$21,821

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Photos

CABINET

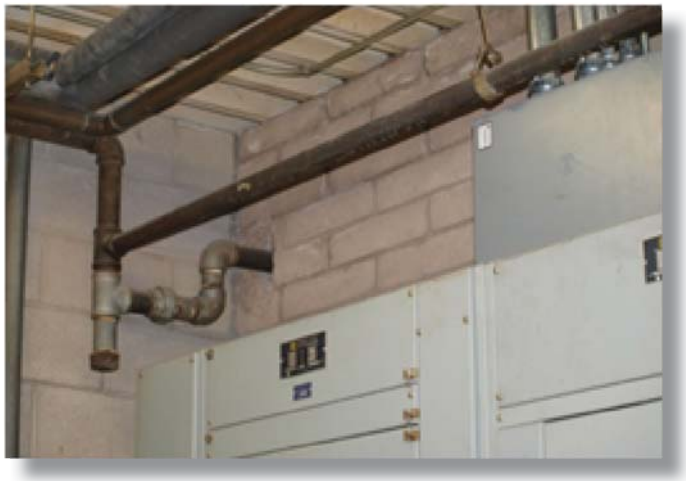
This door does not have an ADA lockset and cabinet is not ADA accessible.

CARPET

Control room carpet in very poor condition.

WATER PIPING

Water piping runs directly above the main electrical panel.



123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Photos

CONTROLS

HVAC controls are obsolete.

DUCTWORK

Roof top ductwork is in poor condition.

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Photos

CURB RAMP

Ramp at front is not ADA compliant.

EVAPORATION COOLER

Evaporative cooler for kitchen is 30+ years old. Ductwork is in poor condition.

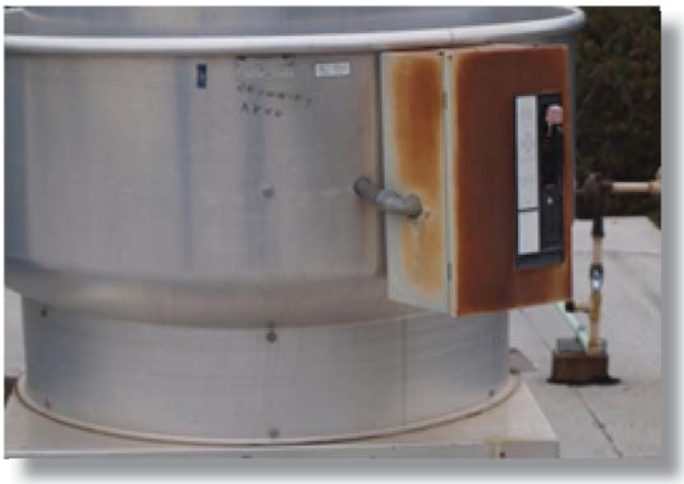
EXERCISE

Asphalt paving in exercise yard is cracked, mainly along water flow line to catch basin.

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Photos

EXHAUST

Rusted 30 year old kitchen exhaust.



FLOORING

Vinyl Composition Tile flooring is worn out.

MAIN

40+ year old main electrical switchboard panel is obsolete.

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Photos

SHOWER

Showers do not have ADA accessible threshold.

TOILET

Inmate toilets are not ADA accessible.

ROOF

Gravel ballast does not cover roof membrane to protect from sun damage.

123 - Juvenile Hall - 299 Fair Lane, Placerville, CA - Photos

ROOF

There are blisters in roof cap sheet.

ROOF

Evidence of standing water due to debris blocking roof drain.

126 - Main Jail - 300 Forni Rd., Placerville, CA - Deficiencies and Cost

Square Footage	85,920
Number of Floors	4
Year Built	1988
Replacement Cost	$46,870,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	The tray dishwasher has protruding hot water piping that may require updating. The elevators, fire dampers and HVAC equipment are not tied into the fire alarm system. Renovations to the facility will require the fire alarm system to be upgraded. The fire sprinkler valves are reported to have issues that will lead to a failure of the system that is within 6 years end of its useful life. Exit lighting is inadequate with many observed nonoperational signs.	$752,000
2	ADA Enhancement	Parking spaces and path of travel to building not ADA accessible. Elevators lack ADA controls. Showers & fixtures may require ADA modernization.	$110,852
3	Structural	There is some wall instability between the loading dock and the kitchen, otherwise no issues noted.	$2,182
4	Building Integrity	The EPDM roofing is over 20 years old. The gravel ballast makes finding leaks difficult. The sealants at expansion joints in brick veneer are failing and only a portion of remedial work done. There are also a few loose, missing or damaged bricks. There are some leakage issues with windows.	$632,045
5	Finishes	Interior finishes in fair condition. Carpet has normal wear and will need to be replaced in a few years.	$275,675
6	Mechanical	The majority of the HVAC system has exceeded its useful life. Operational failure of the equipment is eminent. Equipment is controlled by an obsolete pneumatic system. Ductwork in a state of disrepair although filters are changed on a quarterly basis. The cell plumbing fixtures are nearing end of life within 6 years. The associated piping is experiencing failures at several valves. Waste piping does not have pins to prevent blockage from debris which requires a grinder to be installed. (Which is in process)	$4,189,206

126 - Main Jail - 300 Forni Rd., Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	The majority of the electrical system is approaching end of useful life and will require modifications and upgrades with building renovations. Security cameras and the monitors at control stations are in poor condition. The access door control system is through an obsolete pneumatic system that is prone to failures. Security control station equipment is obsolete and inadequate.	$2,961,754
8	Civil	There is no ADA path of travel from parking lot to building. Other than visitor parking, pavement could use seal coat to prevent premature failure. Sewer system doesn't have grinder to prevent unwanted material clogging main lines.	$29,095
9	Miscellaneous	Temperatures in walk-in refrigerators and freezers difficult to maintain due to poor door seals. Both the regular and tray dishwashers are nearing end of lifecycle. Door hardware on walk-in refrigerators and freezers are nearing end of useful life and have operational issues.	$627,434

126 - Main Jail - 300 Forni Rd., Placerville, CA - Recommendations

- Fire and safety modernization should be addressed. Install new emergency and exit lighting. Have the fire sprinkler system tested to determine if and where corrosion has occurred in the piping from air pockets or Microbiologically Influenced Corrosion (MIC) from the water quality. Replace piping and sprinkler heads that are determined to be sufficiently corroded to maintain the integrity of the system in place to reduce the cost for complete replacement of the system. Replace deficient valves one fire sprinkler system. Provide combination fire/smoke dampers tied to the fire alarm system at all ducts passing through fire rated walls. Modify/replace fire alarm system to incorporate HVAC system, elevator and kitchen fire suppression system for alarm and shutdown.

- Remodel public restroom. Replace the water and waste lines concurrently. Install ADA accessible shower at group or single pod showers and install an ADA combination WC/LAV's at cell pods.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Replace joint sealants at exterior wall. Replace leaking windows.

- Replace flooring as needed.

- Replace deficient obsolete HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Replace cell plumbing fixtures and associated piping and valves at end of system lifecycle. Install grinder system for sewage system.

- Replace electrical service, panels, feeders and generator near or at end of lifecycle. Replace existing lighting with energy efficient fixtures with appropriate security housings. Provide additional lighting at the perimeter to improve security. Replace security access control, cameras, control station equipment and intercom system.

- Provide ADA path of travel from parking lot to main entrance.

126 - Main Jail - 300 Forni Rd., Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
126 Main Jail						
1 Fire & Safety Modernization	**$40,238**	**$711,762**				**$752,000**
Dishwasher	$8,729					$8,729
Emergency and Exit Lighting	$31,248					$31,248
Fire Alarm		$340,408				$340,408
Ramps, Stairs & Guardrails	$262					$262
Wet Type System		$371,354				$371,354
2 ADA Enhancements		**$110,852**				**$110,852**
Cabinets		$1,746				$1,746
Site Access		$109,106				$109,106
3 Structural			**$2,182**			**$2,182**
Structural Framing			$2,182			$2,182
4 Building Integrity		**$521,746**	**$55,746**		**$54,553**	**$632,045**
Doors, Frames and Hardware			$30,724			$30,724
Exterior Wall Finishes		$21,821	$1,455		$54,553	$77,829
Single-ply Roofing		$496,433				$496,433
Windows and Frames		$3,491	$23,567			$27,058
5 Finishes				**$25,458**	**$250,217**	**$275,675**
Carpet				$25,458		$25,458
Ceilings					$104,742	$104,742
Wall Framing and Finishes					$145,475	$145,475
6 Mechanical		**$103,651**	**$1,894,812**	**$2,190,743**		**$4,189,206**
Air Handlers			$727,375			$727,375
Chillers			$232,760			$232,760
Combi Unit			$545,531			$545,531
Controls				$249,984		$249,984
Diffusers & Grills				$187,488		$187,488
Ductwork				$874,945		$874,945
Exhaust Fans				$20,803		$20,803
Expansion Tank/Air Separators		$7,274				$7,274
Furnaces		$32,732				$32,732
HVAC Piping				$524,967		$524,967
MAU Units			$32,732			$32,732
Package Units				$3,491		$3,491
Piping			$65,464	$327,319		$392,783
Plumbing Fixtures				$1,746		$1,746
Pumps		$25,458				$25,458
Showers			$290,950			$290,950
Valves		$38,187				$38,187
7 Electrical		**$804,656**	**$167,296**	**$1,822,374**	**$167,427**	**$2,961,754**
Cameras		$123,785				$123,785
Data and Cabling					$36,369	$36,369
Distribution Boards				$69,828		$69,828
Exterior Building Lighting				$43,643		$43,643
General Interior Lighting				$1,279,358		$1,279,358
Main Service			$167,296			$167,296
Monitoring Equipment		$290,950				$290,950
Outlets and Wiremold				$123,786		$123,786
Panel and Breakers				$247,569		$247,569
Security System		$389,922				$389,922
Site Lighting				$58,190		$58,190
Stand Alone PA System					$123,785	$123,785
Telephone					$7,274	$7,274

126 - Main Jail - 300 Forni Rd., Placerville, CA - Priorities

Priority						
Item	**1**	**2**	**3**	**4**	**5**	**Total**
8 Civil				**$29,095**		**$29,095**
Asphalt Paving				$29,095		$29,095
9 Miscellaneous		**$436**	**$337,502**	**$216,758**	**$72,738**	**$627,434**
Detention Doors and Hardware			$337,502			$337,502
Dishwasher				$29,095		$29,095
Doors, Frames and Hardware				$13,093		$13,093
Elevators				$174,570		$174,570
Freezer & Refridgerator Walk-ins		$436			$72,738	$73,174

126 - Main Jail - 300 Forni Rd., Placerville, CA - Photos

BRICK

Damaged brick veneer.

CHILLER

Original chiller and piping near end of useful life.

EXTERIOR LIGHT

Lens cover on light fixture yellowed from age.

126 - Main Jail - 300 Forni Rd., Placerville, CA - Photos

FAN MOTOR

MAU fan motor shows signs of rust.

FLASHING - DUCT TAPE

Duct tape used to seal joints at parapet flashing.

FLASHING - LOOSE

Flashing not secured to substrate.

126 - Main Jail - 300 Forni Rd., Placerville, CA - Photos

HANDICAP PARKING

Curb ramp at handicap parking is not meet acceptable.

160 - Library - 345 Fair Lane, Placerville, CA - Deficiencies and Cost

Square Footage	38,292
Number of Floors	3
Year Built	1976
Replacement Cost	$9,420,000

	Category	Deficiencies	Cost
1	Fire & Life Safety	Building lacks adequate emergency and exit lighting. Fire alarm system does not meet current requirements for ADA visual/alarm devices, shut-down of HVAC equipment over 2000 cfm, fire/smoke damper control and tie-in control for the elevator. Fire sprinkler system is at the end of its life expectancy. Public access to the lower level is via the loading dock which does not have a protective railing.	$254,399
2	ADA Compliance	The building has not been renovated to accommodate ADA access. Neither level has an ADA restroom. The knob handles on doors are non compliant. Break room sinks do not have an accessible cabinet or faucet.	$151,823
3	Structural	The building does not have any noticeable structural defects; however a major renovation to the building would require a structural upgrade to meet current seismic codes.	$759,618
4	Building Integrity	The roof is at the end of expected life. Water intrusion will cause damage to interior systems. The original window system is near end of lifecycle and lacks energy efficiency, although water intrusion is minimized due to the roof overhang.	$246,316
5	Finishes	Interiors appear to be well maintained. Carpets are the main issue due to normal wear. Walls and ceilings are dated, but serviceable.	$320,243
6	Mechanical	Plumbing fixtures are mostly original and would be replaced as part of an ADA upgrade to the restrooms. The water and waste piping is approaching 40 years and failure in the next 10 years would not be surprising. The HVAC units have been replaced as needed. The ductwork is original and has air leakage with possible contamination. The controls are about 10 years old, but lack monitoring capabilities off-site.	$1,086,409

160 - Library - 345 Fair Lane, Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	The building electrical is mostly original and at the end of its expected lifecycle. Panels and breakers lack spare capacity. Loads do not appear to be balanced. Building lacks adequate power outlets for current requirements. Light fixtures have been retrofitted for electronic ballast and T8 lamps which has improved energy efficiency but has created low light levels throughout. Fixture lenses are old and discolored which further diminishes light output. Lighting controls are outdated and don't comply with current TL24 standards.	$578,666
8	Civil	Asphalt paving has cracks with a few areas of more severe deterioration. The pergola at the front of the building has sun-damaged wood beams and columns. There is also some dry rot and woodpecker damage.	$231,140
9	Miscellaneous	The elevator is not operational, awaiting parts for repair. It also lacks ADA controls.	$79,548

160 - Library - 345 Fair Lane, Placerville, CA - Recommendations

- Fire and safety modifications issues should be addressed. Install new emergency and exit lighting. Install a removable railing at the loading dock. Add contrasting stripes at stairs and provide code compliant handrails. Have the fire sprinkler system tested to determine if and where corrosion has occurred in the piping from air pockets or MIC from the water quality. Replace piping and sprinkler heads that are determined to be sufficiently corroded to maintain the integrity of the system in place to reduce the cost for complete replacement of the system. Provide appropriate storage for historical documents and records to prevent damage from wet pipe fire sprinklers or provide appropriate fire protection system in areas which will not damage records. Provide combination fire/smoke dampers tied to the fire alarm system at all ducts passing through fire rated walls. Seal all openings through fire rated wall with fire rated materials.

- Remodel restrooms on both the main level and in the basement to meet ADA standards. Replace the water and waste lines concurrently. Replace door hardware to meet access requirements.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Repair the minor damage to the mechanical screen and paint the exposed structural before the metal begins to rust. Replacing the windows will provide an energy savings. Suggest an energy audit to determine cost benefit. Seal all wall and floor penetrations to mitigate rodent intrusion.

- Continue replacing mechanical units as required. Replacing the original ductwork will improve air quality, occupant comfort and reduce energy costs. Installing energy management controls will allow remote access which will reduce energy needs and decrease technician visits. Remove abandoned equipment and ductwork.

- Replace original main service, panels and breakers. Additional lighting along with replacing lens covers is needed to improve light levels. Replace lighting controls. Paint parking lot poles to protect metal for prolonged life in conjunction with the replaced LED lights. Install additional receptacles and signal outlets with concealed raceway or wiremold. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits.

- The parking lot paving has minor cracking, but only a couple of areas with complete failure. Currently, replacement will likely be needed within 5 years. Suggest repairing the failure areas, minor repairs where necessary, and seal coating the lot. This should extend the time before replacement to 10 years.

- Replace the elevator.

160 - Library - 345 Fair Lane, Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
160 Main Library						
1 Fire & Safety Modernization	**$254,399**					**$254,399**
Electric Water Heater	$132					$132
Emergency and Exit Lighting	$12,660					$12,660
Fire Alarm	$25,321					$25,321
Guardrail	$2,116					$2,116
Kitchen Hoods	$1,984					$1,984
Ramps, Stairs & Guardrails	$3,968					$3,968
Stairs and Handrails	$5,654					$5,654
Wet Type System	$202,565					$202,565
2 ADA Enhancements		**$151,823**				**$151,823**
Cabinets		$2,645				$2,645
Doors, Frames and Hardware		$4,364				$4,364
Plumbing Fixtures		$6,613				$6,613
Restrooms		$138,201				$138,201
3 Structural			**$759,618**			**$759,618**
Structural Framing			$759,618			$759,618
4 Building Integrity			**$203,295**	**$43,021**		**$246,316**
Built-up Roofing			$194,408			$194,408
Doors, Frames and Hardware				$6,520		$6,520
Fascia			$8,887			$8,887
Gutters				$7,935		$7,935
Windows and Frames				$28,566		$28,566
5 Finishes				**$320,243**		**$320,243**
Carpet				$142,830		$142,830
Ceilings				$175,893		$175,893
Mechanical Screens				$1,521		$1,521
6 Mechanical			**$80,739**	**$1,005,670**		**$1,086,409**
Air Handlers				$5,951		$5,951
Condensing Units				$1,587		$1,587
Controls				$101,282		$101,282
Diffusers & Grills				$50,641		$50,641
Ductwork				$354,488		$354,488
Electric Water Heater				$8,596		$8,596
Exhaust Fans				$5,555		$5,555
HVAC Piping				$12,660		$12,660
Package Units			$80,739	$376,780		$457,519
Piping				$75,962		$75,962
Plumbing Fixtures				$7,935		$7,935
Unit Heaters				$4,232		$4,232
7 Electrical			**$303,847**	**$254,982**	**$19,838**	**$578,666**
Data and Cabling					$19,838	$19,838
Exterior Building Lighting				$9,919		$9,919
General Interior Lighting			$303,847			$303,847
Main Service				$105,800		$105,800
Outlets and Wiremold				$37,981		$37,981
Panel and Breakers				$101,282		$101,282

160 - Library - 345 Fair Lane, Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
8 Civil			**$203,698**	**$27,442**		**$231,140**
Asphalt Paving			$198,375			$198,375
Benches				$992		$992
Concrete Paving			$5,323			$5,323
Framing				$26,450		$26,450
9 Miscellaneous			**$79,350**	**$198**		**$79,548**
Elevators			$79,350			$79,350
Mechanical Screens				$198		$198

160 - Library - 345 Fair Lane, Placerville, CA - Photos

BREAKROOM SINK

The breakroom sink may require ADA modifications.

CONCRETE

Crack in concrete walkway.

CONCRETE

Concrete walkway has excessive gap at joint that has vegetation growing.

160 - Library - 345 Fair Lane, Placerville, CA - Photos

DRINKING FOUNTAIN

Non ADA drinking fountain.

DOCK

Public enters basement level past the dock which does not have a code compliant guardrail.

DOOR - TYPE INTERIOR

Interior doors do not have ADA lever locksets.

160 - Library - 345 Fair Lane, Placerville, CA - Photos

FASCIA

The sun damaged fascia has dry-rot damage and rusted nails popping out.

FLASHING

Roof flashing is rusted and should be replaced.

GRILL

Suspended ceiling partially blocks the return air grill.

160 - Library - 345 Fair Lane, Placerville, CA - Photos

HOT WATER

Hot water heater does not have earthquake strap installed.

LEAK

Ceiling damage from water leak. Leak believed to come from HVAC equipment or piping.

160 - Library - 345 Fair Lane, Placerville, CA - Photos

MECHANICAL SCREEN

Corner trim piece is missing from the roof top mechanical screen.

PAVEMENT

Asphalt pavement is failing.

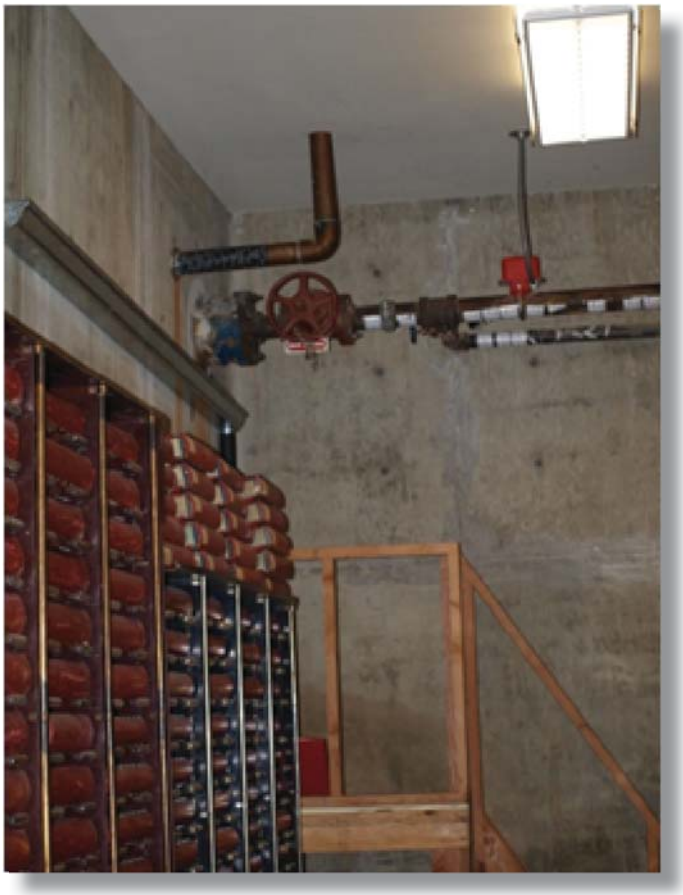
ROOF

Roof membrane has cracking and deterioration.

160 - Library - 345 Fair Lane, Placerville, CA - Photos

RECORDS

Historical records kept in basement. Wet type fire alarm system would destroy these books if activated. Also note the metal gutter and drain above the books.



ROOF

Roof and flashing repair work was needed to prevent leaking.

160 - Library - 345 Fair Lane, Placerville, CA - Photos

STAIRS

Stairs do not have contrasting stripe and vertical spacing on guardrail is greater than code maximum.

STOVE

The stove does not have a range hood or exhaust fan.

AC UNIT

10 year old unit with broken condensation drain line.

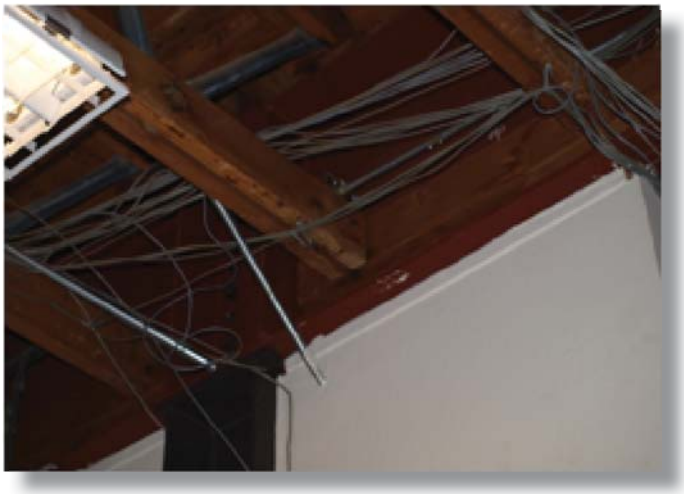
160 - Library - 345 Fair Lane, Placerville, CA - Photos

URINAL

Public restrooms require ADA updates. .

CABLING

Telephone cabling run haphazardly above framing.



PERGOLA

The exterior pergola has sun damaged framing members with splitting and dry-rot.

160 - Library - 345 Fair Lane, Placerville, CA - Photos

PAVEMENT

Asphalt pavement is severely cracked and on verge of failure.

221 - District Attorney - 515 Main St., Placerville, CA - Deficiencies and Cost

Square Footage	9,644
Number of Floors	2
Year Built	1938
Replacement Cost	$2,520,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Building has issues with dated finish materials. Stairs do not have contrasting stripe. Building does not have any observable smoke, visual or audible fire alarm devices nor a fire sprinkler system. Exit lighting is inadequate. Restrooms do not have exhaust fans.	$144,297
2	ADA Enhancement	Rear door can be accessed via an ADA compliant ramp, otherwise the building is non-compliant. Basement level is inaccessible, doors lack ADA levers, parking lot does not have handicap parking, and there are no ADA accessible restrooms.	$265,690
3	Structural	No issues noted, however the age of the building would indicate any renovation work would trigger a code mandated seismic upgrade to current codes.	$191,313
4	Building Integrity	Roof in poor condition. There are shingles missing or damaged on the slope roof. The built-up roof has cracking and ponding due to inadequate drainage. Exterior doors and windows are mostly original and past their useful life.	$101,251
5	Finishes	Flooring in poor condition. Ceilings marginal at best and renovation to HVAC system would require ceiling work. Walls in need of paint. Restroom finishes in poor condition. Interior doors and hardware obsolete.	$127,092
6	Mechanical	Plumbing system including fixtures and piping past useful life. Where piping has been replaced due to failure it is run exposed and penetrations not properly sealed. One rooftop unit well past serviceable life, one nearing end of lifecycle. Ductwork appears to be from 1974 remodel. Air distribution poor due to reconfigured office layout without resizing or balancing ducts. Controls are obsolete.	$282,052

221 - District Attorney - 515 Main St., Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Lighting levels are low, 600 amp service is undersized for building size and use. One of the building panels is still the fused type which is obsolete. Power outlets lack adequate grounding and there is insufficient quantity.	$233,723
8	Civil	Site has drainage issues. Paving in marginal condition. Addition of ADA parking spaces would reduce number of available parking spaces which is already inadequate.	$30,285
9	Miscellaneous	Casework in poor condition with non-ADA accessible sink.	$34,385

221 - District Attorney - 515 Main St., Placerville, CA - Recommendations

- County should consider replacing this facility. The cost to upgrade this facility including ADA requirements is not justified.

221 - District Attorney - 515 Main St., Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
221 District Attorney						
1 Fire & Safety Modernization	**$93,280**	**$51,017**				**$144,297**
Asbestos Abatement		$51,017				$51,017
Emergency and Exit Lighting	$3,189					$3,189
Fire Alarm	$35,074					$35,074
Stairs and Handrails	$4,001					$4,001
Wet Type System	$51,017					$51,017
2 ADA Enhancements		**$265,690**				**$265,690**
Cabinets		$8,729				$8,729
Elevators		$198,375				$198,375
Plumbing Fixtures		$5,687				$5,687
Toilet Rooms		$52,900				$52,900
3 Structural			**$191,313**			**$191,313**
Structural Framing			$191,313			$191,313
4 Building Integrity		**$52,847**		**$48,404**		**$101,251**
Doors, Frames and Hardware				$6,084		$6,084
Roofing		$52,847				$52,847
Windows and Frames				$42,320		$42,320
5 Finishes				**$127,092**		**$127,092**
Carpet				$39,675		$39,675
Ceilings				$42,320		$42,320
VCT				$8,729		$8,729
Wall Framing and Finishes				$36,369		$36,369
6 Mechanical		**$21,160**	**$21,160**	**$239,732**		**$282,052**
Air Handlers				$13,225		$13,225
Condensing Units				$5,290		$5,290
Controls				$25,508		$25,508
Diffusers & Grills				$12,754		$12,754
Ductwork				$89,279		$89,279
Electric Water Heater				$8,596		$8,596
Exhaust Fans				$6,613		$6,613
Package Units		$21,160	$21,160	$40,204		$82,524
Piping				$38,263		$38,263
7 Electrical				**$219,175**	**$14,548**	**$233,723**
Data and Cabling					$13,225	$13,225
General Interior Lighting				$108,411		$108,411
Main Service				$66,125		$66,125
Outlets and Wiremold				$19,131		$19,131
Panel and Breakers				$25,508		$25,508
Telephone					$1,323	$1,323
8 Civil		**$18,052**	**$12,233**			**$30,285**
Asphalt Paving			$12,233			$12,233
Storm Drainage		$18,052				$18,052
9 Miscellaneous				**$31,740**	**$2,645**	**$34,385**
Doors, Frames and Hardware				$31,740		$31,740
Window Blinds					$2,645	$2,645

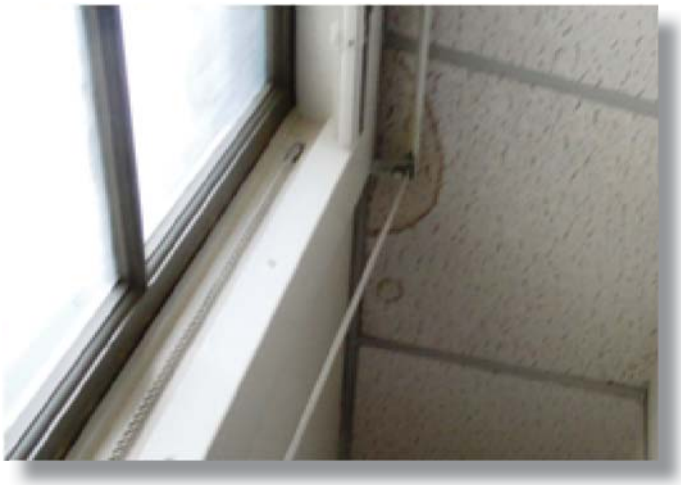
221 - District Attorney - 515 Main St., Placerville, CA - Photos

BREAKROOM

Breakroom sink not ADA suitable. Door is lacking ADA lever lockset.

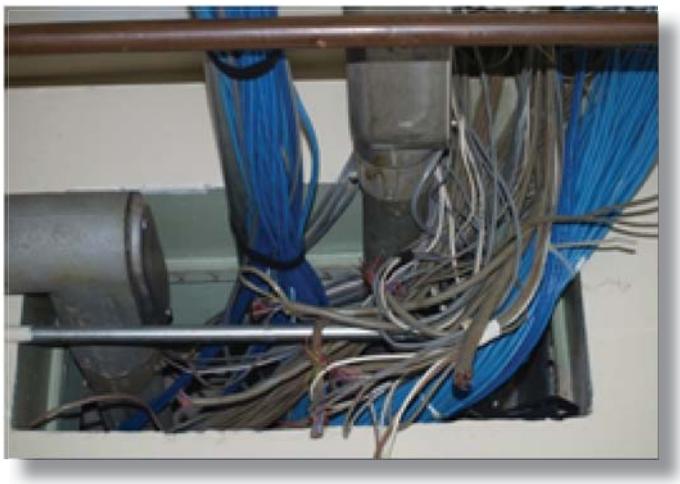
CEILING

Stained ceiling tiles.



CONDUIT

Conduit, cabling and abandoned cabling is run through an abandoned vent.



221 - District Attorney - 515 Main St., Placerville, CA - Photos

DEFLECTOR

The HVAC system is not balanced. A deflector was added at the supply register to reduce the air flow.

DIFFUSER

Diffuser was cut into the acoustic ceiling. The fan coil unit above leaks and has stained the ceiling tile.

DOOR

Door handle is missing.

221 - District Attorney - 515 Main St., Placerville, CA - Photos

FLOORING

Vinyl Composition Tile is in poor condition.

HVAC

Old roof top package unit with surface rust.

221 - District Attorney - 515 Main St., Placerville, CA - Photos

PANEL

Original fused panel is obsolete.

RECEPTACLE

Old receptacle is not grounded.

221 - District Attorney - 515 Main St., Placerville, CA - Photos

RESTROOM

Restroom is in poor condition. Original fixtures at end of lifecycle. Holes in wall where accessory was removed. Exposed piping is unappealing.

RESTROOM

Restroom is not ADA compliant. Stalls lack privacy.

221 - District Attorney - 515 Main St., Placerville, CA - Photos

ROOF

Roof is in poor condition. There is a lack of slope which results in water ponding.

ROOF

Broken shingle.

ROOF

Broken shingle.

221 - District Attorney - 515 Main St., Placerville, CA - Photos

ROOF

Shingle is not secure and nail not secure to substrate.

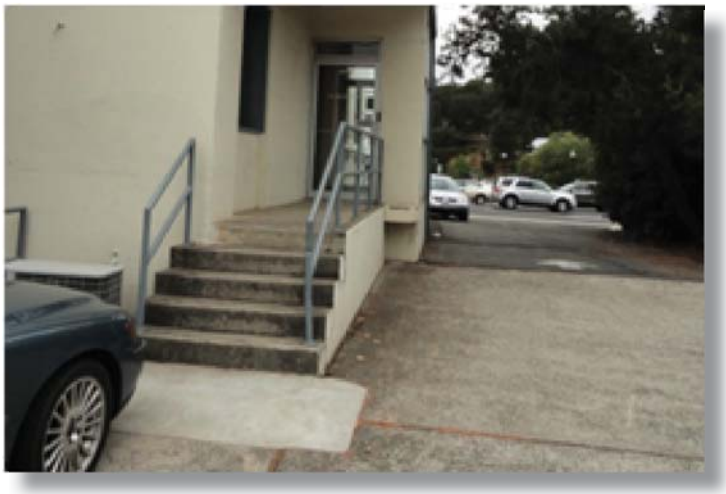
SHOWER

Non ADA shower.

221 - District Attorney - 515 Main St., Placerville, CA - Photos

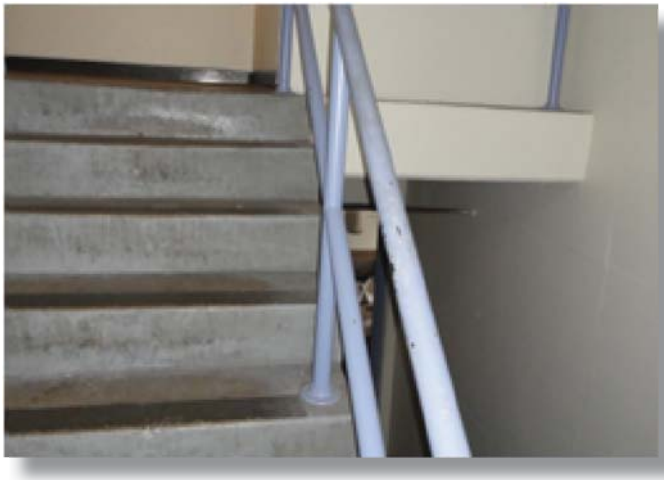
STAIRS

Exterior stairs lack contrasting stripe and do not have code compliant railings.



STAIRS

Interior stairs lack contrasting stripe and do not have code compliant railings.



WINDOW

Single glazed windows do not provide energy efficiency. There is paint peeling. Small window unit to cool room.

330 - DOT - 2441 Headington Rd., Placerville, CA - Deficiencies and Cost

Square Footage	9,725
Number of Floors	2
Year Built	1965
Replacement Cost	$1970,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Building does not have any observable smoke, visual or audible fire alarm devices nor a fire sprinkler system. Exit lighting is inadequate. Stairs do not have contrasting stripe and handrails require updates. The hot water heater is not strapped per code. Ducts & chases in a state of disrepair.	$94,203
2	ADA Enhancement	Building entrances are not accessible. Doors do not have ADA levers. There is no ADA restroom on the second level. Sinks and casework for the first floor kitchen and second floor break room not accessible.	$19,705
3	Structural	No structural issues noted to building. There is one post on the covered entry at the southeast corner that is bent. Appears to have been hit by a vehicle.	$794
4	Building Integrity	Metal roof on original portion of the building is over 40 years old which is past an expected lifespan. Windows are non-energy efficient single glazed units.	$160,948
5	Finishes	Original portion of building has dated vinyl flooring. Carpet is in fair condition. No issues with ceilings. Walls are in fair condition, but the wood paneling gives a dated look.	$46,463
6	Mechanical	Plumbing system on original portion of building including fixtures and piping past useful life. One HVAC unit well past serviceable life, two are about 8 years old and one nearly new. Ductwork is original and is in poor condition with excessive air leakage. Air distribution poor due to reconfigured office layout without resizing or balancing ducts. Controls are obsolete. Restroom exhaust fans inadequate.	$317,962

330 - DOT - 2441 Headington Rd., Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Lighting in the lower level of the east wing has yellowed lenses. Exit lighting is inadequate. Main electrical service to the building is located in the warehouse and not assessed. Panels and breakers are original to the building and approaching obsolescence.	$83,057
8	Civil	The existing septic tank was only sized for the original portion of the building and is undersized for the current configuration. The original piping is corroded with a decreased usable diameter. Blockage and backups to the system are common. The asphalt paving is in poor condition. Many cracks and patched areas.	$232,099
9	Miscellaneous	No issues noted.	$19,838

330 - DOT - 2441 Headington Rd., Placerville, CA - Recommendations

- Fire and safety modifications should be addressed. Install new emergency and exit lighting. Install fire alarm system. Install fire sprinkler system.

- Revised entrance thresholds for wheel chair access. Provide ADA access to public counters and install lever handled locksets.

- Replace roofing, flashings, gutters and downspouts.

- Remodel restrooms at upper level. Replace deteriorated water and waste lines concurrently. Repair damaged piping effected by electrolysis and provide preventative measures to mitigate future damage. Connect sewage system to city sewer system.

- Replace deficient antiquated HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Install/replace inadequate exhaust system in restrooms and lockers. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Remove abandoned equipment and ductwork.

- Replace obsolete and undersized electrical panels and feeders to improve distribution to building loads. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Install additional receptacles and signal outlets with concealed raceway or wiremold. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits.

330 - DOT - 2441 Headington Rd., Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
330 DOT Administration - Headquarters						
1 Fire & Safety Modernization	**$42,758**			**$51,445**		**$94,203**
Emergency and Exit Lighting	$3,215					$3,215
Fire Alarm	$35,369					$35,369
Ramps, Stairs & Guardrails	$2,851					$2,851
Stairs and Handrails	$1,323					$1,323
Wet Type System				$51,445		$51,445
2 ADA Enhancements		**$19,705**				**$19,705**
Cabinets		$2,645				$2,645
Doors, Frames and Hardware		$4,761				$4,761
Plumbing Fixtures		$8,993				$8,993
Site Access		$3,306				$3,306
3 Structural				**$794**		**$794**
Structural Framing				$794		$794
4 Building Integrity			**$397**	**$160,552**		**$160,948**
Built-up Roofing				$24,466		$24,466
Fascia			$397			$397
Metal Roofing				$81,334		$81,334
Windows and Frames				$54,752		$54,752
5 Finishes				**$46,463**		**$46,463**
Carpet				$36,369		$36,369
Sheet Vinyl				$6,110		$6,110
VCT				$3,985		$3,985
6 Mechanical	**$265**		**$100,212**	**$217,485**		**$317,962**
Condensing Units				$5,290		$5,290
Controls				$25,723		$25,723
Diffusers & Grills				$12,861		$12,861
Ductwork				$90,029		$90,029
Electric Water Heater	$265		$17,193			$17,457
Exhaust Fans			$7,406			$7,406
Package Units			$33,856	$81,995		$115,851
Piping			$38,584			$38,584
Plumbing Fixtures				$1,587		$1,587
Unit Heaters			$3,174			$3,174
7 Electrical				**$69,832**	**$13,225**	**$83,057**
Data and Cabling					$13,225	$13,225
General Interior Lighting				$31,248		$31,248
Outlets and Wiremold				$12,861		$12,861
Panel and Breakers				$25,723		$25,723
8 Civil	**$23,805**		**$208,294**			**$232,099**
Asphalt Paving			$208,294			$208,294
Sanitary Sewer	$23,805					$23,805
9 Miscellaneous				**$19,838**		**$19,838**
Doors, Frames and Hardware				$19,838		$19,838

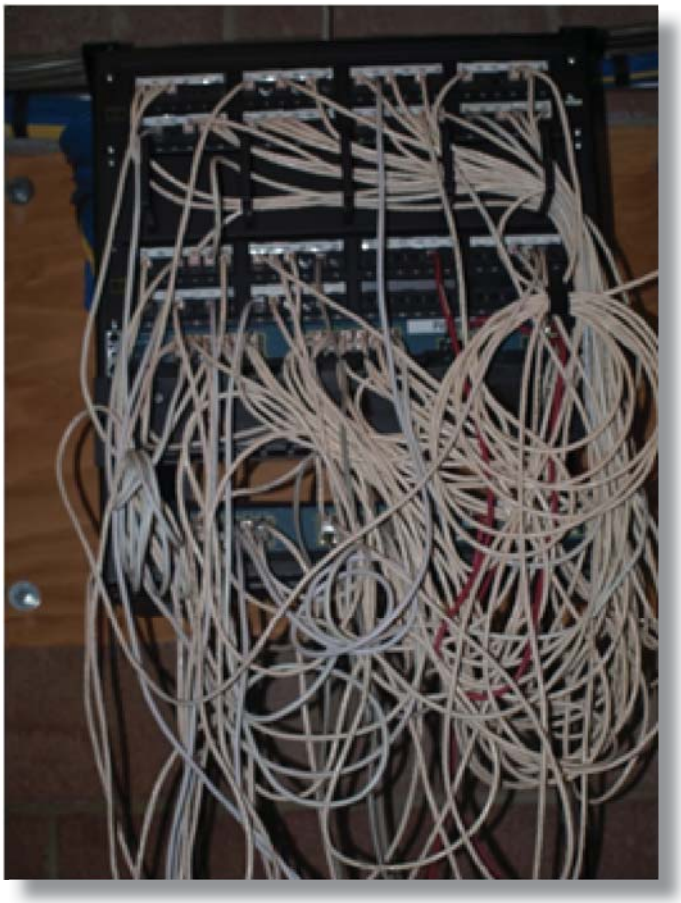
330 - DOT - 2441 Headington Rd., Placerville, CA - Photos

BREAKROOM

Cabinets in good condition, however May require ADA updates. The door lacks an ADA lever lockset.

CABLE

Cable installation at IDF was haphazardly done and should be better organized.



330 - DOT - 2441 Headington Rd., Placerville, CA - Photos

PAVEMENT

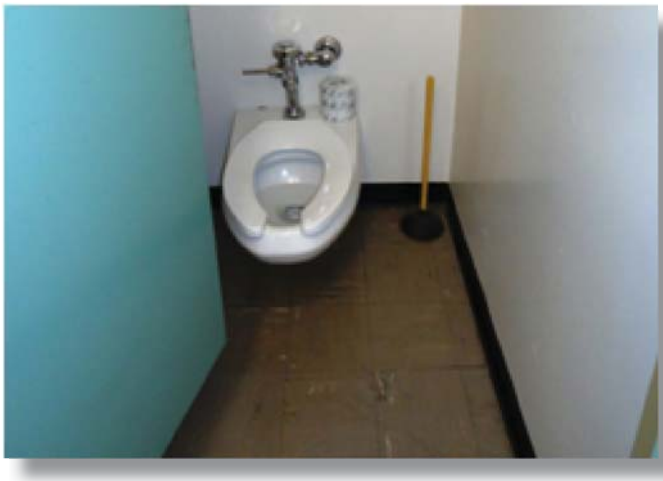
Pavement has major cracking. It appears the base has settled.

PIPING

Electrolysis caused erosion on water piping.

RESTROOM

Non ADA restroom. Floor contains suspect floor tiles.



330 - DOT - 2441 Headington Rd., Placerville, CA - Photos

FASCIA

Dry-rot damage to wood fascia boards.

PANEL

Electrical panel is blocked by added partition wall.

LIGHTS

Light fixtures have old discolored lenses.

330 - DOT - 2441 Headington Rd., Placerville, CA - Photos

HOT WATER

Hot water heater does not have earthquake strap installed.

ENTRANCE

Entrance has 2 to 3 inch lip which prevents wheelchair access.

330 - DOT - 2441 Headington Rd., Placerville, CA - Photos

COLUMN

Column appears to have been hit by a vehicle.

CONFERENCE

Conference room door does not have ADA lever lockset.

GFI

No GFI power receptacle installed at sink.

330 - DOT - 2441 Headington Rd., Placerville, CA - Photos

STAIRS

Exterior stair railing requires updating. Stairs also lack required contrasting stripes. Paint is worn out.

STAIRS

Carpeting at interior stairs is not secure. Stairs do not have contrasting stripe. Lobby flooring contains asbestos.

STAIRS

Second floor guardrail and stair railing requires updating.

330 - DOT - 2441 Headington Rd., Placerville, CA - Photos

THERMOSTAT

Old thermostat is too poorly located to be effective.

VENT

Removed vent pipping penetration was never sealed.

PAVEMENT

Cracks in asphalt paving.

362 - CPL - 2500 Country Club Dr., Cameron Park, CA - Deficiencies and Cost

Square Footage	12,574
Number of Floors	1
Year Built	1994
Replacement Cost	$3,190,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Exterior stairs do not have contrasting stripe.	$190
2	ADA Enhancement	The width for the theft detection system is too narrow for ADA access. There are no other major ADA issues.	$3,306
3	Structural	There is a separation of finishes at the vaulted ceiling in the children's room. Likely due to minor settlement of the structural members.	$0
4	Building Integrity	Composition shingle roof is 20 years old. Minimal broken shingles, however they are brittle due to age. Evidence of roof leaks around penetrations. Skylights have cracked glazing. Some woodpecker damage to wood fascia.	$137,805
5	Finishes	Ceiling has a few stained tiles. The carpet is poorly adhered to the substrate.	$63,877
6	Mechanical	Building has 4 residential grade condensing units at end of lifecycle. The expansion tank and air separator are original and at end of lifecycle. The Alerton controls are not mounted within a control panel and wiring is sloppy. System can not be controlled offsite. The insulation for the refrigerant piping is in poor condition.	$331,191
7	Electrical	Remote ballasts for the HID pendant lighting is difficult to maintain. There are excessive number of power and data cords used at workstations due to insufficient outlets.	$30,423
8	Civil	Paint is peeling at exterior steel guardrails. The exterior concrete walkways are generally good, however there are a few damaged areas in need of replacement. Minor alligator cracking of the asphalt pavement in the parking lot.	$114,611
9	Miscellaneous	The finish on the main checkout counter is badly worn.	$5,502

362 - CPL - 2500 Country Club Dr., Cameron Park, CA - Recommendations

- The theft detection system should be modified to provide ADA access. This work would be best done concurrent with carpet replacement.

- Asphalt shingle roof should be replaced along with the cracked skylights

- Replace HVAC system equipment that is at end of lifecycle. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building.

- Replace high wall and ceiling mounted remote ballast fixtures with energy efficient fixtures with improved optics. Install additional receptacles to reduce use of extension cords and wiremold raceway to conceal loose cabling.

- The parking lot paving has minor cracking. Suggest seal coating the lot. This should extend the time before replacement to 10 years.

362 - CPL - 2500 Country Club Dr., Cameron Park, CA -Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
362 Cameron Park Library						
1 Fire & Safety Modernization	**$190**					**$190**
Ramps, Stairs & Guardrails	$190					$190
2 ADA Enhancements		**$3,306**				**$3,306**
Theft Detection		$3,306				$3,306
4 Building Integrity		**$3,571**	**$130,928**	**$3,306**		**$137,805**
Composition Shingle Roofing			$130,928			$130,928
Fascia				$3,306		$3,306
Skylights		$3,571				$3,571
5 Finishes				**$63,877**		**$63,877**
Carpet				$60,504		$60,504
Ceilings				$1,389		$1,389
Ramps, Stairs & Guardrails				$1,984		$1,984
6 Mechanical			**$64,935**	**$141,538**	**$124,718**	**$331,191**
Air Handlers				$92,575		$92,575
Boilers				$10,745		$10,745
Controls				$33,258		$33,258
Diffusers & Grills				$661		$661
Electric Water Heater				$4,298		$4,298
Expansion Tank/Air Separators			$2,645			$2,645
HVAC Piping			$1,190			$1,190
Package Units			$61,100		$124,718	$185,818
7 Electrical				**$30,423**		**$30,423**
General Interior Lighting				$29,101		$29,101
Outlets and Wiremold				$1,323		$1,323
8 Civil			**$7,985**	**$106,627**		**$114,611**
Asphalt Paving				$106,627		$106,627
Concrete Paving			$7,985			$7,985
9 Miscellaneous					**$5,502**	**$5,502**
Countertops					$5,502	$5,502

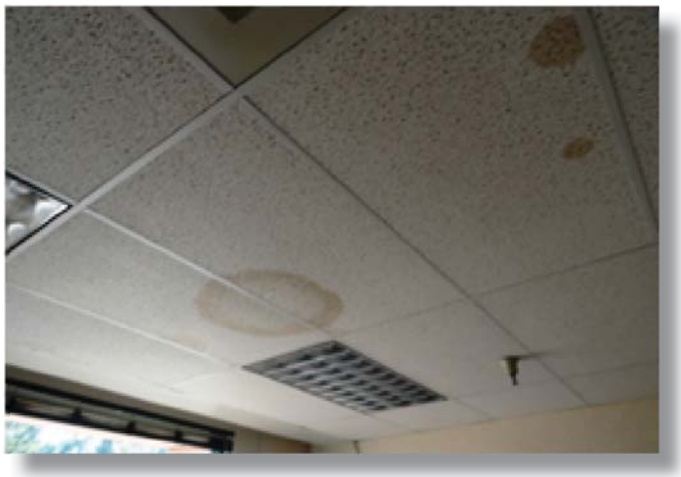
362 - CPL - 2500 Country Club Dr., Cameron Park, CA - Photos

CARPET

Water damaged carpet.

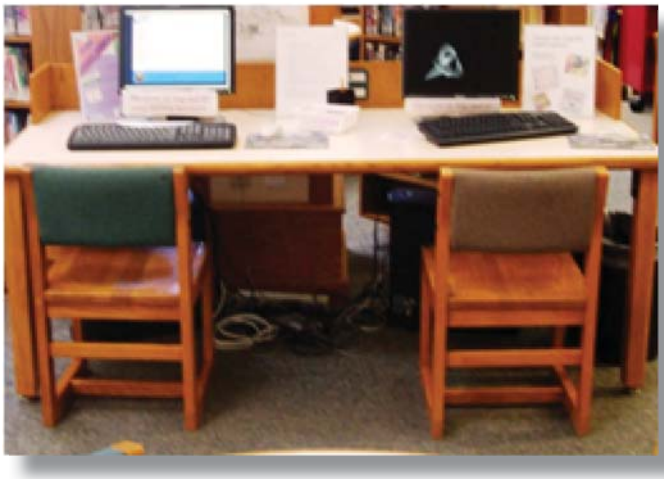
CEILING

Stained ceiling tiles.



COMPUTER

Computers are all powered by one receptacle. Extension cords present possible fire hazard.



362 - CPL- 2500 Country Club Dr., Cameron Park, CA - Photos

CONCRETE

Damaged concrete walkway.

CONDENSING

Old condensing units are ready for replacement.

362 - CPL - 2500 Country Club Dr., Cameron Park, CA - Photos

COUNTER

Finish on checkout counter is worn.

CRACK

Separation of finishes likely caused by minor structural movement.

DRINKING FOUNTAIN

Building has ADA compliant drinking fountain along with restrooms. Lobby finishes are in good condition.

362 - CPL - 2500 Country Club Dr., Cameron Park, CA - Photos

SKYLIGHT

Skylights have cracks in glazing.

STAIRS

Exterior stairs do not have contrasting stripe.
Finish on handrails is in poor condition.

440 - PHF - 935-B Spring St., Placerville, CA - Deficiencies and Cost

Square Footage	13,305
Number of Floors	2
Year Built	1949
Replacement Cost	$4,790,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Exit lighting is inadequate. Fire sprinkler main branch piping original to construction of the building at end of useful life. Data cable penetrations through fire walls not properly sealed.	$38,931
2	ADA Enhancement	Restrooms, showers, and kitchen sink may require ADA updates. Many doors do not have lever handles. Curb ramp at front entrance not ADA compliant.	$100,113
3	Structural	The building does not have any noticeable structural defects; however a major renovation to the building would require a structural upgrade to meet current seismic codes.	$527,876
4	Building Integrity	Roofing over 20 years old and at end of expected lifecycle. CMU exterior walls in fair condition but have poor insulating qualities. Original windows have low energy efficiency and have transite panels. Exterior doors are at end of lifecycle.	$218,232
5	Finishes	Ceiling has a few stained and damaged tiles. Rework to HVAC system likely would require ceiling renovation. VCT flooring mostly fair, but there are areas where tile is chipped or damaged. Building has some damaged vinyl wall covering. No issues with ceramic tile.	$21,160
6	Mechanical	Plumbing piping over 50 years old. Problems occur regularly with the waste piping. No issues reported with water piping, but problems could occur due to age. Ducts are original to hospital raising concerns due to lack of maintenance and air loss. Building only has local controls for the HVAC system. Building has 5 rooftop package units, one dates from the 1980's. Exhaust fans and Make-up Air Unit also from early 1980's and past expected lifecycle.	$369,120

440 - PHF - 935-B Spring St., Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Main service was installed in early 1980's and is undersized for current loads (also services Senior Daycare). Many panels and breakers are original to the building and are obsolete. Some of the outlets and wiring are also original and past expected lifecycle. Parking lot lighting is inadequate.	$377,410
8	Civil	Sanitary sewer piping in poor condition. Original transite piping is failing and replaced in sections as it collapses. Parking lot has minor cracking.	$56,868
9	Miscellaneous	No issues.	$7,935

440 - PHF- 935-B Spring St., Placerville, CA - Recommendations

- County should evaluate how this facility currently meets needs. If the building is not meeting current and future needs, then the county should look to relocating to a more suitable location.

- Recommendations if replacement or relocation is not an option: Fire and safety modernization should be addressed. Install new emergency and exit lighting. Install fully compliant fire alarm system. Replace fire sprinkler system which has exceeded its useful life. Seal all openings to prevent and contain spread of potential fires.

- Remodel restrooms to comply with ADA. Replace deteriorated water and waste lines concurrently. Install ADA hardware at doors. Install new ADA compliant curb ramp at building entrance.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Suggest an energy audit to determine cost saving benefits to install EIFS system to exterior walls and replacing the windows. Seal all wall and floor penetrations to mitigate rodent intrusion.

- Replace deficient antiquated HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Remove abandoned equipment and ductwork. Replace plumbing fixtures and associated piping which has exceeded its useful life.

- Replace obsolete and undersized electrical service, panels and feeders to improve distribution to building loads. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Replace old electrical outlets and install additional receptacles and signal outlets with concealed raceway or wiremold. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits. Install parking lot lighting.

440 - PHF - 935-B Spring St., Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
440 PHF						
1 Fire & Safety Modernization	**$38,931**					**$38,931**
Emergency and Exit Lighting	$3,739					$3,739
Wet Type System	$35,192					$35,192
2 ADA Enhancements		**$100,113**				**$100,113**
Cabinets		$1,984				$1,984
Doors, Frames and Hardware		$4,364				$4,364
Plumbing Fixtures		$1,190				$1,190
Shower		$19,838				$19,838
Toilet Rooms		$72,738				$72,738
3 Structural				**$527,876**		**$527,876**
Structural Framing				$527,876		$527,876
4 Building Integrity		**$68,876**	**$5,237**	**$52,371**	**$91,748**	**$218,232**
Built-up Roofing		$68,876				$68,876
Doors, Frames and Hardware			$5,237			$5,237
Exterior Wall Finishes					$89,269	$89,269
Soffits and Overhangs					$2,480	$2,480
Windows and Frames				$52,371		$52,371
5 Finishes				**$7,935**	**$13,225**	**$21,160**
Carpet				$7,935		$7,935
Wall Framing and Finishes					$13,225	$13,225
6 Mechanical			**$8,332**	**$360,788**		**$369,120**
Controls				$35,192		$35,192
Diffusers & Grills				$17,596		$17,596
Ductwork				$123,171		$123,171
Exhaust Fans				$7,935		$7,935
Gas Fired Water Heater				$17,193		$17,193
MAU Units			$8,332			$8,332
Package Units				$133,308		$133,308
Piping				$26,394		$26,394
7 Electrical			**$215,718**	**$151,773**	**$9,919**	**$377,410**
Data and Cabling					$6,613	$6,613
Emergency Power Supply			$79,350			$79,350
Exterior Building Lighting				$1,984		$1,984
General Interior Lighting			$136,368			$136,368
Main Service				$105,800		$105,800
Outlets and Wiremold				$8,798		$8,798
Panel and Breakers				$35,192		$35,192
Telephone					$3,306	$3,306
8 Civil			**$19,573**	**$37,295**		**$56,868**
Asphalt Paving			$6,877	$24,070		$30,947
Sanitary Sewer			$12,696			$12,696
Site Lighting				$13,225		$13,225
9 Miscellaneous				**$7,935**		**$7,935**
Doors, Frames and Hardware				$7,935		$7,935

440 - PHF - 935-B Spring St., Placerville, CA - Photos

PANEL

Electrical panel is blocked by shelving and used for bulletin board.

PIPING

Fire sprinkler drain piping has corrosion.

440 - PHF - 935-B Spring St., Placerville, CA - Photos

PLUG

A plugstrip is installed below the GFI receptacle. Doesn't appear to have GFI protection.

RESTROOM

Resident restroom may require ADA updates.

SHOWER

Resident showers may require ADA updates.

440 - PHF - 935-B Spring St., Placerville, CA - Photos

VENT

Vent on lower level appears to be abandoned.

PAVEMENT

Cracking pavement appears to run along water flow line.

WINDOWS

Original windows are at end of life cycle and are not energy efficient.

440 A - Senior Day Care - 935 Spring St., Placerville, CA -Deficiencies and Cost

Square Footage	5,671
Number of Floors	2
Year Built	1949
Replacement Cost	$1,620,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Exit lighting is inadequate. Fire sprinkler main branch piping original to construction of the building at end of useful life. Data cable penetrations through fire walls not properly sealed.	$53,812
2	ADA Enhancement	The public restrooms may need ADA updates, although grab bars have been added to toilets. The drinking fountain is not ADA accessible. Many doors lack ADA lever handles. The public reception counter does not have an ADA station. The kitchen sink may need ADA updates.	$78,523
3	Structural	The building does not have any noticeable structural defects; however a major renovation to the building would require a structural upgrade to meet current seismic codes.	$224,997
4	Building Integrity	Roofing over 20 years old and at end of expected lifecycle. CMU exterior walls in fair condition but have poor insulating qualities. Original windows have low energy efficiency and have transite panels. Exterior doors are at end of lifecycle.	$156,425
5	Finishes	Ceiling has a few stained and damaged tiles. Rework to HVAC system likely would require ceiling renovation. VCT flooring mostly fair, but there are areas where tile is chipped or damaged. Building has some damaged vinyl wall covering. No issues with ceramic tile.	$76,540
6	Mechanical	Plumbing piping over 50 years old. Problems occur regularly with the waste piping. No issues reported with water piping, but problems could occur due to age. Ducts are original to hospital raising concerns due to lack of maintenance and air loss. Building only has local controls for the HVAC system. Building has 5 rooftop package units, one dates from the 1980's. Exhaust fans and Make-up Air Unit also from early 1980's and past expected lifecycle.	$174,374

440 A - Senior Day Care - 935 Spring St., Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Main service was installed in early 1980's and is undersized for current loads (also services Senior Daycare). Many panels and breakers are original to the building and are obsolete. Some of the outlets and wiring are also original and past expected lifecycle. Parking lot lighting is inadequate.	$113,243
8	Civil	Sanitary sewer piping in poor condition. Original transite piping is failing and replaced in sections as it collapses. Parking lot has minor cracking.	$72,242
9	Miscellaneous	No issues.	$7,935

440 A - Senior Day Care - 935 Spring St., Placerville, CA - Recommendations

- County should evaluate how this facility currently meets needs. If the building is not meeting current and future needs, then the county should look to relocating to a more suitable location.

- Recommendations if replacement or relocation is not an option: Fire and safety modifications should be addressed. Install new emergency and exit lighting. Install fully compliant fire alarm system. Replace fire sprinkler system which has exceeded its useful life. Seal all openings to prevent and contain spread of potential fires.

- Remodel restrooms to comply with ADA. Replace deteriorated water and waste lines concurrently. Install ADA hardware at doors. Modify public counters for ADA access

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Suggest an energy audit to determine cost saving benefits to install EIFS system to exterior walls and replacing the windows. Seal all wall and floor penetrations to mitigate rodent intrusion.

- Replace deficient antiquated HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Remove abandoned equipment and ductwork. Replace plumbing fixtures and associated piping which has exceeded its useful life.

- Replace obsolete and undersized electrical panels and feeders to improve distribution to building loads. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Replace old electrical outlets and install additional receptacles and signal outlets with concealed raceway or wiremold. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits. Install parking lot lighting.

440 A - Senior Day Care - 935 Spring St., Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
440A Sr Day Care Center						
1 Fire & Safety Modernization	**$53,812**					**$53,812**
Emergency and Exit Lighting	$3,187					$3,187
Fire Alarm	$20,625					$20,625
Wet Type System	$30,000					$30,000
2 ADA Enhancements		**$78,523**				**$78,523**
Cabinets		$1,984				$1,984
Countertops		$1,289				$1,289
Doors, Frames and Hardware		$7,274				$7,274
Plumbing Fixtures		$4,497				$4,497
Toilet Rooms		$63,480				$63,480
3 Structural				**$224,997**		**$224,997**
Structural Framing				$224,997		$224,997
4 Building Integrity		**$68,876**	**$8,200**		**$79,350**	**$156,425**
Built-up Roofing		$68,876				$68,876
Doors, Frames and Hardware			$8,200			$8,200
Exterior Wall Finishes					$79,350	$79,350
5 Finishes				**$51,578**	**$24,962**	**$76,540**
Carpet				$19,838		$19,838
Ceilings				$31,740	$9,092	$40,832
Wall Framing and Finishes					$15,870	$15,870
6 Mechanical			**$78,292**	**$96,082**		**$174,374**
Controls				$15,000		$15,000
Diffusers & Grills				$7,500		$7,500
Ductwork				$52,499		$52,499
Exhaust Fans				$6,084		$6,084
Package Units			$78,292			$78,292
Piping				$15,000		$15,000
7 Electrical			**$58,124**	**$51,151**	**$3,968**	**$113,243**
Data and Cabling					$2,645	$2,645
Exterior Building Lighting				$1,984		$1,984
General Interior Lighting			$58,124			$58,124
Outlets and Wiremold				$3,750		$3,750
Panel and Breakers				$15,000		$15,000
Site Lighting				$30,418		$30,418
Telephone					$1,323	$1,323
8 Civil			**$19,011**	**$53,231**		**$72,242**
Asphalt Paving			$19,011	$53,231		$72,242
9 Miscellaneous			**$7,935**			**$7,935**
Doors, Frames and Hardware			$7,935			$7,935

440 A - Senior Day Care - 935 Spring St., Placerville, CA - Photos

KITCHEN

Sink in kitchen may need ADA updates.

KITCHEN

Old light fixture in kitchen. Fire sprinkler head corroded.

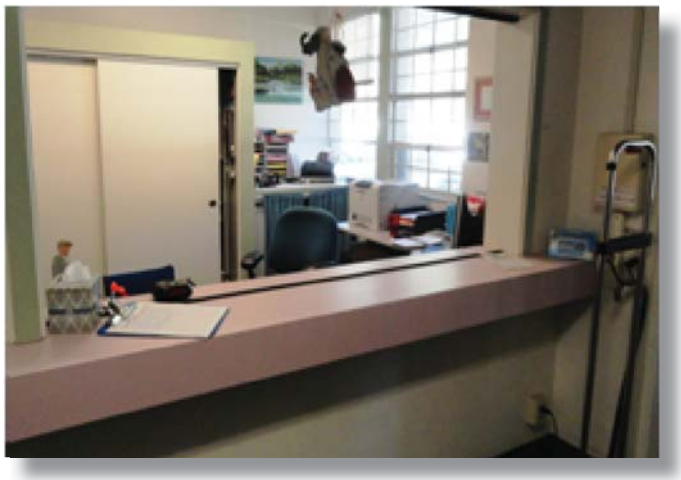
KITCHEN

Power strip on kitchen counter does not have GFI protection.

440 A - Senior Day Care - 935 Spring St., Placerville, CA - Photos

RECEPTION

Reception counter is not ADA compliant.



PARKING

Pavement has cracking and deterioration.

RESTROOM

Urinal does not work.

440 A - Senior Day Care - 935 Spring St., Placerville, CA - Photos

RESTROOM

Restroom has grab bar installed, but is not ADA compliant.

ROOF PATCH

Roof patch applied to stop leak.

441 - Health Department - 931 Spring St., Placerville, CA - Deficiencies and Cost

Square Footage	7,776
Number of Floors	2
Year Built	1966
Replacement Cost	$2,250,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Exit lighting is inadequate. Data cable penetrations through fire walls not properly sealed. The guardrail at the retaining wall south of the building requires updating. Handrails at stairs do not extend 12 inches per code and the stairs do not have a contrasting stripe. The fire alarm system has no visual or audible devices. No fire sprinkler system in building.	$81,647
2	ADA Enhancement	The staff restrooms require ADA updates. The HC parking spaces in the parking lot require ADA updates. The counter at the lab station is not ADA accessible. The drinking fountain in the lobby is not compliant. Many doors lack ADA lever locksets.	$88,211
3	Structural	The building does not have any noticeable structural defects; however a major renovation to the building would require a structural upgrade to meet current seismic codes.	$0
4	Building Integrity	Roofing has alligator cracking and visible evidence of ponding. There are holes in the EIFS coating applied to the exterior CMU walls. The original single pane windows with transite panels lack energy efficiency and are at end of lifecycle. Exterior doors are also at end of expected life.	$162,958
5	Finishes	Much of the carpet is in poor to fair condition. Some torn vinyl wall covering, otherwise no issues.	$10,249
6	Mechanical	Plumbing piping is about 45 years old. Problems occur regularly with the waste piping. No issues reported with water piping, but problems could occur due to age. Ducts are original, raising concerns due to lack of maintenance and air loss. Building only has local controls for the HVAC system. HVAC condensing units are less than 10 years old, however two of the four air handlers are original and at beyond lifecycle. Exhaust fans in restrooms are original and beyond useful life.	$206,642

441 - Health Department - 931 Spring St., Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	600 amp main service installed in 1967 is at end of lifecycle and undersized per current standards. Panels and breakers are original to the building, obsolete and inadequate to handle current loads. Some of the outlets and wiring are also original and past expected lifecycle. Parking lot lighting is inadequate.	$193,355
8	Civil	Sanitary sewer piping in poor condition. Original transite piping is failing and replaced in sections as it collapses. Parking lot has minor cracking.	$58,322
9	Miscellaneous	No issues.	$0

441 - Health Department - 931 Spring St., Placerville, CA - Recommendations

- Fire and safety modernization should be addressed. Install new emergency and exit lighting. Install fully compliant fire alarm system. Install a fire sprinkler system. Seal all openings to prevent and contain spread of potential fires.

- Seal all wall and floor penetrations to mitigate rodent intrusion.

- Remodel staff restrooms to comply with ADA. Replace deteriorated water and waste lines concurrently. Replace non-ADA drinking fountain. Install ADA lever handles at doors. Modify the Lab Station counter so it provides ADA access.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Repair EIFS system on exterior walls and replace exterior doors and windows.

- Replace carpeting and repair damaged wall coverings.

- Replace deficient antiquated HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Replace plumbing fixtures and associated piping which has exceeded its useful life.

- Replace obsolete and undersized electrical service, panels and feeders to improve distribution to building loads. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Replace old electrical outlets and install additional receptacles and signal outlets with concealed raceway or wiremold. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits. Install parking lot lighting.

- ADA parking spaces need to be provided in the parking lot. Will likely require removing paving, re-grading lot and installation of new retaining wall.

441 - Health Department - 931 Spring St., Placerville, CA -Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
441 Health Department						
1 Fire & Safety Modernization	**$81,647**					**$81,647**
Emergency and Exit Lighting	$4,371					$4,371
Fire Alarm	$28,280					$28,280
Ramps, Stairs & Guardrails	$7,861					$7,861
Wet Type System	$41,135					$41,135
2 ADA Enhancements	**$5,951**	**$82,260**				**$88,211**
Asphalt Paving		$13,225				$13,225
Cabinets		$11,903				$11,903
Countertops		$1,719				$1,719
Doors, Frames and Hardware		$5,819				$5,819
Plumbing Fixtures	$5,951	$3,306				$9,258
Retaining Walls		$23,144				$23,144
Toilet Rooms		$23,144				$23,144
4 Building Integrity			**$89,930**	**$56,299**	**$16,730**	**$162,958**
Built-up Roofing			$83,318			$83,318
Doors, Frames and Hardware			$6,613			$6,613
Exterior Wall Finishes					$11,572	$11,572
Soffits and Overhangs					$5,158	$5,158
Windows and Frames				$56,299		$56,299
5 Finishes				**$10,249**		**$10,249**
Carpet				$8,266		$8,266
Wall Framing and Finishes				$1,984		$1,984
6 Mechanical	**$265**		**$29,095**	**$177,283**		**$206,642**
Air Handlers			$26,450			$26,450
Controls				$20,568		$20,568
Diffusers & Grills				$2,057		$2,057
Ductwork				$35,993		$35,993
Electric Water Heater	$265			$17,193		$17,457
Exhaust Fans				$3,968		$3,968
Package Units			$2,645	$66,654		$69,299
Piping				$30,851		$30,851
7 Electrical			**$166,392**	**$22,334**	**$4,629**	**$193,355**
Data and Cabling					$3,306	$3,306
Exterior Building Lighting				$3,968		$3,968
General Interior Lighting			$79,699			$79,699
Main Service			$66,125			$66,125
Outlets and Wiremold				$5,142		$5,142
Panel and Breakers			$20,568			$20,568
Site Lighting				$13,225		$13,225
Telephone					$1,323	$1,323
8 Civil			**$12,696**	**$45,626**		**$58,322**
Asphalt Paving				$45,626		$45,626
Sanitary Sewer			$12,696			$12,696

441 - Health Department - 931 Spring St., Placerville, CA - Photos

CABLING

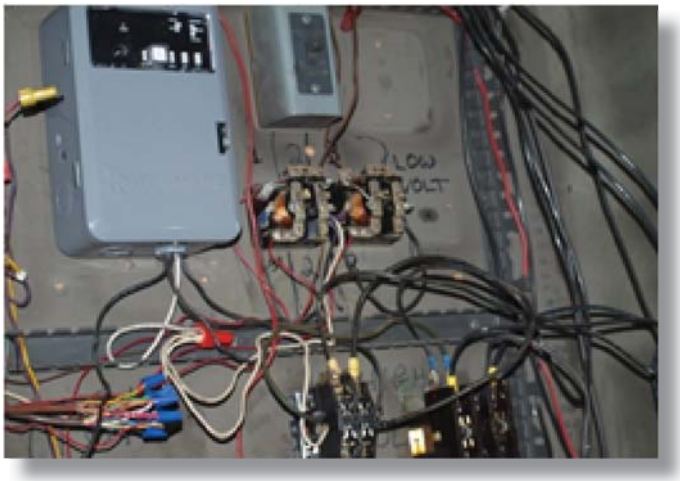
Disorganized cabling in mechanical room.

CARPET

Stained and worn carpet.

CONTROLS

HVAC controls are obsolete.



441 - Health Department - 931 Spring St., Placerville, CA - Photos

DAMAGE

Hole in EIFS wall finish.

EXAM

Typical exam room. There is no wheelchair access to sink.

GFI

No GFI receptacle installed at sink.

441 - Health Department - 931 Spring St., Placerville, CA - Photos

HANDICAP PARKING

Handicap parking spaces require ADA updates. There is no ADA path of travel from parking spaces to building entrance.

HOT WATER

Hot water heater does not have earthquake strap installed.

441 - Health Department - 931 Spring St., Placerville, CA - Photos

LAB

Counter at lab window is not wheelchair accessible.

MAIN

1967 electrical is beyond its service.

REFRIGERANT

Refrigerant piping is not supported and penetration through exterior wall not sealed.

441 - Health Department - 931 Spring St., Placerville, CA - Photos

INSULATION

Not all of the piping has insulation. Nearby tag indicates asbestos material.

PIPING

Refrigerant piping blocks access to unit for service.

441 - Health Department - 931 Spring St., Placerville, CA - Photos

WATER STAINS

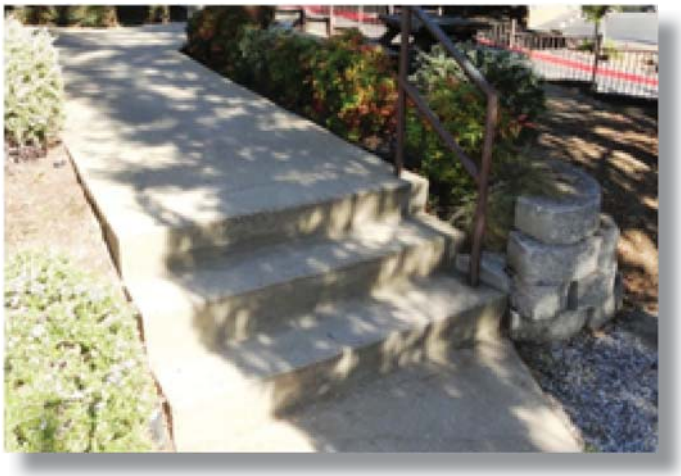
Water stains on exterior wall and soffit.

WINDOW

Exterior windows are non energy efficient single glazed units. The lower panel is transite.

STAIRS

Exterior stairs do not have contrasting stripe. There should be two handrails and the one present doesn't extend 12 inches past steps.



441 - Health Department - 931 Spring St., Placerville, CA - Photos

ROOF

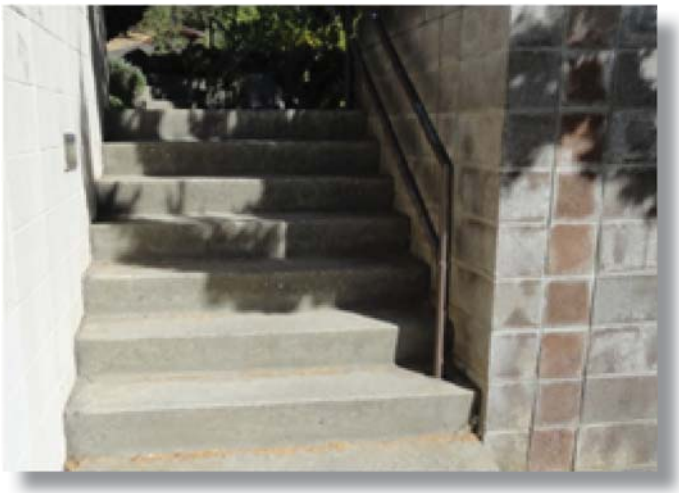
Seek N Seal applied to roof to stop water leak.

ROOF

Roof patches around mechanical and electrical penetrations to stop water leaks.

STAIRS

Exterior stairs do not have contrasting stripe. There should be two handrails and the one present doesn't extend 12 inches past steps.



441 - Health Department - 931 Spring St., Placerville, CA - Photos

STAIRS

Exterior stairs do not have contrasting stripe. Vertical spacing on guardrail requires updates & railings don't extend 12 inches past steps.

470 - Community Services - 937 Spring St., Placerville, CA - Deficiencies and Cost

Square Footage	21,775
Number of Floors	2
Year Built	1964
Replacement Cost	$5,930,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Emergency and exit lighting is inadequate. The fire alarm system in place requires updating. Any building modernization would require an upgrade. Fire sprinkler system is original to construction of the building is at end of useful life. Data cable penetrations through fire walls not properly sealed.	$164,998
2	ADA Enhancement	The public restrooms were remodeled in 2008 and ADA compliant, however, staff restrooms are not ADA suitable. The drinking fountain is not ADA accessible. Many doors lack ADA lever handles. The two public reception counters and transaction window do not have an ADA station.	$132,779
3	Structural	The building does not have any noticeable structural defects; however a major renovation to the building would require a structural upgrade to meet current seismic codes.	$719,936
4	Building Integrity	25 year old roof has some alligator cracking. CMU exterior walls in fair condition but have poor insulating qualities. Original w windows have low energy efficiency and have transite (asbestos) panels. Exterior doors are at end of lifecycle.	$521,726
5	Finishes	Ceiling has a few stained and damaged tiles. Rework to HVAC system likely would require ceiling renovation. VCT flooring mostly fair, but there are areas where tile is chipped or damaged. Some vinyl asbestos tiles still in place.	$228,396
6	Mechanical	Plumbing piping is about 45 years old. Problems occur regularly with the waste piping. No issues reported with water piping, but problems could occur due to age. Ducts are original, raising concerns due to lack of maintenance and air loss. Building only has local controls for the HVAC system. HVAC condensing units are less than 10 years old, however two of the four air handlers are original and at beyond lifecycle. Exhaust fans in restrooms are original and beyond useful life.	$1,602,818

470 - Community Services - 937 Spring St., Placerville, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Main service is original to building that was sized for original use as a hospital. Most panels and breakers are original to the building and are obsolete. Some of the outlets and wiring are also original and past expected lifecycle. The generator lacks capacity to serve all required loads to be on back-up. Light levels of retrofitted fixtures are low and switch controls are old. Parking lot lighting is inadequate.	$583,768
8	Civil	Sanitary sewer piping in poor condition. Original transite piping is failing and replaced in sections as it collapses. Parking lot has minor cracking.	$238,844
9	Miscellaneous	No issues.	$72,738

470 - Community Services - 937 Spring St., Placerville, CA - Recommendations

- County should evaluate how this facility currently meets needs. If the building is not meeting current and future needs, then the county should look to relocating to a more suitable location.

- Recommendations if replacement or relocation is not an option: Fire and safety modernization should be addressed. Install new emergency and exit lighting. Install fully compliant fire alarm system. Replace fire sprinkler system which has exceeded its useful life. Seal all openings to prevent and contain spread of potential fires.

- Remodel staff restrooms to comply with ADA. Replace deteriorated water and waste lines concurrently. Install ADA hardware at doors. Modify public counters for ADA access.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow. Suggest an energy audit to determine cost saving benefits to install EIFS system to exterior walls and replacing the windows. Seal all wall and floor penetrations to mitigate rodent intrusion.

- Replace chipped VCT flooring and VAT flooring.

- Replace deficient antiquated HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Remove abandoned equipment and ductwork. Replace plumbing fixtures and associated piping which has exceeded its useful life.

- Replace obsolete and undersized electrical service, panels and feeders to improve distribution to building loads. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Replace old electrical outlets and install additional receptacles and signal outlets with concealed raceway or wiremold. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits. Install parking lot lighting.

470 - Community Services - 937 Spring St., Placerville, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
470 Community Services / Sr Nutrition						
1 Fire & Safety Modernization	**$164,998**					**$164,998**
Emergency and Exit Lighting	$14,399					$14,399
Fire Alarm	$28,797					$28,797
Telephone	$6,613					$6,613
Wet Type System	$115,190					$115,190
2 ADA Enhancements		**$132,779**				**$132,779**
Cabinets		$1,984				$1,984
Countertops		$3,439				$3,439
Doors, Frames and Hardware		$14,548				$14,548
Plumbing Fixtures		$3,306				$3,306
Toilet Rooms		$105,800				$105,800
Windows		$3,703				$3,703
3 Structural				**$719,936**		**$719,936**
Structural Framing				$719,936		$719,936
4 Building Integrity			**$215,832**	**$157,113**	**$148,781**	**$521,726**
Built-up Roofing			$211,071			$211,071
Doors, Frames and Hardware			$4,761			$4,761
Exterior Wall Finishes					$148,781	$148,781
Windows and Frames				$157,113		$157,113
5 Finishes				**$154,666**	**$73,729**	**$228,396**
Cabinets					$1,984	$1,984
Carpet				$66,125		$66,125
Ceilings				$66,125	$4,959	$71,084
Soffits and Overhangs					$9,919	$9,919
VCT				$22,416		$22,416
Wall Framing and Finishes					$56,868	$56,868
6 Mechanical			**$486,432**	**$252,463**	**$863,923**	**$1,602,818**
Air Handlers			$112,413			$112,413
Boilers			$9,919			$9,919
Chemical Treatment Equipment			$6,613			$6,613
Chillers			$63,480			$63,480
Controls				$57,595		$57,595
Cooling Towers			$6,613			$6,613
Diffusers & Grills				$6,131		$6,131
Ductwork				$100,791		$100,791
Exhaust Fans			$18,515			$18,515
Expansion Tank/Air Separators			$6,613			$6,613
Gas Fired Water Heater				$8,596		$8,596
HVAC Piping			$129,588			$129,588
MAU Units				$11,903		$11,903
Package Units				$67,448	$863,923	$931,371
Piping			$86,392			$86,392
Pumps			$26,450			$26,450
Valves			$19,838			$19,838

	Category	Deficiencies	Cost
7	Electrical	Main service is original to building that was sized for original use as a hospital. Most panels and breakers are original to the building and are obsolete. Some of the outlets and wiring are also original and past expected lifecycle. The generator lacks capacity to serve all required loads to be on back-up. Light levels of retrofitted fixtures are low and switch controls are old. Parking lot lighting is inadequate.	$583,768
8	Civil	Sanitary sewer piping in poor condition. Original transite piping is failing and replaced in sections as it collapses. Parking lot has minor cracking.	$238,844
9	Miscellaneous	No issues.	$72,738

470 - Community Services - 937 Spring St., Placerville, CA - Photos

BATHROOM

Bathroom may require ADA updates. Fixtures are not set at ADA heights. Grab bars not installed per ADA standards. The door does not have lever lockset.

BATHTUB

Original hospital bathtub is still present.

BREAKROOM KITCHEN

Cabinets in good condition, however may require ADA updates.

470 - Community Services - 937 Spring St., Placerville, CA - Photos

CASEWORK - ARTS

Cabinets in condition, however may rquire ADA updates.

CHILLER

Original chiller is over 40 years old. One no longer used.

EXIT

Exit door. The exit light above door does not work and the panic bar is obsolete.

470 - Community Services - 937 Spring St., Placerville, CA - Photos

EXTERIOR - EAST - Windows

Exterior windows are non energy efficient single glazed units. The lower transit panel is made out of asbestos.

FLOOR

Flooring in poor condition, particularly around door jambs.

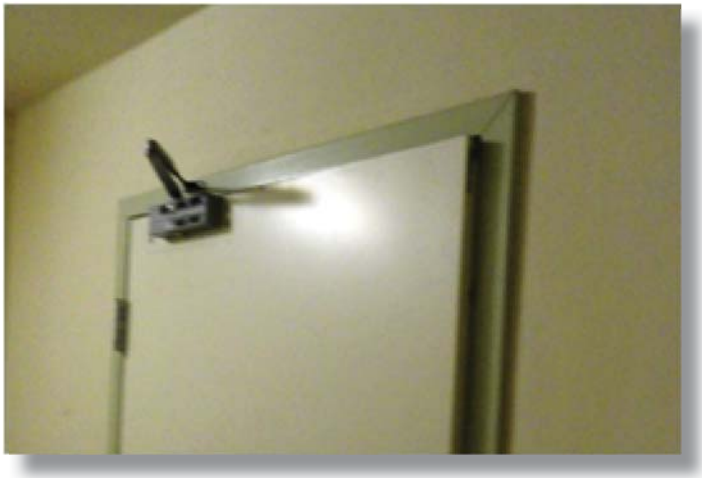
GFI

Non GFI outlet old patient lavatory.

470 - Community Services - 937 Spring St., Placerville, CA - Photos

INTERIOR DOOR - CLOSER

Much of the interior hardware is obsolete. The cover is missing from the closer on this door.



KILN ROOM

Three kilns are jammed into this tiny room. The room does not have an exhaust hood or fan.

LIGHT FIXTURE - NO COVER

This light fixture is missing the lens cover.

470 - Community Services - 937 Spring St., Placerville, CA - Photos

PLASTER PATCH

The corner of the building was damaged and crude plaster patch installed.

ROOF

Alligator cracking in the built-up roofing cap sheet.

PIPING REPAIR

Original ventilator piping is failing. Here it has been patched with flexible hose and two hose clamps.

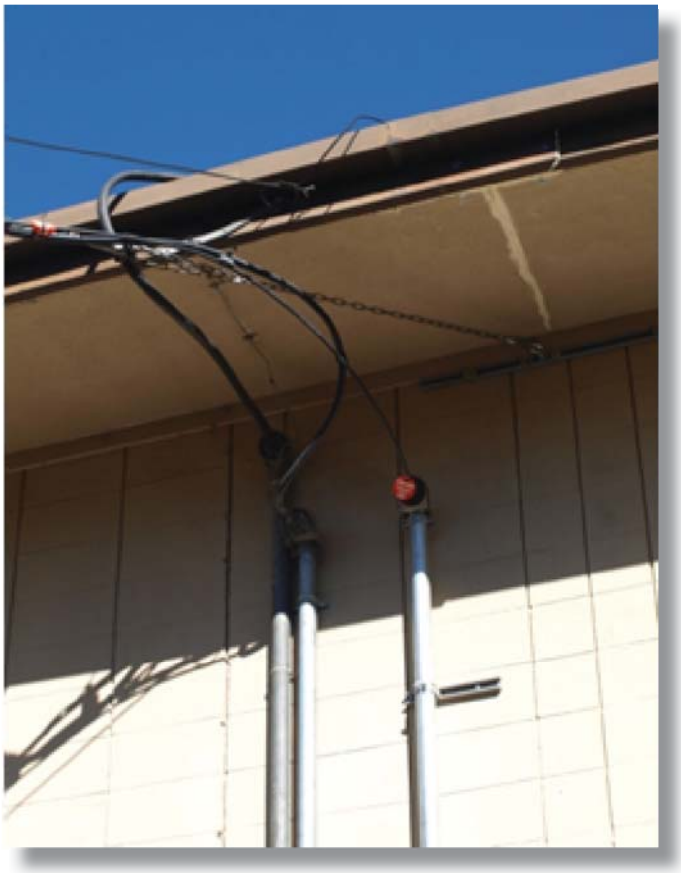
470 - Community Services - 937 Spring St., Placerville, CA - Photos

PLASTER SOFFIT DAMAGE

Crude patch where plaster soffit was damaged.

SERVICE ENTRANCE

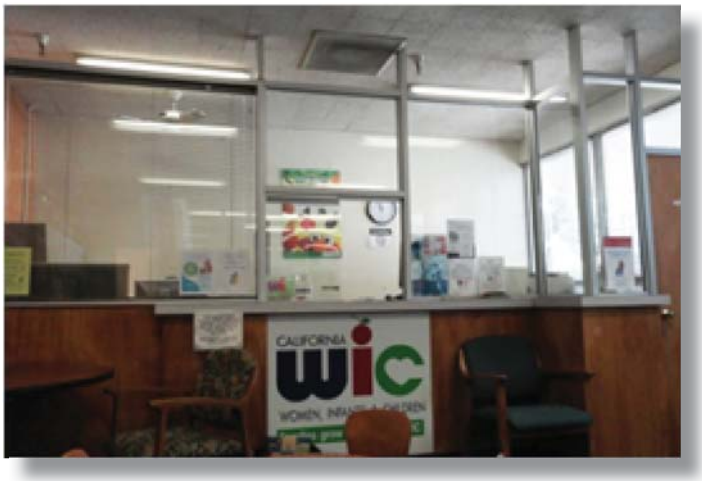
Overhead electrical service to building. Should have weather head extending above roof.



470 - Community Services - 937 Spring St., Placerville, CA - Photos

WIC COUNTER

There is no wheelchair access at the reception counters.



FLUSH

Flush valves are very old & inefficient.

470 - Community Services - 937 Spring St., Placerville, CA - Photos

COOLING

Cooling tower water is not treated and results in corrosion issues.

600 - SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Deficiencies and Cost

Square Footage	22,343
Number of Floors	1
Year Built	1975
Replacement Cost	$5,820,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Emergency and exit lighting is inadequate. Data cable in office space run exposed and pose tripping hazard. The fire alarm system may need updating. Fire sprinkler system should be pressure tested. Heads are original and appear dirty and grimy which could affect operation.	$192,066
2	ADA Enhancement	Public restrooms and restrooms between health department and DA's office require updating. Most doors lack ADA lever locksets. Path of travel from parking lot marginal due to poor asphalt conditions. Break room sinks are not accessible. Lighting levels in parking lot and path to building likely do not meet ADA guidelines.	$189,508
3	Structural	No issues noted.	$3,306
4	Building Integrity	Built-up roof is 20 years old with some alligator cracking in cap sheet. Roof has patches where water intrusion has occurred. Facia boards have sun damage. Exterior doors ok, however hardware is obsolete. No immediate issues with windows or brick veneer.	$359,985
5	Finishes	Carpet in poor to fair condition, except sheriff's offices mostly good. VCT mostly good, but areas in need of replacement. Ceramic tile in restrooms fair, but renovation for ADA compliance will require replacement. One door damaged where closer removed. Minor damage to wall in janitor's closet.	$103,367
6	Mechanical	Plumbing piping is about 45 years old. Problems occur regularly with the waste piping. No issues reported with water piping, but problems could occur due to age. Ducts are original, raising concerns due to lack of maintenance and air loss. Building only has local controls for the HVAC system. HVAC condensing units are less than 10 years old, however two of the four air handlers are original and at beyond lifecycle. Exhaust fans in restrooms are original and beyond useful life.	$648,352

600 - SLT Admin - 1360 Johnson Blvd., S. Lake Tahoe, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
7	Electrical	Main service is marginally sized for current usage and demand. Load not balanced due to various renovation/remodels that have occurred. Panels are obsolete and have limited expansion capabilities. Outlets and power distribution inadequate for current building configuration. Lighting fixtures retrofitted, but lighting levels low in portions of the building. Light switch control in spaces is limited and inadequate for fixture control.	$477,349
8	Civil	Asphalt paving in poor condition, cracks, crumbling base and potholes.	$153,443
9	Miscellaneous	No issues	$0

600 - SLT Admin - 1360 Johnson Blvd., S. Lake Tahoe, CA - Recommendations

- Fire and safety modernization should be addressed. Install new emergency and exit lighting. Have the fire sprinkler system tested to determine if and where corrosion has occurred in the piping from water ponding or (MIC) from the water quality on the dry pipe system. Replace piping and sprinkler heads that are determined to be sufficiently corroded to maintain the integrity of the system in place to reduce the cost for complete replacement of the system. Replace dirty heads, deficient valves and air compressor on fire sprinkler system. Provide combination fire/smoke dampers tied to the fire alarm system at all ducts passing through fire rated walls. Replace fire alarm system to meet current codes and to incorporate HVAC system for alarm and shutdown.

- Remodel restrooms to comply with ADA. Replace deteriorated water and waste lines concurrently. Replace non-ADA drinking fountain. Install ADA lever handles at doors. Modify break room cabinets for ADA compliance.

- Replace carpeting and interior door hardware.

- Replace air handlers and condensing units at or near end of useful life. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Replace defective sewer and water piping along with valves.

- Replace obsolete and undersized electrical service, panels and feeders to improve distribution to building loads. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Install additional receptacles and signal outlets with concealed raceway or wiremold.

- Replace asphalt walkways to provide suitable ADA access from parking lot.

600 - SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
600 South Lake Tahoe Administration						
1 Fire & Safety Modernization	**$192,066**					**$192,066**
Emergency and Exit Lighting	$14,774					$14,774
Fire Alarm	$88,646					$88,646
Wet Type System	$88,646					$88,646
2 ADA Enhancements		**$160,413**	**$1,323**	**$27,773**		**$189,508**
Cabinets		$4,761				$4,761
Doors, Frames and Hardware		$258	$1,323	$27,773		$29,353
Plumbing Fixtures		$9,919				$9,919
Toilet Rooms		$145,475				$145,475
3 Structural			**$3,306**			**$3,306**
Structural Framing			$3,306			$3,306
4 Building Integrity			**$128,283**	**$231,702**		**$359,985**
Built-up Roofing			$115,719			$115,719
Doors, Frames and Hardware			$9,919			$9,919
Fascia			$2,645			$2,645
Metal Roofing				$179,331		$179,331
Windows and Frames				$52,371		$52,371
5 Finishes				**$103,367**		**$103,367**
Carpet				$101,833		$101,833
VCT				$873		$873
Wall Framing and Finishes				$661		$661
6 Mechanical			**$359,252**	**$82,260**	**$206,840**	**$648,352**
Air Handlers			$166,635			$166,635
Condensing Units			$79,985			$79,985
Controls			$59,097			$59,097
Diffusers & Grills				$36,936		$36,936
Ductwork			$41,368		$206,840	$248,208
Electric Water Heater				$8,596		$8,596
Exhaust Fans			$12,167			$12,167
Gas Fired Water Heater				$17,193		$17,193
Piping				$14,774		$14,774
Unit Heaters				$4,761		$4,761
7 Electrical			**$88,646**	**$362,253**	**$26,450**	**$477,349**
Data and Cabling					$26,450	$26,450
Exterior Building Lighting				$11,903		$11,903
General Interior Lighting				$251,163		$251,163
Main Service				$66,125		$66,125
Outlets and Wiremold			$29,549			$29,549
Panel and Breakers			$59,097			$59,097
Site Lighting				$33,063		$33,063
8 Civil			**$153,443**			**$153,443**
Asphalt Paving			$153,443			$153,443

600 -SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

BEAM

Minor damage at end of outrigger beam.

BREAKROOM

Breakroom sink not ADA suitable. Original plumbing was capped and left exposed.

BREAKROOM

Breakroom sink not ADA suitable. Finish on cabinets is in poor condition.

600 -SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

CONDUIT

Many of the conduits above the ceiling are not attached to structure for support.

CEILING

Stained ceiling tiles.

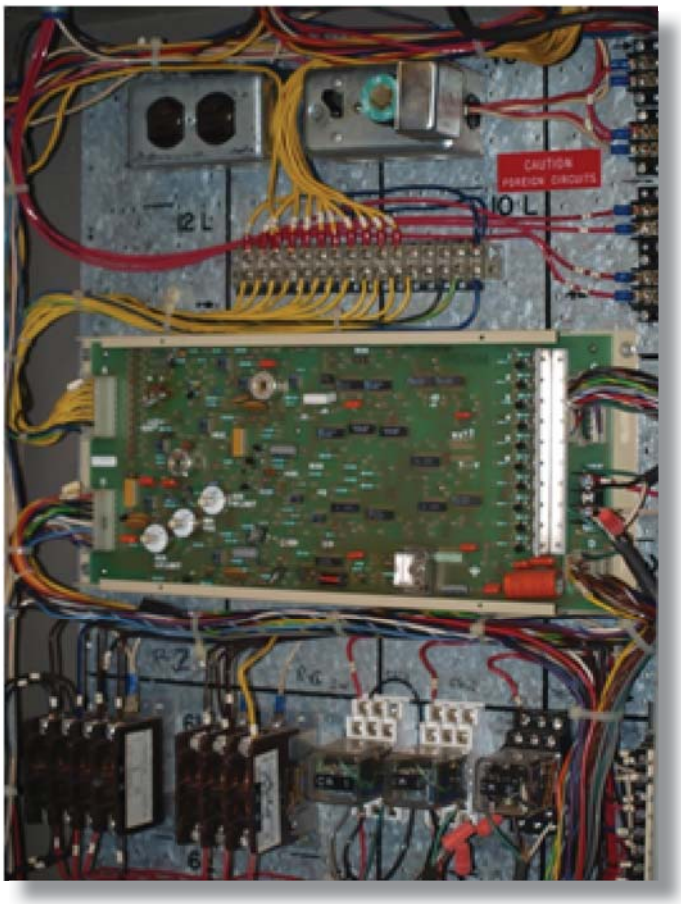
DOOR

Door does not have ADA lever locksets.

600 -SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

CONTROLS

Original HVAC controls are obsolete.



SHOWER

Shower does not meet current ADA standards and in very poor condition.

600 -SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

DOOR

Unsightly patch where closer was removed from the door.

EXIT

Exit sign is not illuminated. Cover is missing from door closure.

FASCIA

Sun damaged fascia boards are split and separating at joint.

600 -SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

FASCIA

Nail popping at fascia.

FLOORING

Carpet is not secure to substrate below and wrinkled.

FLOORING

Tear in carpet at joint.

600 - SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

FLOORING

VCT flooring is chipped around door.

HVAC PIPING

Insulation of roof piping is almost completely deteriorated.

PAVEMENT

Complete failure in pavement.

600 - SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

PAVEMENT

Parking lot pavement deterioration.

RESTROOM

Restroom has grab bar installed, but may require ADA upgrades.

RESTROOM

Urinals are not ADA suitable.

600 - SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

RESTROOM

Single occupant restroom is not ADA suitable.

ROOF

Alligator cracking and numerous patches at electrical and mechanical penetrations.

SHOWER

Shower may require ADA upgrades.

600 - SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

TRANSACTION

Window is not wheelchair accessible and speaker is not ADA compliant.

TRANSFORMER

Transformer blocks full access to electrical panel above.

600 - SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

THERMOSTAT

There is no cover on the old thermostat.

WALL

Wall has water damage around janitor's sink**.**

WORKSTATION

Typical workstation. There are not enough power outlets. Extension cords present possible fire and tripping hazard.

600 - SLT Admin. - 1360 Johnson Blvd., S. Lake Tahoe, CA - Photos

SPRINKLER

Typical fire sprinkler head. Heads are dirty with material buildup. System should be tested.

SHERIFF

Main entrance to sheriff's office does not have ADA accessible hardware..

610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Deficiencies and Cost

610 – SLT El Dorado Center – 3368 Lake Tahoe Blvd., Placerville, CA

Square Footage	18,453
Number of Floors	3
Year Built	1960
Replacement Cost	$4,960,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Emergency and exit lighting is inadequate. Data cable penetrations in walls not properly sealed. The fire alarm system is obsolete and may require updates. Building lacks fire sprinklers and any modernization would likely require installation. The low roof at the west end of the building is accessible through a door. The railing at 3rd story balcony requires updates. Stairs lack a contrasting stripe.	$146,285
2	ADA Enhancements	Restrooms require ADA enhancements. Most doors lack ADA lever locksets. Break room sinks are not accessible. Public counters at various agencies do not have ADA stations. Drinking fountains are not ADA compliant. The elevator does not have ADA controls. Elevator does not go to basement, so this level is not accessible.	$152,749
3	Structural	The building does not have any noticeable structural defects, however a major renovation to the building would require a structural upgrade to meet current seismic codes.	$670,217
4	Building Integrity	Built-up roof was installed in 1996 and approaching end of useful life. Building lacks positive drainage to roof drains resulting in standing water and a shortened life expectancy. The window wall system is single glazed, not energy efficient and have air and water intrusion issues. A flashing retrofit in 1996 eliminated some of the issues, but there are still problems. Exterior doors and hardware are obsolete.	$651,530
5	Finishes	Carpet in poor condition except at offices which were recently remodeled. Restroom finishes are marginal and should be replaced as part of ADA required upgrade. There is wall covering separating from substrate. Wood paneling gives offices a dated appearance.	$172,123

610 - SLT El Dorado Ctr, 3368 LT Blvd., S. Lake Tahoe, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
6	Mechanical	Plumbing piping over 50 years old. Problems occur regularly with the waste and water piping for backflow issues, low water pressure and failing valves. Majority of the ducts are at end of useful life raising concerns due to lack of maintenance and air loss. Building only has local controls for the HVAC system. Building has a mismatched HVAC system with chiller, boiler, ventilators along with package units to serve various areas which are all at the end of useful life. Controls are outdated and lack capability to be monitored off-site.	$1,442,188
7	Electrical	Main service is marginally sized for current usage and demand. Load not balanced due to various renovation/remodels that have occurred. Panels are obsolete and have limited expansion capabilities. Outlets and power distribution inadequate for current building configuration. Lighting fixtures retrofitted, but lighting levels low in portions of the building. Light switch control in spaces is limited and inadequate for fixture control.	$385,171
8	Civil	Paving in poor condition. Areas with complete failure. Storm water drainage from parking lot is poor. Pavement slopes to the building where run-off goes to a catch basin and then piped through the building. When pump fails or power outage occurs, water infiltrates into building.	$247,969
9	Miscellaneous	Elevator is obsolete and does not stop at basement level.	$30,418

610 - SLT El Dorado Ctr, 3368 LT Blvd., S. Lake Tahoe, CA Recommendations

- **Building has too many costly deficiencies which would indicate that the relocation of the County Department to an appropriate building or replacement of the building would be more cost effective.**

- Recommendations if replacement or relocation is not an option: Fire and safety modernization should be addressed. Install new emergency and exit lighting. Install fire sprinkler system. Install a new compliant fire alarm system. Seal all openings through fire rated wall with fire rated materials.

- Seal all wall and floor penetrations to mitigate rodent intrusion.

- Remodel public restrooms on all levels. Replace the water and waste lines concurrently.

- Replace deficient antiquated HVAC system equipment and components to improve energy efficiency and reduce maintenance costs. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Replace defective sewer and water piping along with valves. Remove abandoned equipment, piping and ductwork.

- Replace obsolete and undersized electrical service along with downstream deficient panels and feeders. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Replace parking lot and building mounted lighting. Install additional receptacles and signal outlets with concealed raceway or wiremold. Remove abandoned electrical equipment, conduit, low voltage cabling and power circuits.

610 - SLT El Dorado Ctr, 3368 LT Blvd., S. Lake Tahoe, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
610 South Lake Tahoe El Dorado Center						
1 Fire & Safety Modernization	**$146,285**					**$146,285**
Emergency and Exit Lighting	$18,392					$18,392
Fire Alarm	$24,404					$24,404
Mechanical Screens	$2,222					$2,222
Stairs and Handrails	$3,174					$3,174
Wet Type System	$98,092					$98,092
2 ADA Enhancements		**$152,749**				**$152,749**
Cabinets		$7,935				$7,935
Doors, Frames and Hardware		$7,274				$7,274
Toilet Rooms		$137,540				$137,540
3 Structural				**$670,217**		**$670,217**
Structural Framing				$670,217		$670,217
4 Building Integrity			**$117,967**	**$533,563**		**$651,530**
Built-up Roofing			$104,425			$104,425
Doors, Frames and Hardware				$17,788		$17,788
Storefront Systems				$515,775		$515,775
Wood Shake Roof			$13,542			$13,542
5 Finishes			**$64,009**	**$73,399**	**$34,716**	**$172,123**
Cabinets					$1,653	$1,653
Carpet				$72,738		$72,738
Ceilings			$64,009			$64,009
Wall Framing and Finishes				$661	$33,063	$33,724
6 Mechanical			**$1,150,336**	**$291,851**		**$1,442,188**
Air Handlers			$79,350			$79,350
Boilers			$9,919			$9,919
Chillers			$31,740			$31,740
Controls				$49,046		$49,046
Diffusers & Grills				$24,523		$24,523
Ductwork				$171,662		$171,662
Electric Water Heater				$8,596		$8,596
Exhaust Fans			$15,870			$15,870
Expansion Tank/Air Separators			$6,613			$6,613
Gas Fired Water Heater				$8,596		$8,596
HVAC Piping			$110,354			$110,354
MAU Units			$11,903			$11,903
Package Units			$809,092			$809,092
Piping			$49,046	$29,428		$78,474
Pumps			$6,613			$6,613
Valves			$19,838			$19,838
7 Electrical			**$141,621**	**$243,550**		**$385,171**
Data and Cabling				$6,613		$6,613
Exterior Building Lighting				$3,968		$3,968
General Interior Lighting				$208,446		$208,446
Main Service			$66,125			$66,125
Outlets and Wiremold				$24,523		$24,523
Panel and Breakers			$49,046			$49,046
Site Lighting			$26,450			$26,450

610 - SLT El Dorado Ctr, 3368 LT Blvd., S. Lake Tahoe, CA - Priorities

Priority						
Item	**1**	**2**	**3**	**4**	**5**	**Total**
610 South Lake Tahoe El Dorado Center						
8 Civil			**$247,969**			**$247,969**
Asphalt Paving			$208,294			$208,294
Storm Drainage			$39,675			$39,675
9 Miscellaneous		**$15,870**		**$14,548**		**$30,418**
Doors, Frames and Hardware				$14,548		$14,548
Elevators		$15,870				$15,870

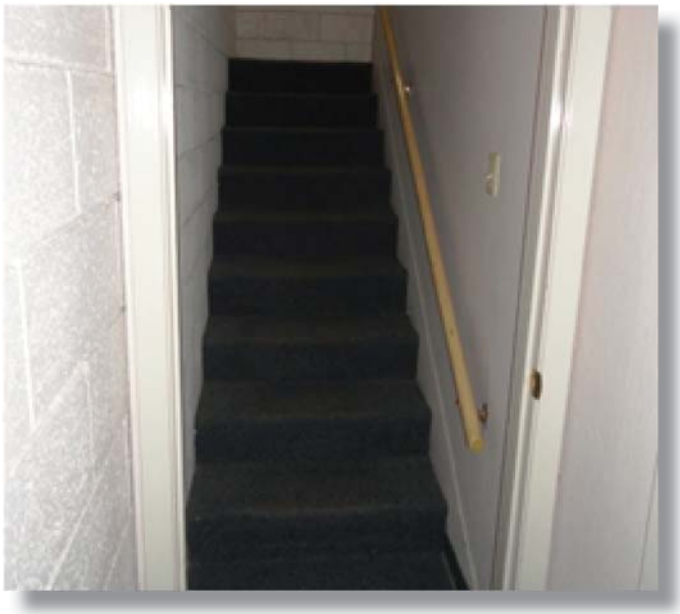
610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Photos

WALL PAPER TEAR

Tear in vinyl wall covering.

STAIRWELL

Stairs are very narrow and lack code compliant handrails and contrasting stripes.



610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Photos

PENETRATIONS

Pipe penetrations are not properly sealed at wall.

MECHANICAL SCREEN MISSING

The wood mechanical screen of north side of the roof is in very poor condition.

610 - SLT El Dorado Ctr., 3368 LTBlvd., S. Lake Tahoe, CA - Photos

ROOF

Evidence of standing water at roof drain indicates either the drain is undersized or gets clogged.

PAVING

Parking lot pavement is at end of life cycle.

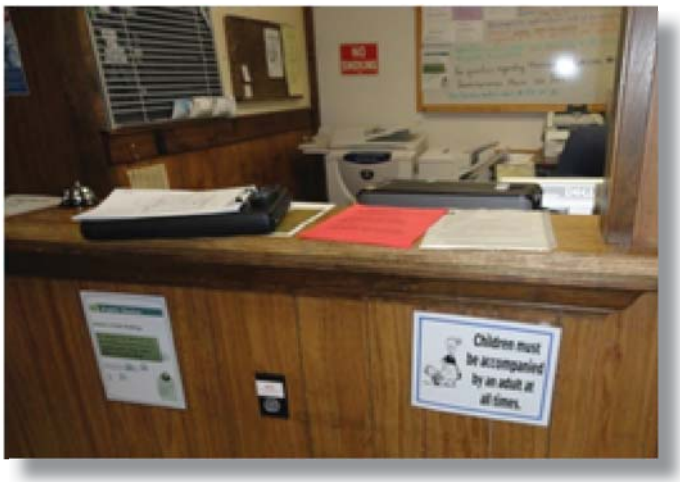
MECHANICAL SCREEN

The mechanical screen is completely gone on south side of roof. This level of roof is accessible through a door.

610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Photos

NON ADA COUNTER

Counter does not have wheelchair access.



PIPE

Pipe repair with mixture of PVC, copper and galvanized steel.

610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Photos

NON ADA RESTROOM

Restroom is non ADA compliant.

WASTE PIT

Unclosed waste pit in basement produces foul smell at lower level.

ROOF BLISTER

Roofing is in poor condition. Major blister in capsheet likely will cause problems soon.

610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Photos

MOULDING MISSING

Finishes not patched when wall was removed during renovation.

CHAIR RAIL MISSING

Chair rail at top of wainscot is missing.

DEFLECTOR

The HVAC system is not balanced. A deflector was added at the supply register to reduce the air flow.

610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Photos

BALCONY RAILING

Vertical spacing for pickets on balcony greater than per code. Steel members rusted.

DRINKING FOUNTAIN

Drinking fountain. This should not be used.

CATCH BASIN

All water run-off from parking lot goes into this one drain where it is pumped through the building to the other side. If the drain clogs or pump malfunctions, then water gets into first floor.

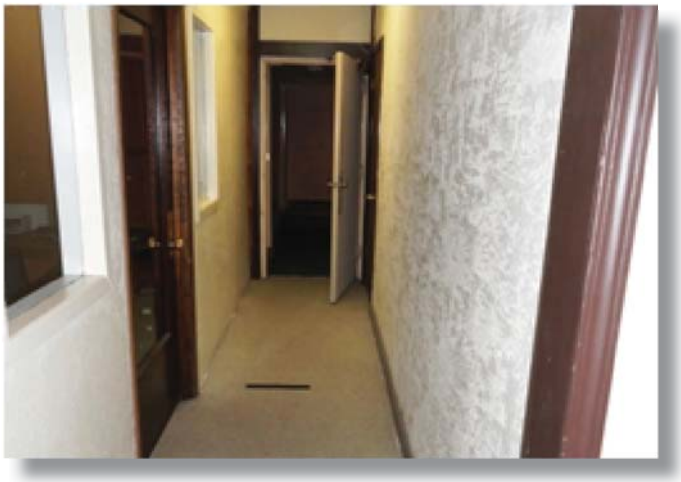
610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Photos

MAIN

400 amp main service is obsolete and undersized to handle a 20,000 sf office building.

BASEMENT HALLWAY

Doors do not have ADA compliant lever locksets.



610 - SLT El Dorado Ctr., 3368 LT Blvd., S. Lake Tahoe, CA - Photos

CEILING

Stained ceiling tiles.

620 - SLT Juvenile - 1041 Al Tahoe Blvd., S. Lake Tahoe, CA - Deficiencies and Cost

Square Footage	26,180
Number of Floors	2
Year Built	2004
Replacement Cost	$9,440,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	No issues noted.	$0
2	ADA Enhancement	There are no ADA compliant dayroom tables.	$2,910
3	Structural	No issues noted.	$0
4	Building Integrity	No issues noted.	$0
5	Finishes	Interior finishes in good condition. Carpet has normal wear and will need to be replaced in a few years.	$7,419
6	Mechanical	No issues noted	$0
7	Electrical	Security monitors for cameras are in poor condition. Security system does not have capability to provide 1 year back-up storage for recording. Additional cameras are needed in hallways to eliminate blind spots.	$33,459
8	Civil	Pavement marking faded. Exterior exercise yard rarely used because fencing does not have razor wire at top and is easily climbed.	$34,041
9	Miscellaneous	Hinges on doors failing causing door operational issues. Finish on one dayroom table peeling from substrate. One dayroom countertop is de-laminating.	$8,423

620 - SLT Juvenile - 1041 Al Tahoe Blvd., S. Lake Tahoe, CA - Recommendations

- Replace damaged dayroom table with ADA accessible table.
- Upgrade security camera system. Provide additional backup capabilities, replace monitors and install additional cameras to eliminate blind spots.
- Replace door hinges where necessary.
- Make modifications to fence at the exterior exercise yard.
- Seal coat and re-stripe parking lot.

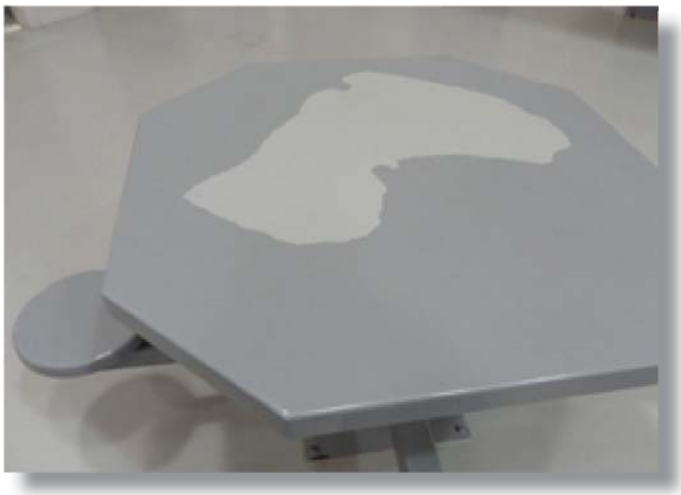
620 - SLT Juvenile - 1041 Al Tahoe Blvd., S. Lake Tahoe, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
620 South Lake Tahoe Juvenile Treatment		**$44,224**		**$34,041**	**$7,987**	**$86,252**
2 ADA Enhancements		**$2,910**				**$2,910**
Dayroom Tables		$2,910				$2,910
5 Finishes					**$7,419**	**$7,419**
Carpet					$7,419	$7,419
7 Electrical		**$33,459**				**$33,459**
Monitoring Equipment		$23,276				$23,276
Security System		$10,183				$10,183
8 Civil				**$34,041**		**$34,041**
Asphalt Paving				$29,459		$29,459
Fencing				$4,582		$4,582
9 Miscellaneous		**$7,856**			**$567**	**$8,423**
Countertops					$567	$567

620 - SLT Juvenile - 1041 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

DAYROOM TABLE

Finish on dayroom table.



DAYROOM COUNTERTOP

Minor chip in countertop held in place by blue tape.

OUTDOOR EXERCISE

The outdoor exercise yard is rarely used because the fence is easily climbed.

620 - SLT Juvenile - 1041 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

PARKING LOT

Parking lot in good condition. Sealing and re-striping parking lot will prolong pavement life.

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Deficiencies and Cost

Square Footage	64,188
Number of Floors	2
Year Built	1973
Replacement Cost	$32,900,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	The fire dampers and HVAC equipment are not tied into the fire alarm system. Renovations to the facility will require the fire alarm system to be upgraded. Exit lighting is inadequate with many observed nonoperational signs.	$392,767
2	ADA Enhancement	Locker rooms require ADA restroom upgrades. The transaction window at the bail area is not ADA compliant.	$114,089
3	Structural	Minor wall separation at wall in old exercise yard. Facilities indicate much of CMU walls in original portion of jail are not fully grouted. Any major renovation would likely trigger a code required seismic upgrade.	$529,638
4	Building Integrity	Majority of the building has new roof, however portion closest to the new addition was not re-roofed. The exterior door frame at the kitchen is rusted and no longer properly anchored to the wall.	$448,819
5	Finishes	There are stained ceiling tiles. Worst area is in control room. Carpeting is near end of lifecycle. Interior walls and ceiling in need of paint. Not all doors have stops, and a few walls have holes from door handle impact.	$252,195
6	Mechanical	The plumbing fixtures with associated piping and valves in the older section of the jail are in poor condition and at end of useful life. The HVAC system air handlers in the older section are at end of useful life. Ductwork in state of disrepair.	$1,333,373
7	Electrical	The electrical service equipment in the older section of jail is approaching end of useful life and limits the ability for expansion to serve additional loads. The electrical system within the older section of jail is in poor condition and will require replacement with any renovations. Security cameras, monitors for cameras and touch screen panels are in fair to poor condition.	$2,075,965

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
8	Civil	Asphalt paving cracked and crumbling. Concrete paving has some moderate to severe cracking and one place with exposed rebar.	$177,298
9	Miscellaneous	Door hardware failing. The control room countertop is in poor condition. Minor issues with vehicle gate at sally port occasionally sticking.	$47,643

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Recommendations

- Fire and safety modernization should be addressed. Install new emergency and exit lighting. Have the fire sprinkler system tested to determine if and where corrosion has occurred in the piping from water ponding or MIC from the water quality on the dry pipe system. Replace piping and sprinkler heads that are determined to be sufficiently corroded to maintain the integrity of the system in place to reduce the cost for complete replacement of the system. Replace dirty heads, deficient valves and air compressor on fire sprinkler system. Provide combination fire/smoke dampers tied to the fire alarm system at all ducts passing through fire rated walls. Modify/replace fire alarm system to incorporate HVAC system and kitchen fire suppression system for alarm and shutdown.

- Install ADA accessible shower at group or single pod showers and install an ADA combination WC/LAV's at cell pods. Upgrade locker restrooms to meet ADA. Modify the bail transaction window for ADA access.

- Replace the exterior door and frame to the kitchen. Replace portion of low slope roofing not completed this past summer.

- Replace damaged ceiling tiles and carpet. Repair wall finishes damaged by doors and install door stops. Paint interior walls and ceilings. Replace door hardware. Replace control room counter.

- Replace deficient obsolete HVAC system equipment and components at the older section of the jail to improve energy efficiency and reduce maintenance costs. Replace original ductwork at the older section to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Replace cell plumbing fixtures and associated piping and valves in the older section that are at end of system lifecycle. Replace deficient costly plumbing valves.

- Replace older panels, feeders and generator near or at end of lifecycle. Replace older existing lighting with energy efficient fixtures with appropriate security housings. Replace security access control, cameras, control station equipment and intercom system.

- Repair or replace damaged concrete paving. Repair damage asphalt paving and seal coat and re-stripe parking lot.

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
621, 622 & 631 South Lake Tahoe Jail						
1 Fire & Safety Modernization	**$280,714**	**$112,053**				**$392,767**
Fire Alarm	$280,132					$280,132
Stairs and Handrails	$582					$582
Wet Type System		$112,053				$112,053
2 ADA Enhancements		**$114,089**				**$114,089**
Casework		$2,619				$2,619
Doors, Frames and Hardware		$6,001				$6,001
Shower		$32,732				$32,732
Toilet Rooms		$72,738				$72,738
3 Structural				**$529,638**		**$529,638**
Structural Framing				$529,638		$529,638
4 Building Integrity		**$40,035**	**$22,912**	**$340,048**	**$45,825**	**$448,819**
Built-up Roofing				$43,279		$43,279
Doors, Frames and Hardware		$5,121				$5,121
Exterior Wall Finishes					$45,825	$45,825
Metal Roofing				$296,769		$296,769
Single-ply Roofing			$22,912			$22,912
Skylights		$34,914				$34,914
5 Finishes				**$34,550**	**$217,645**	**$252,195**
Carpet				$32,732		$32,732
Ceilings					$81,262	$81,262
Wall Framing and Finishes				$1,818	$136,383	$138,201
6 Mechanical		**$42,697**	**$261,928**	**$1,028,748**		**$1,333,373**
Air Handlers				$290,950		$290,950
Combi Unit				$65,464		$65,464
Controls				$186,755		$186,755
Diffusers & Grills				$46,689		$46,689
Ductwork				$196,093		$196,093
Exhaust Fans			$14,548			$14,548
MAU Units		$16,366				$16,366
Package Units		$26,331	$193,773			$220,104
Piping				$218,213		$218,213
Plumbing Fixtures				$10,038		$10,038
Pumps			$14,548			$14,548
Showers				$14,548		$14,548
Unit Heaters			$2,328			$2,328
Valves			$36,732			$36,732

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
621, 622 & 631 South Lake Tahoe Jail						
7 Electrical	**$46,689**		**$139,656**	**$1,860,525**	**$29,095**	**$2,075,965**
Cameras				$93,377		$93,377
Data and Cabling					$21,821	$21,821
Distribution Boards				$34,914		$34,914
Emergency and Exit Lighting	$46,689					$46,689
Emergency Power Supply				$285,858		$285,858
Exterior Building Lighting			$1,455	$32,732		$34,187
General Interior Lighting				$466,887		$466,887
Main Service			$138,201			$138,201
Monitoring Equipment				$290,950		$290,950
Outlets and Wiremold				$70,033		$70,033
Panel and Breakers				$140,066		$140,066
Security System				$294,139		$294,139
Site Lighting				$58,190		$58,190
Stand Alone PA System				$93,377		$93,377
Telephone					$7,274	$7,274
8 Civil			**$17,675**	**$159,622**		**$177,298**
Asphalt Paving			$5,455	$159,622		$165,078
Concrete Paving			$12,220			$12,220
9 Miscellaneous				**$47,643**		**$47,643**
Countertops				$2,837		$2,837
Dishwasher				$29,095		$29,095
Doors, Frames and Hardware				$13,093		$13,093
Gates				$2,619		$2,619

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

WALKWAY

Cracks in concrete walkway appear to be due to roots from adjacent tree.

MANSARD

Wood shingles on mansard ar brittle and have splits.

WALL REPAIR - TELEPHONE

Telephone was removed and wall not patched.

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

LAUNDRY

Commercial equipment in laundry in good condition. Door does not have ADA lockset.

TRENCH DRAIN

Trench drain does not have cover.

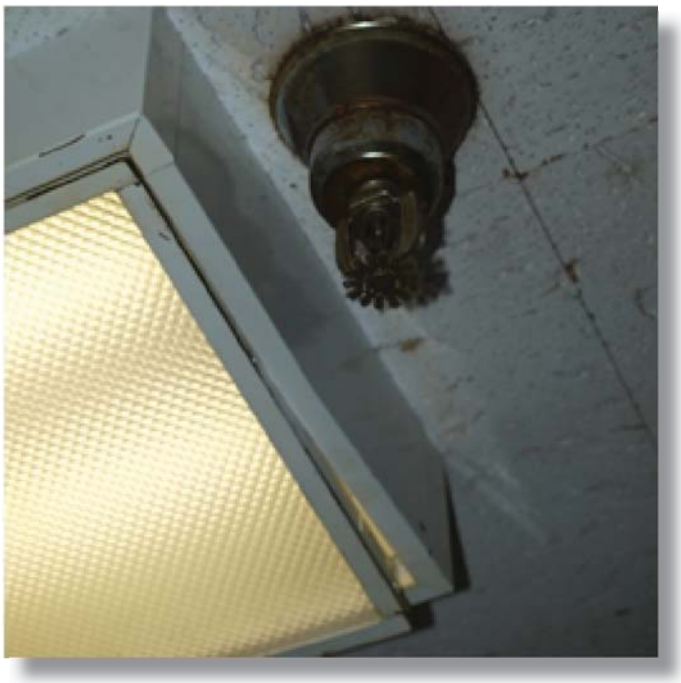
DIFFUSER

Diffuser at original jail in poor condition. Reduced air flow due to blocked grate.

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

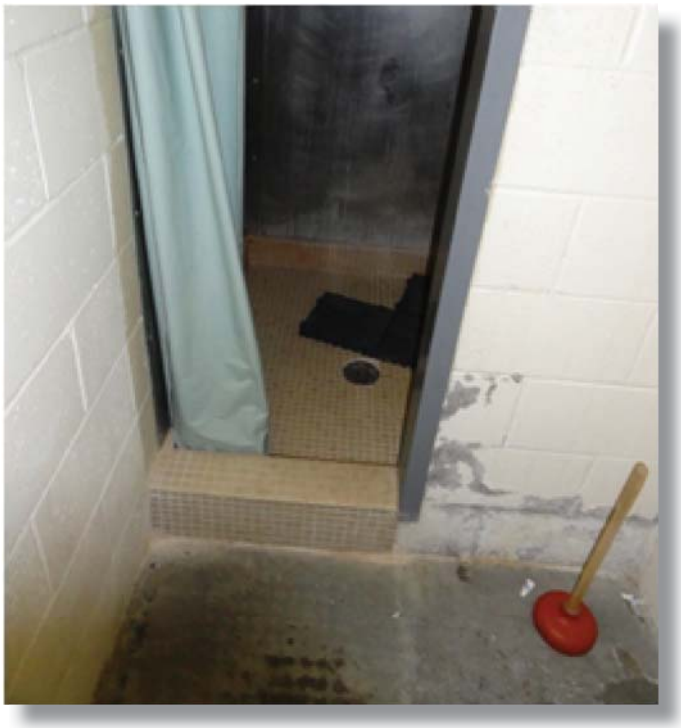
FIRE SPRINKLER

Old dirty and corroded fire sprinkler head. The light fixture has a broken hinge.



SHOWER

Shower may need ADA upgrades. Shower and finishes in poor condition.



621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

CONCRETE CURB

Concrete curb damage.

EXIT LIGHT

Lenses on exterior light fixture yellowed with age.

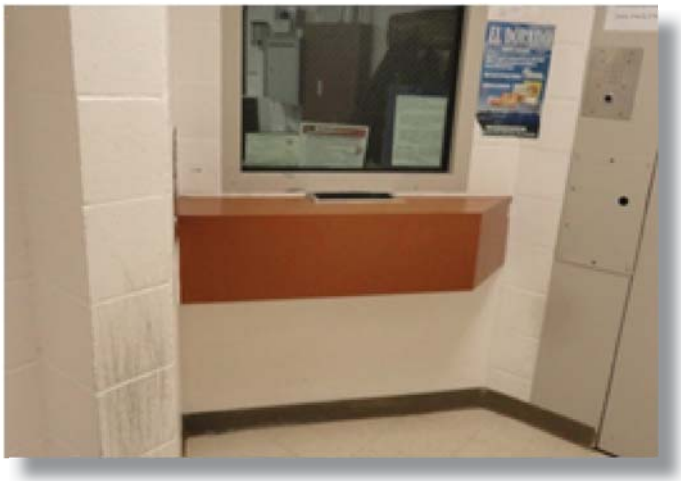
SALLY PORT

Lift mechanism occasionally sticks during winter weather.

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

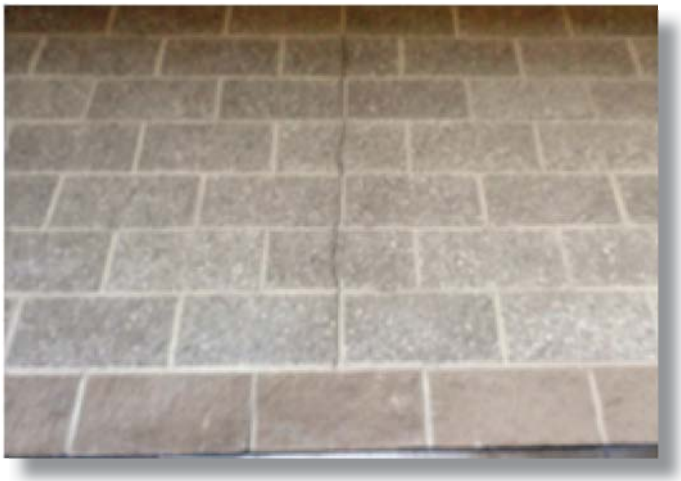
BAIL WINDOW

Bail window may require ADA upgrades.



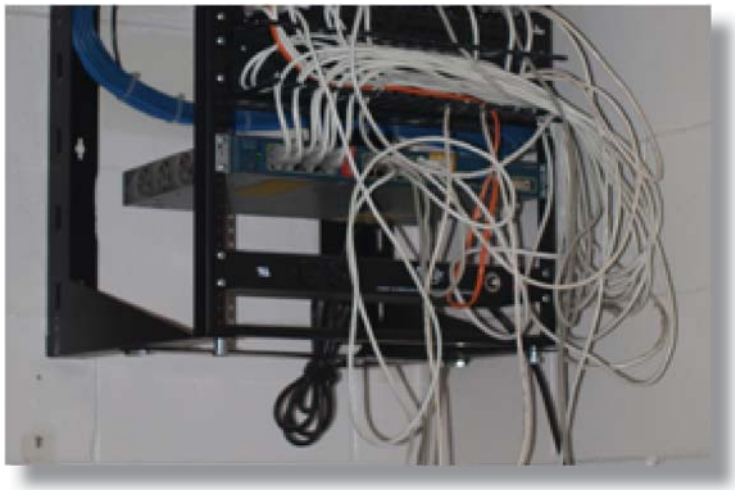
CMU CRACK

There is a crack in the CMU wall directly above entrance doors. Crack is likely minor because it does not affect door operation.



IDF

Data cables are haphazardly installed.



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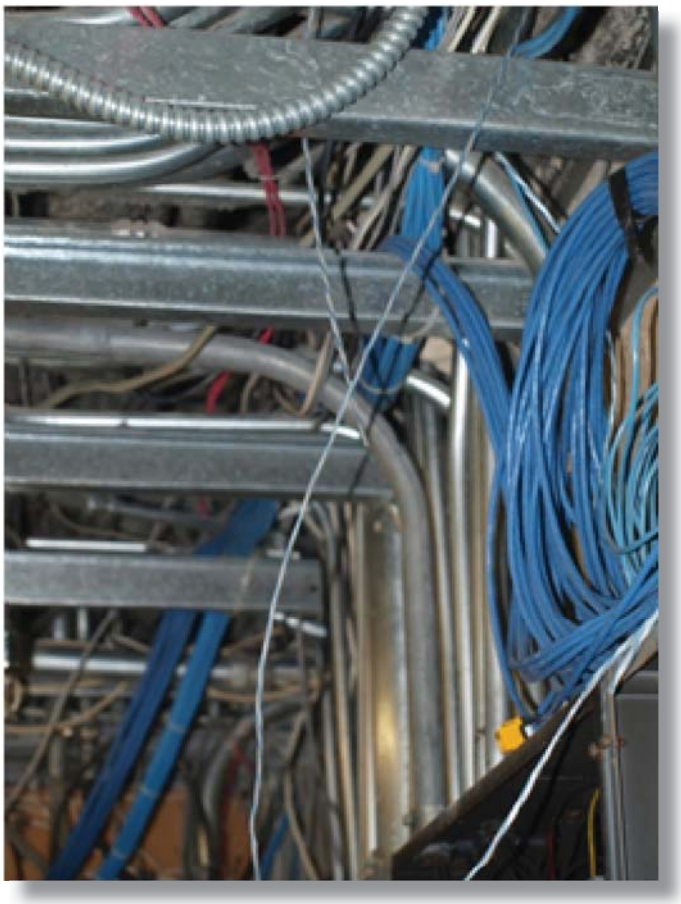
CABLING

Cabling below control station is haphazard. Note exposed wire nut connection.



CONCRETE EXPOSED REBAR

Concrete in sidewalk is broken and left exposed rebar.

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CONTROL PANEL

Booking control panel in poor condition.

CONTROL ROOM COUNTER

Control room counter is in poor condition. The wood substrate is exposed and plastic laminate is chipped.

ROOF HVAC DUCTS

Insulation of exposed duct is no longer functioning and needs to be replaced.

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

CONTROLS

Controls for the air handling units are obsolete.

EXIT

The exit light above the door does not work.

621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

HOT CART

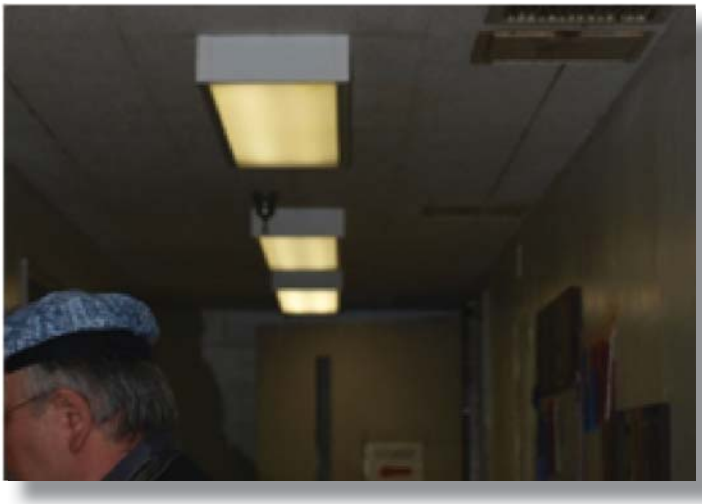
Steam table does not work. Maintenance hasn't been able to locate parts to repair.

KITCHEN DOOR EXTERIOR

Exterior door and frame are rusted. Frame is not secure to the wall framing making closing problematic.

LIGHT

Lenses on light fixtures yellowed with age.



621 - SLT Jail -1051 Al Tahoe Blvd., S. Lake Tahoe, CA - Photos

PAINTED CONCRETE FLOOR

Paint of floor is worn through. There is minor cracking in the concrete.

PANEL

Antiquated electric panel in older portion of jail services.

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Deficiencies and Cost

Square Footage	12,221
Number of Floors	1
Year Built	1982
Replacement Cost	$3,430,000

	Category	Deficiencies	Cost
1	Fire & Safety Modernization	Water heater does not have earthquake strap. No fire alarm system installed. Fire sprinklers should be pressure tested. System is 30 years old and heads appear grimy. Stove in break room does not have exhaust hood.	$111,211
2	ADA Enhancement	Restrooms are mostly ADA compliant, may require some upgrades. Break room sinks are not accessible. Path of travel from parking lot marginal due to tree root issues.	$3,968
3	Structural	No visual issues.	$0
4	Building Integrity	The wood shingles on mansard roof are cracked with cupping. The built-up roof is approaching the end of lifecycle. Roof issues likely due to inadequate drainage and roof drains clogged with leaves/pine needles from nearby trees. No issues with doors, windows and brick veneer.	$182,981
5	Finishes	No current issues. Carpet has a few years till replacement is needed.	$70,291
6	Mechanical	Plumbing fixtures are mostly original and near end of useful life expectancy. The HVAC air handlers and outdoor condensing units are at the end of life expectancy. Ductwork is original, not maintained and has air leakage with its age. The pneumatic controls are obsolete and lack ability to be monitored off-site.	$391,557
7	Electrical	Light fixtures have been retrofitted with low levels in some areas. Switching controls are poor. Exterior building and parking lot lighting are at end of useful life and are not energy efficient. Electrical service and panels are original are approaching end of useful life and are limited to supply additional loads.	$292,327
8	Civil	Paving in poor condition. Areas with complete failure. Storm water drainage is adequate. Pedestrian asphalt paving uneven due to tree roots uplifting pavement.	$265,161

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Deficiencies and Cost

	Category	Deficiencies	Cost
9	Miscellaneous	Plastic laminate counter in the workroom is chipped.	$0

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Recommendations

- Fire and safety modernization should be addressed. Install new emergency and exit lighting. Have the fire sprinkler system tested to determine if and where corrosion has occurred in the piping from water ponding or microbiologically Influenced corrosion (MIC) from the water quality on the dry pipe system. Replace piping and sprinkler heads that are determined to be sufficiently corroded to maintain the integrity of the system in place to reduce the cost for complete replacement of the system. Replace dirty heads, deficient valves and air compressor on fire sprinkler system. Provide combination fire/smoke dampers tied to the fire alarm system at all ducts passing through fire rated walls. Replace fire alarm system to meet current codes and to incorporate HVAC system for alarm and shutdown.

- Modify break room cabinets for ADA compliance.

- Replace roofing and flashings. Consider adding tapered insulation to provide positive flow.

- Replace air handlers and condensing units at or near end of useful life. Replace original ductwork to improve air quality, occupant comfort and reduce energy costs. Install energy management system for optimal energy conservation with capability to monitor and control system off-site to reduce technician visits to building. Replace defective sewer and water piping along with valves.

- Replace obsolete and undersized electrical service, panels and feeders to improve distribution to building loads. Replace existing lighting with energy efficient fixtures with improved optics. Replace local light switches with occupancy sensor light controls with a building lighting control panel to sweep off lighting in spaces unoccupied during off hours to reduce energy consumption. Install additional receptacles and signal outlets with concealed raceway or wiremold.

- Replace asphalt walkways to provide suitable ADA access from parking lot.

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Priorities

	Priority					
Item	**1**	**2**	**3**	**4**	**5**	**Total**
760 South Lake Tahoe Library						
1 Fire & Safety Modernization	**$111,211**					**$111,211**
Fire Alarm	$44,446					$44,446
Gas Fired Water Heater	$132					$132
Kitchen Hoods	$1,984					$1,984
Wet Type System	$64,649					$64,649
2 ADA Enhancements		**$3,968**				**$3,968**
Cabinets		$1,587				$1,587
Plumbing Fixtures		$2,381				$2,381
4 Building Integrity			**$182,981**			**$182,981**
Built-up Roofing			$154,415			$154,415
Wood Shake Roof			$28,566			$28,566
5 Finishes				**$69,431**	**$860**	**$70,291**
Carpet				$69,431		$69,431
Countertops					$860	$860
6 Mechanical		**$3,306**		**$388,250**		**$391,557**
Air Handlers				$92,575		$92,575
Controls				$32,325		$32,325
Diffusers & Grills				$16,162		$16,162
Ductwork				$113,136		$113,136
Exhaust Fans				$2,645		$2,645
Gas Fired Water Heater				$8,596		$8,596
Package Units				$72,738		$72,738
Piping				$48,487		$48,487
Plumbing Fixtures		$3,306		$1,587		$4,893
7 Electrical				**$279,102**	**$13,225**	**$292,327**
Data and Cabling					$13,225	$13,225
Exterior Building Lighting				$3,968		$3,968
General Interior Lighting				$137,379		$137,379
Main Service				$66,125		$66,125
Outlets and Wiremold				$18,146		$18,146
Panel and Breakers				$32,325		$32,325
Site Lighting				$21,160		$21,160
8 Civil			**$27,111**	**$238,050**		**$265,161**
Asphalt Paving			$13,886	$238,050		$251,936
Storm Drainage			$13,225			$13,225

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Photos

ADA CURB

Curb ramp next to handicap parking is not ADA compliant.

ADA TOILET

Restroom is mostly ADA compliant. May require some enhancements.

AIR HANDLER ELECTRICAL BOX

Cover is missing from air handler electrical box. Moisture or dirt could cause problems with connections.

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Photos

BELL

Fire sprinkler bell provides only alarm to building. There are no visual alarms for hearing impaired.

BREAKROOM

Break room sink may need ADA updates.

DRINKING FOUNTAIN

Non ADA drinking fountain.

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Photos

GFI

No GFI receptacle installed at sink.

HOT WATER

Hot water heater does not have earthquake strap installed.

MANSARD

Wood shingles on mansard are brittle, cupped and have splits.

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Photos

MANSARD

Wood shingles on mansard are brittle, cupped and have splits.

PAVEMENT

Parking lot pavement deterioration.

PENETRATIONS

Penetrations for data cables and electrical conduits through the ceiling are not properly sealed.

760 - SLT Library - 1000 Rufus Allen, S. Lake Tahoe, CA - Photos

STOVE

The stove does not have a range hood.

WORKROOM COUNTER

Laminate on counter top held in place with duct tape.

WORKSTATION

Typical computer station. Extension cords and loose wiring present possible fire and tripping hazard.

B-15c. Statement of Work, Section 1: Relevance and Importance

Statement of Need

> *"As water use and competition for water have increased during the past several decades, so has conflict among water users.*[1]*"*

According to the USGS, Californians used an average of over 38,400 million gallons of fresh water *every day* in 2000[2]. Over 60 percent of this water was surface water which came out of our rivers, lakes and streams,[3] putting pressure on aquatic habitats and endangered fisheries resources.

Domestic water use, which includes self-supplied domestic and public supply, makes up a large portion of this off-stream water demand. Across the United States, domestic water use made up 11 percent of the total off-stream demand for water in 2000[4], and trends show that this demand is increasing. Per capita withdrawals for domestic water use in the United States jumped 53 percent from 1950 to 2000[5]. The increasing demands of domestic water use have put undue pressure on our environment and water supply.

These pressures are extremely apparent in the Bay-Delta ecosystem. The watershed of the Bay-Delta, which stretches far up into the Sierra-Nevada mountain range, is the source of water for millions of Californians. In addition to its importance for water supply, the Bay-Delta watershed supports many runs of endangered and threatened salmonids, both wild and hatchery bred,[6] whose survival is dependent on having suitable water flows. Its wetlands, shoals, and sloughs also provide important habitat for a variety of plants, birds, and biotic communities.[7] The growing demand from off-stream uses like domestic water supply has decreased the amount of water available for these important in-stream uses.

Fortunately, with good educational programs, this conflict between in-stream and off-stream water needs can be partially resolved through domestic conservation measures. In 2000, Americans still used an average of 189 gallons of water each day for domestic and public supply uses[8]. By comparison, people living in developed countries with similar technologies and standard of living are dramatically more efficient water users. Spain consumes only 69 gallons per person per day for domestic water use, and other countries even less—France at 43 gallons, Germany at 34 and Belgium, only 30[9].

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[1] CALFED Phase II Report, Page 11
[2] USGS "Estimated Use of Water in the United States in 2000" Circular 1268, 15 figures, 14 tables (released March 2004, revised April 2004, May 2004)
[3] ibid
[4] ibid
[5] ibid
[6] http://www.nwr.noaa.gov/1salmon/salmesa/pubs/1pgr.pdf, a website of NOAA Fisheries
[7] CALFED Ecosystem Restoration Program plan Volume 1, pages 31-46.
[8] USGS "Estimated Use of Water in the United States in 2000" Circular 1268, 15 figures, 14 tables (released March 2004, revised April 2004, May 2004)
[9] Lallana, Concha, CEDEX. 2003 *Indicator Fact Sheet: (WQ02e) Water Use in Urban Areas version 01.10.03*. European Environment Agency.

These numbers show that Americans use far more water per capita than necessary, which presents a huge opportunity for improving efficiency. The EPA estimates that by adopting simple behavior changes, Californians could save a substantial amount of water every day[10]. Behaviors as easy as running the dishwasher when it's full can save 10-20 gallons a day[11]. Turning the water off when brushing teeth can save 2.6 gallons of water, and shortening a shower by 5 minutes saves an average of 10 gallons of water[12]. The effects of these simple behavior changes can add up to save Californians millions of gallons of water every year.

In order to accomplish this shift in behaviors around domestic water use, it is crucial to educate our communities about the necessity of water conservation. In a *Journal of the American Water Works Association* article "Long-Term Options for Municipal Water Conservation," Grisham and Fleming noted that Public school education is an important means for instilling water conservation awareness[13].

Many state and regional programs already recognize the importance of education in any water use efficiency program. The California Urban Water Conservation Council lists school education programs as one of 14 Best Management Practices[14] for water conservation. Regional water suppliers such as the Sacramento Storm Water Management Program and Regional Water Authority require their member water agencies to offer school education programs.

However, there are no free in-school education programs on water conservation available in Yolo, Sutter, and large portions of Solano and Contra Costa Counties[15]. In Sutter County the Woodleaf Environmental Center, a retreat center for 6th graders, offers a small segment on water conservation for some visiting schools[16]. However, this program is only available for one grade level, and because it is not an in-school program, many schools cannot afford the trip.

The only free in-school water conservation program offered to Yolo county schools is a once a year poster contest run by the Water Resources Association of Yolo County[17]. The Resources Association sends the materials to the schools, but it does not send any staff person to the schools, and participation is solely dependent on the individual teachers.

In Solano County, Benicia is the only city that offers a free in-classroom water conservation program to all of its schools[18]. Vallejo, Rio Vista and the smaller Solano

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[10] http://www.epa.gov/watrhome/you/chap3.html, EPA website
[11] ibid
[12] http://www.h2ouse.org, California Urban Water Conservation Council website
[13] Grisham, A., and M. Fleming, 1989. "Long-Term Options for Municipal Water Conservation." *Journal of American Water Works Association*
[14] http://www.cuwcc.org/memorandum.lasso, California Urban Water Conservation Council web site
[15] http://bmp.cuwcc.org/bmp/read_only/list.lasso, California Urban Water Conservation Council web site, and E-mail correspondence and phone conversations with staff at Woodleaf Environmental Center, Water Resources Association of Yolo County, Solano County Water Agency, Solano Irrigation District, City of Benicia, and Contra Costa Water District
[16] Conversation with John Hendrickson at the Woodleaf Environmental Center.
[17] Conversation with Donna Gentile at the Water Resources Association of Yolo County
[18] Conversation with Sue Wickam at the City of Benicia

County towns have no in-school water conservation programs available,[19] and the cities of Valencia, Fairfield, Suisun City and Dixon have an extremely limited amount of funding for in-school programs[20]. Conversations with city personnel in these cities have shown that SYRCL's free in-school assembly program and Water Audits would dovetail beautifully with their existing program by reinforcing its message, while reaching a wider range of schools and avoiding duplicating the delivery method.

The Contra Costa Water District provides several excellent in-school water conservation programs to schools *within* its district, but they get many calls every year from schools outside of their district which have no in-school programs available[21]. These schools are turned away because they are outside the district boundaries[22].

An effective education program needs to offer on-site resources requiring a minimum investment of time and money from the teachers that it serves. It also needs to be available to lower income schools with limited access to computer and web-based resources. Resources and web sites that require teachers to train themselves in new curricula or activities often languish on the shelves. Off-site programs that require transportation are not cost-effective for many schools.

The Water Use Efficiency Program offers a great opportunity to fill the need for in-school water conservation education in these counties. By providing effective water conservation education in these four counties, we can create a more water-conscious culture in this portion of the Bay-Delta watershed.

Additionally, if local communities understand the importance of water conservation, CALFED will have more backing for other water use efficiency programs that require broad stakeholder support.

Project Goals and Objectives

In response to the need to reduce per capita domestic water use, SYRCL has developed an in-school assembly program called "The Great Water Mystery." This assembly program changes the attitudes and behaviors of audience members so that they incorporate simple water conservation techniques into their daily habits. *(See "About 'The Great Water Mystery'" below.)*

SYRCL's water assembly programs are one component of SYRCL's larger education program, RiverTeachers, which inspires people throughout our watershed—from the source to the sea—to alter their lifestyles by incorporating awareness of water conservation, pollution prevention, and salmonid conservation into their daily actions. In order to accomplish this goal, RiverTeachers aims to reach students in counties throughout the Bay-Delta Watershed with two free assembly programs, "The Great Water Mystery" and "Journey of the Salmon," as well as involving students in performing school water audits to reduce their school's water use.

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[19] ibid

[20] Conversation with Diane Adis, Cindy Perazzo, and Ursula Heffernon at Solano County Water Agency and Solano Irrigation District

[21] Conversation with Marianne Hook at the Contra Costa Water District

[22] ibid

SYRCL has already delivered "The Great Water Mystery" and its partner assembly, "Journey of the Salmon," to over 43,500 elementary and middle school students in 5 Northern California Counties. SYRCL is currently funded to bring these assemblies to schools in the upper limits of the Bay-Delta Watershed (See Figures 1 & 2). These assemblies are funded through several public-private partnerships that match funding from SYRCL's membership donations with funding from NOAA Fisheries, the Bureau of Reclamation, the Yuba County Water Agency, Sacramento Stormwater Management Program, and the Regional Water Authority.

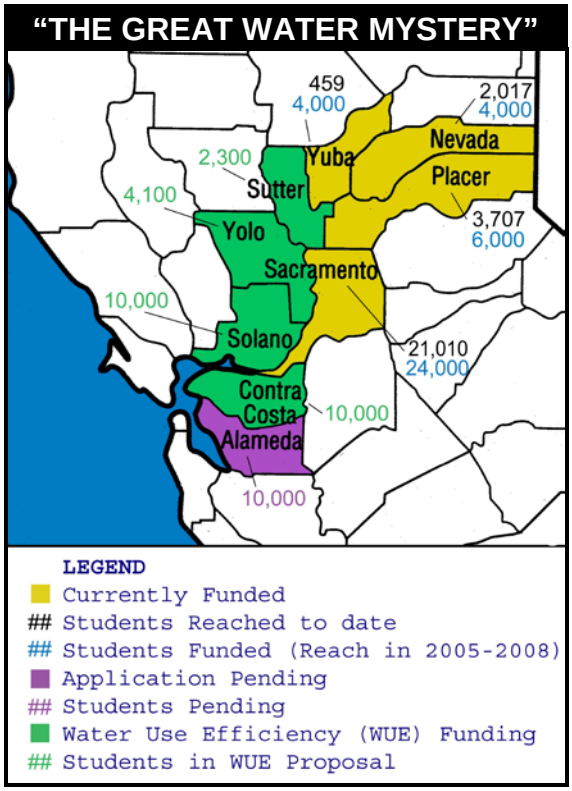

Figure 1

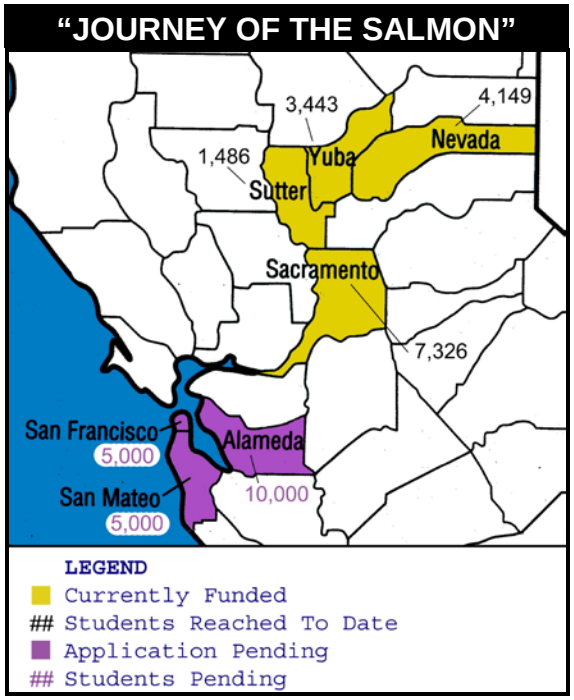

Figure 2

[redacted]

A grant from the Water Use Efficiency Program will allow SYRCL to expand the audience of "The Great Water Mystery" assemblies down the watershed towards the Bay-Delta. Specifically, this funding will bring "The Great Water Mystery" to 20 percent of all of the kindergarten-eighth grade students in Yolo, Solano, Sutter, and Contra Costa Counties who are not within the range of a free in-school water conservation program—a total of 26,400 students over the course of 3 years (See Table 1 for a broad timeline).

This funding will also enable SYRCL to pilot and expand a "School Water Audit" as a follow up to "The Great Water Mystery" in 15 of the participating schools *(see "About the School Water Audit" below)*. By involving students in a real-life water conservation project and in teaching their peers about water conservation, students will become even more inspired to conserve water in their daily habits and will be extremely familiar with simple ways to do this. These School Water Audits will involve approximately 450 students and 15 teachers in creating a water conservation plan for their school. Through

the water conservation plan, these students will educate the other students and teachers at their schools (approximately 7,050 students and 225 teachers).

In addition to the educational value of the School Water Audits, SYRCL is estimating that the water audit will result in direct water savings of between 50 and 100 gallons of water per day for each participating school. Over the course of a single school year, these savings would add up to between 13,500-27,000 gallons for each participating school.

SYRCL will use the success of these assembly programs and School Water Audits as a demonstration project to leverage money from local water districts and agencies. SYRCL will work to partner with these local agencies to offer free presentations of "The Great Water Mystery" and School Water Audits in future years. This partnership between non-profit organizations and water supply agencies will allow SYRCL to expand the range of this program and will create a model for implementing this type of program on a statewide basis.

TABLE 1—TARGET AUDIENCE NUMBERS AND BROAD TIMELINE
BLUE = # Students Reached (Funded by SYRCL & Partners)
GREEN = # Students Reached (Funded by Water Use Efficiency Program)

	Year 0 ('02-'05)	**Year 1 (2006)**	**Year 2 (2007)**	**Year 3 (2008)**
"Water Mystery," Nevada Co.	3,017	1,000	1,000	1,000
"Water Mystery" Yuba Co.	1,459	1,000	1,000	1,000
"Water Mystery" Placer Co.	6,707	3,000	TBD	TBD
"Water Mystery" Sacramento Co.	33,010	12,000	TBD	TBD
"Water Mystery" Alameda Co. (pending $$ not included in cost share)	10,000 (pending)	TBD	TBD	TBD
"Water Mystery" Yolo Co.		4,100	TBD	TBD
"Water Mystery" Solano Co.		10,000	TBD	TBD
"Water Mystery" Sutter County			2,300	TBD
"Water Mystery" Contra Costa Co.			10,000	TBD
School Water Audit Nevada Co.		3 Schools (PILOT)	TBD	TBD
School Water Audit Yolo Co.			3 Schools	TBD
School Water Audit Solano Co.			3 Schools	TBD
School Water Audit Sutter County				3 Schools
School Water Audit Contra Costa Co.				3 Schools

Yolo and Solano County are scheduled during the same year because of the strong ties between the Resource Conservation Districts (RCDs) in these two counties. The RCDs will help SYRCL deliver the Water Audit Portion of the program in these two counties.

ABOUT "THE GREAT WATER MYSTERY"

The goal of "The Great Water Mystery" assembly program is to change the attitudes and behaviors of the audience members so that they incorporate simple water conservation techniques into their daily habits.

> *"Every student should see this presentation. It has a profound message about our water resources." M. Cleland, 3/4th grade teacher at Isador Cohen*

"The Great Water Mystery" is an interactive in-school assembly program that uses an engaging mystery story to teach children about water conservation. This presentation uses hilarious audience participation, dramatic slides, exciting demonstrations and fun stories to keep students and teachers enthralled while teaching them to understand the effects that their daily actions have on our water supply.

> *"This was a fantastic program. My students were talking after the assembly about the specifics of the water cycle and how to conserve." Lindsay Wong, 3rd grade teacher at PS7*

"The Great Water Mystery" also teaches about California and National Science Content Standards, such as the water cycle and resource use, which makes it fit extremely well with school curriculum across counties. The presentation is adapted for each grade level, so that the mystery story teaches age-appropriate science concepts for kindergarten through eighth grade while delivering a powerful message about water conservation.

Evaluation results from "The Great Water Mystery" have shown that because of the correlation to science standards and the minimum effort required from teachers, even teachers who would not otherwise include water conservation education in their classroom are extremely excited about this assembly program. For teachers who are inspired by the presentation, the assembly comes with a supplemental activity packet that gives teachers a fun and easy way to expand on the presentation.

> *"I was so impressed with the assembly that I immediately contacted the principal at Cordova Meadows to tell him about it." Mr. Hackbarth, Principal at Blanche Sprentz Elementary*

> *If just5 percent of the 65,200 students who will see "The Great Water Mystery" assemblies change their behavior to turn the water off while they brush their teeth, they will save 4,346,400 gallons of water per year. If 5 percent of the audience shortens their showers by 5 minutes, they will save 16,717,000 gallons of water per year.*

Through these presentations, SYRCL is building a constituency of students who understand the importance of water conservation and who are changing their lifestyles to incorporate simple conservation techniques. Additionally, with the backing of an informed constituency, CALFED's other water use efficiency programs will have backing from more local stakeholders (see Table 2).

ABOUT THE SCHOOL WATER AUDIT

The goal of the School Water Audit is to build on the water conservation concepts taught in "The Great Water Mystery," and to deepen students' commitment to water conservation and their understanding of ways to conserve water in their daily lives. Additionally, each school whose students conduct a School Water Audit Program will save between 50-100 gallons of water per day through a student-designed and implemented Water Conservation Action Plan.

> *"My class would LOVE to participate in a School Water Audit program. It would be great for my students to take on the responsibility of a real-life conservation project."*
> *Steve Darden, 5th grade teacher, Deer Creek Elem.*

As part of the School Water Audit, each participating classroom will learn how to monitor and reduce their school's water use. After collecting baseline data to document the amount of water currently used by the school, these classrooms will create and implement a Water Conservation Action Plan for their school. Once students have implemented the Action Plan, they collect more data on their school's water use to document the amount of water saved by their Action Plan. Students will also post the results of their Action Plan on a portion of SYRCL's web site so that other participating schools can compare methods and water savings.

By participating in a real-life water conservation project and teaching their peers about water conservation, students will become even more inspired to conserve water in their daily habits and will be extremely familiar with simple ways to do this.

> *"Based on the outstanding presentations that SYRCL has given at our school in the past, I am extremely excited about participating in a School Water Audit."*
> *Brian Buckley, Principal of Scotten School*

Water Audits have worked extremely well for schools across the United States. One school in Tennessee published direct water savings of 66.7 gallons of water per day at their school after a student-led School Water Audit[23]. Students at a school in Worthing, England saved 1,400 gallons per day through a School Water Audit[24]! In addition to in-school savings accomplished through a School Water Audit, changes in student behaviors and attitudes about water use will result in enormous water savings throughout the children's lives.

There are two distinct audiences for the School Water Audit: the teachers, parent volunteers and students directly participating in the Water Audit program, and the other students and teachers at the school who will be educated by their peers about water use efficiency. The pilot phase of this program will directly involve students and teachers in 15 upper elementary classrooms; approximately 450 students and 15 teachers. Additionally, the students conducting the School Water Audit will educate the other students and teachers at their school; an estimated 7,050 students and 225 teachers (assuming an average school size of 500 students and 16 classrooms).

[23] http://www.state.tn.us/environment/dca/tp3/pdf/ss-centennial-lw.pdf
[24] http://www.southernwater.co.uk/pdfs/educationAndEnviro/educationResource/schoolsResources/ChesswoodStudy.pdf

TABLE 2: CALFED Bay-Delta Benefits (From "Final Programmatic EIS/EIR Technical Appendices: Ecosystem Restoration Program Plan" and "Water Use Efficiency Program Plan," July 2000)

Cal Fed Goal	Section	Success Indicator
"Reduce existing irrecoverable losses … will increase the overall volume of useable water" "By reducing losses that currently return to the water system … CALFED can achieve multiple benefits" "Build on existing water use efficiency programs"	*CALFED Water Use Efficiency Program Objectives*	Reducing domestic water use will help reduce existing irrecoverable water losses due to transport and processing. Reducing domestic water use will achieve multiple benefits by making this water available for other uses and improving flow between the point of diversion and the point of reentry This program will expand the range of SYRCL's existing "Great Water Mystery" assembly programs, and will add a School Water Audit section. It is also consistent with the goals of the California Urban Water Conservation Council. SYRCL's assembly programs have the potential to increase schools' involvement in other more time-intensive water education opportunities such as field trips. Investments in education about water conservation can yield real water supply benefits in the short term, which is especially important as CALFED works to implement surface storage and conveyance improvements that will take multiple years to complete.
"Achieve recovery of at-risk native species dependent on the Delta and Suisun Bay …" "Rehabilitate natural processes in the Bay-Delta estuary and its watershed to fully support … natural aquatic habitats." "Protect and/or restore functional habitat types in the Bay-Delta estuary and its watershed …"	*CALFED Ecosystem Restoration Program (ERP) Strategic Goals*	Reduced water demand will improve fish habitat and natural processes in the Bay-Delta estuary by providing increased flow. Species benefited include several that are listed under the Endangered Species Act, such as Central Valley Spring Run Chinook Salmon. Reducing water demand in participating counties will make water available for transfers to other water users, the Environmental Water Account, or to the environment.

B-15d. Statement of Work, Section 2: Technical Merit, Feasibility

SYRCL has a proven track record of implementing our assembly programs in multiple counties. In just over three years, SYRCL has become renowned regionally for its school assemblies, which have already reached over 45,000 students.

The success of the SYRCL's existing program puts us in a unique position to reach students in Sutter, Yolo, Solano and Contra Costa Counties. SYRCL has already built a network of teachers, school administrators, and government agencies that work with schools throughout the Bay-Delta Watershed. SYRCL has also created a highly effective tracking database, mapping system, scheduling protocol, and publicity materials that allow us to efficiently market, track, and present our assembly programs.

After each year of assemblies, SYRCL will use the database of teachers to select the most enthusiastic teachers who will participate in the School Water Audit. The School Water Audit Project will use curriculum from existing successful Water Audit programs such as the Department of Water Resources' "Conservation Connection: Water and Energy Use in California," Sydney Water's "Rainwater Tanks in Schools—Every Drop Counts Water Audit" (www.sydneywater.com.au) and "WET in the City: Water Education for Teachers."

What follows is a list of the detailed project tasks that make up this extensively tested procedure followed by a project timeline showing when these tasks will be completed in each of the participating counties.

DETAILED PROJECT TASKS FOR "THE GREAT WATER MYSTERY"

1. **Administration:** Provide administrative services as needed; review work performed; prepare quarterly reports; and coordinate budgeting and scheduling to assure that the contract is completed within budget, on schedule, and in accordance with approved procedures, applicable laws, and regulations.
2. **Update Publicity:** Add partner logos to existing publicity & outreach materials.
3. **Update Database:** Import data on county schools into SYRCL's existing database.
4. **Create Map:** Create a map of county schools that links to the database to facilitate efficient scheduling and minimize travel-related costs.
5. **Purchase Equipment:** Laptop computer, LCD projector, & portable slide screen.
6. **Hire and Train Staff:** Recruit, hire, and train an actor with experience in children's theater to present the assemblies as a temporary employee. Hiring a temporary employee living near participating counties will reduce costs associated with travel and lodging. Actor will be provided with a detailed script and given videotapes of current SYRCL staff giving the presentation. (S)he will also have comprehensive rehearsals with SYRCL staff. SYRCL has used temporary employees in this capacity before with tremendous success. The Foothill Theatre Company and our network of current actors will help facilitate the hiring process.
7. **Send Publicity:** Print and send promotional brochure to all elementary and middle schools in the county (through the school mail system if possible to save on postage costs). Publicize assemblies on free web sites, such as www.creec.org, and use SYRCL's network of educators and agencies to publicize assemblies via e-mail.
8. **Schedule Assemblies:** Make follow-up calls to schools and schedule assemblies. Schedule schools that are near each other on the same day to minimize travel costs. Scheduler will also let schools know about the availability of the School Water Audit Programs the following year and will keep note of the most enthusiastic schools.

9. **Send Materials:** Send activity packets, confirmation letter, evaluation forms, student pre- and post- assembly questionnaires, and a return envelope to all participating schools at least two weeks prior to scheduled assembly date.
10. **Deliver Assemblies:** Give assembly presentations at each scheduled school.
11. **Actor Supervision:** SYRCL will communicate with the actor regularly. SYRCL staff will evaluate this employee at least twice in the early stages of their tenure.
12. **Send Thanks:** Send thank you letters to all schools within one week of assembly.
13. **Monitor and Evaluate:** Project staff will compile the results from all evaluation methods into a segment of the Yearly Report. Integrate improvements suggested by these results into program design and delivery.
14. **Yearly Report:** Produce a yearly report, including copies of all materials developed for the project, a statistical analysis of the audience reached, a comparison and analysis of pre- and post- assembly student questionnaire results, copies of project publicity, and a summary of feedback from teacher evaluations.

DETAILED PROJECT TASKS FOR THE SCHOOL WATER AUDITS

1. **Administration:** Provide administrative services as needed; review work performed; prepare quarterly reports; and coordinate budgeting and scheduling to assure that the contract is completed within budget, on schedule, and in accordance with approved procedures, applicable laws, and regulations.
2. **Recruit Teachers:** Project Staff contacts the most active teachers in the county (as identified during the previous year's assemblies) to invite them to participate in the School Water Audit program. Project Staff works with teacher to ensure that maintenance staff and principal are willing to help with audit and to assess the school water metering system.
3. **Recruit Resource Agencies:** SYRCL will work with local resource agencies to make it easier for schools to receive on-site support as needed and to make it easier to continue this project in future years. This step will only be necessary in Sutter and Contra Costa Counties since the Yolo and Solano County Resource Conservation Districts have already agreed to participate in this program.
4. **Assemble Printed Materials:** Materials will be adapted from successful Water Audit projects and will include a school application form and memo of agreement, curriculum and resource materials, an overview of teacher responsibilities, promotional materials and evaluation forms.
5. **Assemble Audit Materials:** Since conducting the Water Audit requires simple tools (such as a bucket & stopwatch), project staff will create a resource kit for the audit.
6. **Create Web Resources:** Project staff will add a School Water Audit segment to SYRCL's award winning web site that includes all of the printed materials for the program. This web site will also include an interactive segment where students will post the results of their school's water audits and conservation plan.
7. **Host Training Workshop:** SYRCL hosts a two-hour teacher training workshop in the appropriate county. This seminar gives an overview of the program logistics, trains participating teachers in the 4 lesson plans, and coaches teachers in using the interactive web-site. Classroom parent volunteers are welcome to attend this training.
8. **Train Local Resource Agencies:** Agency staff will attend training workshop and meet with SYRCL staff to enable them to coordinate local logistics, site visits, regular check in dates, and awards ceremonies for each School Water Audit in their county.
9. **Provide Technical Assistance:** Project staff will be available to answer questions and provide technical assistance as necessary. Includes the cost of one on-site visit.

10. **Assess Students:** Teachers give a short test to evaluate students' knowledge of and commitment to water conservation (as part of project monitoring & evaluation).
11. **Give Assembly:** To introduce the underlying concepts and get students excited about the School Water Audit project, Project staff visits each participating school to give "The Great Water Mystery" assembly to the classroom conducting the audit.
12. **Give Introductory Lessons:** Each teacher leads two introductory lessons to prepare students for the water audit: one on water availability and conservation, and the second on how to read the school water meter. Curricula for these activities will give students the tools to evaluate their school's water use and identify potential problems.
13. **Conduct Water Audit:** Project staff visit the school to help students conduct a thorough water audit. The estimated water audit time is two hours. Curriculum for the water audit will include forms for students to completely evaluate their school's water use and will give them the tools to continue identifying problem areas.
14. **Give Follow-up Lessons:** Each teacher guides their class in two follow up lessons: creating a water conservation plan for their school and implementing that plan. The lesson plan will give students the tools to interpret their findings from the Water Audit and shape them into a concise action plan. In order to implement their action plan, students break into three teams—implementers (who apply conservation measures such as reporting leaks, turning off taps, etc.), communicators (who educate the rest of the school about water conservation), and evaluators (who monitor the results of the conservation plan).
15. **Observe Lessons:** During the pilot test phase of the School Water Audit Program in Nevada County, the program director will observe and evaluate at least one of each of the four lesson plans as they are taught by participating teachers.
16. **Post Results on the Web:** Students post their results on the interactive web site, enabling students from different schools to compare their results.
17. **Assess Students (part 2):** Teachers re-administer assessment test to evaluate changes in students' knowledge of and commitment to water conservation.
18. **Publicize Results:** Program director publicizes the results on SYRCL's web site, in SYRCL's newspaper, and in press releases to local media, giving public recognition to the students and teachers and publicizing the amount of water saved.
19. **Hold Award Ceremonies:** Project staff visits participating classrooms and presents students with a certificate of completion.
20. **Monitor and Evaluate:** Project staff will compile the results from the evaluation methods detailed in Section 3 into a segment of the Yearly Report. Integrate improvements suggested by these results into program design and delivery.
21. **Prepare Yearly Report:** Program director produces the final project report.

TASKS IN BLUE ARE FUNDED BY SYRCL'S COST SHARE (AND ARE NOT BROKEN DOWN IN DETAIL), TASKS IN GREEN ARE FUNDED BY THE WATER USE EFFICIENCY PROGRAM. SEE ATTACHED TIMELINES FOR FURTHER DETAIL

YEAR 0 PROJECT TASK LIST

THE GREAT WATER MYSTERY	DATES	COST
Provide Assemblies for 3,017 Nevada County Students	3/1/02—12/31/05	$16,100
Provide Assemblies for 1,459 Yuba County Students	1/1/03—12/31/05	$13,600
Provide Assemblies for 33,010 Sacramento Co students	3/1/04—12/31/05	$66,880
Provide Assemblies for 6,707 Placer County Students	11/1/04—12/31/05	$22,400

YEAR 1 PROJECT TASK LIST

THE GREAT WATER MYSTERY	DATES	COST
Provide Assemblies for 1,000 Nevada County Students	1/1/06—12/31/06	$2,200
Provide Assemblies for 1,000 Yuba County Students	1/1/06—12/31/06	$2,200
Provide Assemblies for 12,000 Sacramento Co students	1/1/06—12/31/06	$20,700
Provide Assemblies for 3,000 Placer County Students	1/1/06—12/31/06	$5,500
Update Publicity	12/1/05—12/31/05	$100
Update Database with schools from all counties	12/1/05—12/31/05	$750
Create Map for all counties	12/1/05—12/31/05	$1,400
Purchase Equipment	12/1/05—12/31/05	$3,000
Hire and Train Staff	12/1/05—1/31/06	$5,000
Send Publicity to schools in Yolo & Solano Counties	1/1/06—1/31/06	$500
Schedule Assemblies in Yolo & Solano Counties	1/1/06—2/28/06	$7,500
Send Materials to schools in Yolo & Solano Counties	1/1/06—5/31/06	$300
Deliver Assemblies in Yolo (4,100 students) & Solano (10,000 students) Counties	1/1/06—5/31/06	$16,000
Actor Supervision	1/1/06—5/31/06	$1,500
Send Thanks to schools in Yolo & Solano Counties	1/1/06—5/31/06	$100
Monitor and Evaluate Yolo & Solano County Results	6/1/06—7/31/06	$2,600
SCHOOL WATER AUDITS	**DATES**	**COST**
Recruit Teachers in Nevada County	4/1/06—4/30/06	$900
Assemble Printed Materials	5/1/06—8/31/06	$3,000
Assemble Audit Materials	8/1/06—8/31/06	$100
Create Web Resources	5/1/06—8/31/06	$2,000
Host Training Workshop in Nevada County	9/1/06—9/30/06	$1,000
Provide Technical Assistance to Nevada Co. Schools	9/1/06—12/31/06	$1,600
Assess Students in Nevada County Schools	9/1/06—9/30/06	$150
Give Assembly to the 3 Nevada County Schools	9/1/06—9/30/06	$600
Give Introductory Lessons in Nevada County Schools	9/1/06—10/15/06	$350
Conduct Water Audit in 3 Nevada County Schools	10/1/06—10/31/06	$1,000
Give Follow-up Lessons in Nevada County Schools	10/15/06—11/30/06	$350
Observe Lessons	9/1/06—11/31/06	$500
Post Results on the Web (Nevada County Results)	11/1/06—11/30/06	*Students ($0)*
Assess Students (part 2) in Nevada County Schools	11/1/06—11/30/06	$150
Publicize Results (Nevada County Results)	11/1/06—11/30/06	$400
Hold Award Ceremonies for Nevada County Schools	12/1/06—12/31/06	$400
Monitor and Evaluate	12/1/06—12/31/06	$2,600
OVERALL TASKS	**DATES**	**COST**
Administration	12/1/05—12/31/06	$1,700
Yearly Report	12/1/06—12/31/06	$700

YEAR 2 PROJECT TASK LIST

THE GREAT WATER MYSTERY	DATES	COST
Provide Assemblies for 1,000 Nevada County Students	1/1/07—12/31/07	$2,200
Provide Assemblies for 1,000 Yuba County Students	1/1/07—12/31/07	$2,200
Hire and Train Staff (if necessary)	1/1/07—1/31/07	$5,000
Publicity to schools in Sutter & Contra Costa Counties	1/1/07—1/31/07	$500
Schedule Assemblies in Sutter & Contra Costa Co.s	1/1/07—2/28/07	$7,500
Send Materials to Sutter & Contra Costa Co. Schools	1/1/07—5/31/07	$300

Deliver Assemblies in Sutter (2,300 students) & Contra Costa (10,000 students) Counties	1/1/07—5/31/07	$16,000
Actor Supervision	1/1/07—5/31/07	$1,500
Send Thanks to Sutter & Contra Costa Co. Schools	1/1/07—5/31/07	$100
Monitor and Evaluate Sutter & Contra Costa Results	6/1/07—7/31/07	$2,600
SCHOOL WATER AUDITS	**DATES**	**COST**
Recruit Teachers in Yolo & Solano Counties	4/1/07—4/30/07	$1,800
Assembly Printed Materials (printing costs only)	4/1/07—4/30/07	$500
Host Training Workshop in Yolo & Solano Counties	9/1/07—9/30/07	$2,000
Train Local Resource Agencies	9/1/07—9/30/07	$800
Provide Technical Assistance to Yolo/Solano Schools	9/1/07—12/31/07	$3,200
Assess Students in Yolo & Solano County Schools	9/1/07—9/30/07	$150
Give Assembly to the 3 Yolo & 3 Solano Schools	9/1/07—9/30/07	$1,200
Give Introductory Lessons in Yolo & Solano Schools	9/1/07—10/15/07	$350
Conduct Water Audit in 3 Yolo & 3 Solano Schools	10/1/07—10/31/07	$2,000
Give Follow-up Lessons in Yolo & Solano Schools	10/15/07—11/30/07	$350
Post Results on the Web (Yolo & Solano Results)	11/1/07—11/30/07	*Students ($0)*
Assess Students (part 2) in Yolo & Solano Schools	11/1/07—11/30/07	$150
Publicize Results (Yolo & Solano Results)	11/1/07—11/30/07	$800
Hold Award Ceremonies for Yolo & Solano Schools	12/1/07—12/31/07	$800
Monitor and Evaluate	12/1/07—12/31/07	$5,200
OVERALL TASKS	**DATES**	**COST**
Administration	1/1/07—12/31/07	$2,400
Yearly Report	12/1/07—12/31/07	$690

YEAR 3 PROJECT TASK LIST

THE GREAT WATER MYSTERY	**DATES**	**COST**
Provide Assemblies for 1,000 Nevada County Students	1/1/08—12/31/08	$2,200
Provide Assemblies for 1,000 Yuba County Students	1/1/08—12/31/08	$2,200
SCHOOL WATER AUDITS	**DATES**	**COST**
Recruit Teachers in Sutter & Contra Costa Counties	4/1/08—4/30/08	$1,800
Assembly Printed Materials (printing costs only)	4/1/07—4/30/07	$500
Recruit Resource Agencies in Sutter & Contra Costa	4/1/08—4/30/08	$100
Host Training Workshop in Sutter & Contra Costa	9/1/08—9/30/08	$2,000
Train Local Resource Agencies	9/1/08—9/30/08	$800
Technical Assistance to Sutter/Contra Costa Schools	9/1/08—12/31/08	$3,200
Assess Students in Sutter & Contra Costa Schools	9/1/08—9/30/08	$150
Give Assembly to 3 Sutter & 3 Contra Costa Schools	9/1/08—9/30/08	$1,200
Give Intro. Lessons in Sutter & Contra Costa Schools	9/1/08—10/15/08	$350
Conduct Audit in 3 Sutter & 3 Contra Costa Schools	10/1/08—10/31/08	$2,000
Follow-up Lessons in Sutter & Contra Costa Schools	10/15/08—11/30/08	$350
Post Results on Web (Sutter & Contra Costa Results)	11/1/08—11/30/08	*Students ($0)*
Assess Students (part 2) in Sutter & Contra Costa	11/1/08—11/30/08	$150
Publicize Results (Sutter & Contra Costa Results)	11/1/08—11/30/08	$800
Award Ceremonies for Sutter & Contra Costa Schools	12/1/08—12/31/08	$800
Monitor and Evaluate	12/1/08—12/31/08	$5,200
OVERALL TASKS	**DATES**	**COST**
Administration	1/1/08—12/31/08	$1,500
Yearly Report	12/1/08—12/31/08	$690

B-15e. Statement of Work, Section 3: Monitoring & Assessment

In order to evaluate the effectiveness of this project, SYRCL will adhere to the following Evaluation Plan, which involves collecting data from several sources. All evaluation results will be summarized in the Yearly Reports.

FOR "THE GREAT WATER MYSTERY" SCHOOL ASSEMBLIES

Goal: *To achieve an increase in student knowledge about the importance of water conservation. Document that at least 5 percent of the participating students plan to change at least one of their daily behaviors, such as teeth brushing, to conserve water.*

SYRCL will use suggestions from the teacher evaluations and the analysis of the student testing results to improve and perfect our assembly program and activity packet to maximize students' knowledge of and commitment to water conservation.

Teachers: At the end of each assembly, participating teachers will be asked to fill out a written evaluation of the program. This evaluation includes questions about the length, effectiveness, educational value, and curriculum relevance of the assembly. It will also ask teachers to evaluate the accompanying activity packet.

Students: Gains in student knowledge and commitment to water conservation behaviors will be measured through a comparison of pre- and post-assembly test results. Project staff will mail a packet to each participating school 2 weeks prior to each assembly. In addition to extension activities, this packet will include a brief questionnaire to assess student knowledge about and commitment to water conservation. SYRCL will require teachers to have their students complete the questionnaire both before and a few days after the assembly. The results of this questionnaire will allow project staff to quantify increases in students' knowledge about water conservation and to estimate how many gallons of water will be saved through changes in student behavior.

FOR THE SCHOOL WATER AUDITS

Goal: *To achieve an increase in student knowledge about the importance of water conservation and methods of conservation. Document that at least 75% of the participating students plan to change at least one of their daily behaviors to conserve water. Decrease water used at each participating school by 50-100 gallons/day.*

SYRCL will use the results of these analyses to improve and perfect our School Water Audit program to maximize students' knowledge of and commitment to water conservation and to maximize the amount of water saved at each participating school.

Water Use Report Card: As part of the School Water Audit, each participating classroom will collect baseline data to document the amount of water used by the school. After they have implemented a Water Conservation Action Plan, the class will measure their school's water use again to document their water savings. Students will also post the results of their Action Plan on a portion of SYRCL's web site so that other participating schools can compare methods and water savings.

Teachers: At the end of each School Water Audit, participating teachers will fill out a written evaluation of the effectiveness of the program, the value and relevance of the lesson plans, the methodology, and the quality of the support they received from project staff. This will be followed by a phone interview with the project director.

Students: Gains in student knowledge and commitment to water conservation behaviors will be measured through a comparison of pre- and post-assembly test results. SYRCL will require teachers to have their students complete the questionnaire both before and

after their class completes the School Water Audit. The results of this questionnaire will allow project staff to quantify increases in students' knowledge about water conservation and to estimate how many gallons of water will be saved through changes in student behavior.

Observations: During the first year of the program, the project director will sit in on at least one of each of the four lesson plans as they are taught by participating teachers. The purpose of these evaluations is to get an observer's perspective on the effectiveness of the lessons and to observe the reaction of the students to the lesson.

Program Director Notes: Throughout the project, the Program Director will keep detailed notes on any changes that need to be made—either to the curriculum or the project procedures.

B-15f. Qualifications of the Applicants and Cooperators

Disadvantaged Communities Served:

All data is from US Census Bureau: 2000 Census data, because later census data was not available for all counties and areas.

In 2000, 80 percent of the statewide annual median household income was $37,994. "The Great Water Mystery" assemblies and School Water Audits will reach several disadvantaged communities. The target audience that will be funded through Water Use Efficiency monies includes students in Live Oak (annual median household income: $25,754), Yuba City ($32,858), and West Sacramento ($31,718). The target audience that is funded through SYRCL membership donations and partnerships includes students in Yuba County (annual median household income: $30,460)

Project Manager: SYRCL

SYRCL will be responsible for managing and delivering all aspects of this program except as noted under "Project Partners" below.

SYRCL was formed in 1983 to combat dam threats on the South Yuba River and has a 21-year record of measurable successes. SYRCL's successes include achieving Wild and Scenic status for the South Yuba in 1999, serving as the lead environmental group in the Upper Yuba River Studies Program—a $10 million CALFED-funded project studying salmon restoration in the Yuba Watershed—and the formation of a water and salmon conservation education program that has reached over 43,500 children since 2002. In 2003 SYRCL won the prestigious California Governor's Award for Environmental and Economic Leadership.

In the three years that our education program has been active, SYRCL has created a database, mapping system, publicity materials, and scheduling protocol that allow us to efficiently market, track, and present our assembly programs. These systems and protocol have already proven extremely effective in delivering assemblies throughout Nevada, Yuba, Sutter, and Sacramento Counties. SYRCL's extensive experience in managing all aspects of an assembly program make us uniquely qualified to implement "Great Water Mystery" Assemblies in Sutter, Yolo, Solano and Contra Costa County.

Additionally, SYRCL has experience implementing more in-depth, hands-on programs such as the School Water Audit. In 2004, SYRCL partnered with the EPA to develop and implement a three-month Science Docent Program in Nevada County that trained 20

community volunteers to teach monthly hands-on water activities to their partner classrooms of 5th grade students. Through this project, SYRCL gained experience recruiting teachers, running trainings sessions, and managing all aspects of a more intensive program of study.

Based on the strength of our assembly programs and their proven results, SYRCL has won contracts with NOAA Fisheries, the Yuba County Water Agency, the Bureau of Reclamation, the Sacramento Stormwater Management Program and the Regional Water Authority to promote water use efficiency and salmon conservation through school assemblies. These agencies have all been extremely satisfied with our work. References and recommendations from any of these agencies are available upon request (please call SYRCL for contact information).

SYRCL has built an organization with unparalleled community support, including 4,500 supporters and 500 active volunteers, which fosters vibrant partnerships among diverse interests, and is nationally regarded as a model of best practices for protecting and restoring a watershed. Our sound management systems and project management experience ensure that our projects are always conducted in a timely and professional way.

Project Partners: Yolo and Solano County Resource Conservation Districts

In years two and three, SYRCL will work with local resource agencies where possible as we expand the range of the School Water Audit Program to four additional counties. Agency staff will attend the School Water Audit training session, led by SYRCL, along with the three participating teachers from their county. Although SYRCL will be ultimately responsible for ensuring that the project flows smoothly, the local Agency staff will help coordinating the logistics, site visits, regular check in dates, and awards ceremonies for each School Water Audit in their county.

Having a local contact person in each county will make it easier for schools to receive on-site support as needed. The Yolo and Solano County Resource Conservation Districts (RCDs) have already agreed to participate in this program. By involving these RCDs, SYRCL is sowing the seeds to continue this project in future years. Through the School Water Audit portion of this program, SYRCL will train four Resource Conservation Districts and 15 teachers how to conduct a school water audit.

B-15g. Outreach, Community Involvement, and Acceptance

Over the past three years, SYRCL has delivered our in school assembly programs to over 43,500 elementary and middle school students in 5 Northern California Counties. To accomplish this, SYRCL has created a database, mapping system, publicity materials, and scheduling protocol that allow us to efficiently market, track, and present our assembly programs.

The main outreach tool that SYRCL uses to publicize our assembly programs is a brochure mailing followed by a personal phone call to each eligible school. Each phone call is logged in a database that, when combined with a map of county schools, allows us to schedule nearby schools on the same day to minimize travel expenses. Because “The Great Water Mystery” assemblies are free, correlated with state science content standards, and require a minimal time commitment from teachers, even teachers who do

not usually include water conservation education in their classrooms participate in and enjoy this program. SYRCL's past experience has shown that we can easily reach 20 percent of the students in a given county using this scheduling protocol.

SYRCL will use the network of teachers created while scheduling these assembly programs to find three motivated teachers in each county who would like to have their classroom participate in performing a School Water Audit. "The Great Water Mystery" assembly programs gain an easy audience with most teachers because they require such a minimal time commitment. However, we have found that there are always teachers that are interested in doing more as a follow up project after the assembly. In order to accommodate these teachers, SYRCL sends a packet of supplemental activity ideas to each participating school, but the School Water Audit program will allow the most motivated teachers to go one step further.

In the first year of the project, SYRCL will pilot test a School Water Audit Program in Nevada County. Through the School Water Audit Program, students will create a Water Conservation Action Plan for their school and collect before and after data to document its effectiveness. Based on the results of similar programs in other areas, we are estimating that each participating school will save between 50-100 gallons of water per day[25]. Students will post the results of their findings and water savings on a portion of SYRCL's web site, which will publicize the success of the program and allow students from different schools to compare results.

In years two and three, SYRCL will work with local resource agencies where possible as we expand the range of this program to four additional counties. Agency staff will attend a School Water Audit training session along with the three teachers from their county. They will then coordinate the logistics, site visits, and awards ceremonies for each School Water Audit in their county. Yolo and Solano County Resource Conservation District (RCD) staff have already agreed to participate in this program. By involving these RCDs, SYRCL is sowing the seeds to continue this project in future years. Through the School Water Audit portion of this program, SYRCL will train four Resource Conservation Districts and 15 teachers how to conduct a school water audit.

Additionally, SYRCL plans to use the success of these School Water Audits as a demonstration project to leverage money from local water districts and agencies. SYRCL will work to partner with these local agencies to offer free presentations of "The Great Water Mystery" and School Water Audits in future years. This partnership between non-profit organizations and water supply agencies will allow SYRCL to expand the range of this program and will create a model for implementing this type of program on a statewide basis.

SYRCL staff has extensively researched existing water conservation education programs in Yolo, Solano, Sutter and Contra Costa counties[26]. These water agencies, resource conservation districts, and non-profit agencies are all excited about SYRCL's "Great Watery Mystery" and School Water Audit programs and are willing help publicize them

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[25] http://www.state.tn.us/environment/dca/tp3/pdf/ss-centennial-lw.pdf

[26] http://bmp.cuwcc.org/bmp/read_only/list.lasso, California Urban Water Conservation Council web site, and E-mail correspondence and phone conversations with staff at Woodleaf Environmental Center, Water Resources Association of Yolo County, Solano County Water Agency, Solano Irrigation District, City of Benicia, and Contra Costa Water District

through word of mouth. Additionally, in counties with out-of-school water conservation education opportunities, such as the Waterways program in Yolo and Solano counties, SYRCL's in-school assemblies can help build interest among teachers to take advantage of these other more time consuming and costly programs (please see Section 1 for more details on the educational programs available in each of the proposed counties).

There is no known opposition to this proposed project, and we have no reason to expect any. Our "Great Water Mystery" assemblies have been sponsored by a very diverse group of agencies including the Bureau of Reclamation, NOAA Fisheries, the Yuba County Water Agency, Sacramento Stormwater Management Program and more. Additionally, we have directed our attention to the portions of each county that do not have competing in-school water conservation education programs to avoid potential overlap or conflict.

B-15h. Innovation

Resources and web sites that require teachers to review and train themselves in new curricula or activities often languish on the shelves. Off-site programs require motivated teachers to organize the logistics (financing, permission forms, transportation, etc.).

SYRCL's proposed Water Education Program will offer free on-site assembly programs that require minimal time commitment from teachers. It also provides the opportunity for different levels of involvement at negligible cost by offering packets of water conservation activities to all participating teachers. Additionally, for 15 of the most motivated teachers and schools, SYRCL will train the teachers and assist the students in performing a School Water Audit. Through this Audit, students will participate in a real-life water conservation project that will save their school thousands of gallons of water each year and will increase each student's personal commitment to water conservation.

The "Great Water Mystery" assemblies are efficient & innovative because:

- "The Great Water Mystery" is correlated to State Science Content Standards, which makes it relevant for teachers in counties across California.
- Assembly programs require a minimal time commitment from teachers, resulting in an extremely high level of participation from teachers *who would not otherwise include water education* in their classrooms.
- Assembly programs reach students directly and do not *require* teachers to train themselves in new activities or curricula.
- SYRCL will provide an activity packet as a supplement to the assembly. Packets give teachers an extremely easy way to expand on the concepts in the assembly.

The School Water Audits are efficient and innovative because:

- They provide a hands-on, real-life opportunity for students to create change within their school.
- Not only will students be directly involved in saving their school thousands of gallons of water each year, but through their involvement in this project, they will increase their personal commitment to water conservation in the rest of their lives.
- By giving the School Water Audit program after a year of "Great Water Mystery" assemblies, SYRCL will be able to use our existing relationship with the schools to seek out the most committed teachers and schools, ensuring project success.

- Teachers will be more likely to participate in the School Water Audit once they have seen "The Great Water Mystery" assembly since they will have a degree of confidence in the quality of SYRCL's programs.

This innovative educational approach will be tested, expanded and refined through this project. After this project, these assemblies and water audits will serve as a model for widespread replication throughout the state. SYRCL will use the success of these assembly programs and School Water Audits as a demonstration project to leverage money from local water districts and agencies. SYRCL will work to partner with these local agencies to offer free presentations of "The Great Water Mystery" and School Water Audits in future years. This partnership between non-profit organizations and water supply agencies will allow SYRCL to expand the range of this program and will create a model for implementing this type of program on a statewide basis.

B-15i. Benefits and Costs

Budget Explanation

1. **Rates:**

Principal Project Manager	$30/hr	225 hours *(for state funded portion)*
Project Manager	$25/hr	525 hours *(for state funded portion)*
Scheduler	$15/hr	800 hours *(for state funded portion)*
Assembly Presenter	$25/hr	1,025 hours *(state funded portion)*
Audit Technical Staff	$30/hr	500 hours *(for state funded portion)*
Administrative Officer	$18/hr	635 hours *(for state funded portion)*

2. **Contingency:** For Salaries is calculated at 10%
3. **Benefits:** calculated at 20% include health care and employment taxes.
4. **Major supplies and materials:** Major supplies include a projector screen, a laptop computer and LCD projector, minimal supplies (such as stopwatches and measuring containers) for the School Water Audit Kit, printed publicity materials, and printed activity packets.
5. **Travel Expenses:** 45,560 miles at $.34 per mile includes the Assembly Presenter's travel to each assembly, Project Manager's travel to oversee Assembly Presenter, Project Manager's travel to give each School Water Audit Training, and local agency staff travel to provide on-site assistance with each School Water Audit.
6. **Cost Share:** Applicant's portion of the cost share is from membership contributions, fundraisers, and partnerships with the Sacramento Stormwater Management Program, Regional Water Authority, and the Yuba County Water Agency.
   Additional cost share for the School Water Audits is figured as a portion of the salaries of the teachers who use their class time to apply the lessons learned during the training (estimated at $40 per hour for 75 hours over the life of the project).

In-school assembly programs are an extremely effective way to teach thousands of children about water conservation. Not only are they very cost effective, but because they require such a minimal investment of time from teachers, they are an excellent way to reach students whose teachers would not otherwise include any water conservation education in their classrooms. Combining these assembly presentations with school water audits creates the perfect blend between involving a large number of students and allowing for a more in-depth learning process.

If just 5 percent of the 91,600 students who will see assemblies sponsored by the Water Use Efficiency Program (26,400 students sponsored by Water Use Efficiency Program,

65,200 students through SYRCL cost share) change their behavior to turn the water off while they brush their teeth, they will save 4,346,400 gallons of water every year. If 5 percent of the audience shortens their showers by 5 minutes, they will save 16,717,000 gallons of water every year. Teachers who have participated in this program in the past have suggested that the percentage of students changing behaviors may be even higher.

The School Water Audit Section of the program will allow a more in-depth exploration for 15 of the most motivated classrooms. By participating in a real-life water conservation project and teaching their peers about water conservation, students will become even more inspired to conserve water in their daily habits and will be extremely familiar with simple ways to do this.

If 75 percent of the 450 students and 15 teachers who participate in the School Water Audit program change their behavior to turn the water off while they brush their teeth, they will save 330,963 gallons of water every year. If 75 percent of the participants shorten their showers by 5 minutes, they will save 1,272,937 gallons of water every year.

In addition to the educational value of the School Water Audits, SYRCL is estimating that the water audit will result in direct water savings of between 50 and 100 gallons of water per day for each participating school. Over the course of a single school year, these savings would add up to between 13,500-27,000 gallons for each participating school—202,500-405,000 project wide. This estimation of water savings is based on the results of similar projects in other areas[27].

The total of anticipated quantifiable water savings are: 4,500,000—16,000,000 gallons of water per year through student behavior changes due to water assembly, 500,000 gallons of water per year through student behavior changes due to participating in the school water audit, and 300,000 gallons of water per year directly saved by changes made through the school water audit. This level of savings is likely to be sustained as students integrate these behaviors into their daily lifestyle. These quantifiable water savings will be monitored according to our monitoring and assessment plan.

[27] http://www.state.tn.us/environment/dca/tp3/pdf/ss-centennial-lw.pdf

Attachment 3: Technical Analysis of Project Physical Benefits Claimed

Project 1. El Dorado County, Regional Water Conservation Planning - Model Implementation and Education Programs

Project Description

El Dorado County Water Use Efficiency and Outreach Programs

The project includes an El Dorado County-wide all inclusive water use efficiency (WUE) and water conservation outreach (WCO) program. El Dorado County Water Agency would develop a comprehensive WUE_WCO program and implementation plan. Specific elements of the program/plan would draw from the implementing agencies 2010 Urban Water Management Plan Drought Management Measures and Best Management Practices (BMPs) and other successful components of WUE_WCO programs. The WUE_WCO program/plan would consist of BMPs/DMM that would include but are not limited to: rebates for toilet replacements, cash for grass programs, water conservation educational materials, school education presentations and curriculum add-ins for teachers, water audits/surveys, showerhead giveaways, etc. Through public education and other outreach activities, this program would help educate customers on the value of water, how to use it efficiently and the need to conserve water immediately. Over time, this would result in long-term water savings benefits and water use efficiency.

The outreach components include: 1) The widely acclaimed Great Water Mystery Program and 2) implementing the El Dorado County Government Building Retrofit as described below.

Great Water Mystery Program. The Great Water Mystery Water Conservation Program and School Audit Program is designed to promote life-long water conservation behaviors amongst K-8 school children. The South Yuba River Citizens League (SYRCL), an original CABY RWMG member, has run this program all over Northern California for the past 12 years and shown it to more than 250,000 with demonstrable results. SYRCL would adapt the program to create a CABY region-wide version of the Great Water Mystery and produce the program in schools region-wide. SYRCL pre-and post-program surveys (resulting from a similar SYRCL/DWR-funded program in 2005) demonstrate clearly that The Great Water Mystery program promotes life-long water conservation behaviors that would be realized immediately and year-over-year. The School Water Audit would be used as part of the classroom teaching curriculum to have students conduct a school-wide water audit that would show existing school facilities water demands and demonstrate water conservation savings. Consistent with the 20x2020 statewide per capita water reduction, this program would be developed to promote water use efficiency to achieve countywide 20% per capita water demand reduction**.**

El Dorado County Government Building Retrofits. The County of EI Dorado's government functions operate from both County-owned and leased facilities dispersed on the western and eastern slopes, covering from EI Dorado Hills to South Lake Tahoe. The County has over 746,000 square feet of owned facilities under its direct operational control. The facilities are comprised of numerous administrative offices, senior centers, community centers, libraries, animal shelters, jails and juvenile halls, psychiatric and health facilities, as well as workshops and storage facilities. The County owns over 70 buildings and structures that range from a relatively new South Lake Tahoe Animal Shelter, built in 2008, to the

Chamber of Commerce building in Placerville, built in 1923. The average age of all owned buildings is approaching 40 years old.

Buildings and facilities within the EDC government center complex were constructed over numerous years, most of which were built before 1992 and therefore, not compliant with 1992 or later federal plumbing code requirements. As a result, pre-1992 constructed facilities (EDC Government Center buildings, Jail and Library) are fitted with high-volume, inefficient toilets, urinals, sinks, showers and showerheads.

This project promotes water conservation and achieves long-term reduction of water use by increasing water use efficiency through replacement of high-volume, inefficient toilets, urinals, sinks, showers and shower-heads throughout the EDC Government Center buildings, Jail and Library and with modern, low or ultra low fixtures and high-efficiency models to reduce water demand within the EDC Government Center. It also improves reliability of downstream supplies by reducing the quantity of diversions needed for meeting future water demands within the EDC Government Center.

Technical Basis of the Project

Great Water Mystery Program. According to the USGS, Californians used an average of over 38,400 million gallons of fresh water *every day* in 2000[1]. Over 60 percent of this water was surface water which came out of our rivers, lakes and streams,[2] putting pressure on aquatic habitats and endangered fisheries resources. Domestic water use, which includes self-supplied domestic and public supply, makes up a large portion of this off-stream water demand. Across the United States, domestic water use made up 11 percent of the total off-stream demand for water in 2000[3], and trends show that this demand is increasing. Per capita withdrawals for domestic water use in the United States jumped 53 percent from 1950 to 2000[4]. The increasing demands of domestic water use have put undue pressure on our environment and water supply.

The Great Water Mystery Water Conservation Program is run by the South Yuba River Citizens League (SYRCL) - one of the original CABY stakeholders. This is a successful school water conservation program currently being used in parts of the CABY region serviced by the Nevada Irrigation District and Placer County Water Agency. The program has been shown to more than 250,000 school children throughout Northern California for the past twelve years. SYRCL would update existing materials for the School Water Audit part of the project to reflect current state and national educational standards and adjust all materials for the specific attributes of the relevant watersheds throughout the CABY region and then take the program to schools in the CABY Region where the program has not yet been shown.

The project includes a model Water Conservation Education and School Water Audit program that is designed to promote life-long water conservation behaviors SYRCL pre-and post-program surveys (resulting from a similar SYRC/DWR-funded project in 2005) demonstrate clearly that The Great Water Mystery program promotes life-long water conservation behaviors that would be realized immediately and year-over-year. The School Water Audit element would be used as part of the classroom teaching

[1] USGS "Estimated Use of Water in the United States in 2000" Circular 1268, 15 figures, 14 tables (released March 2004, revised April 2004, May 2004)
[2] ibid
[3] ibid
[4] ibid

curriculum to have students conduct a school-wide water audit that would show existing school facilities water demands and demonstrate how water conservation savings can be achieved.

Government Building Retrofits. In 2013, El Dorado County hired Vanir Construction Management, Inc. to compile a Conditions Assessment Report (all pages) which comprehensively evaluated the EDC Government Center and made recommendations for upgrades and improvements at each building. This Assessment report serves as the basis for a model retrofit implementation project and as an example for other agencies throughout the CABY region and beyond. This is a model shovel-ready project which scores as a high priority program in the CABY IRWM Plan with immediate water savings to benefit drought impacts. The project would retrofit the County Buildings A,B, and C as well as the library and the main jail with water modern, low or ultra low flow, high efficiency fixtures to reduce daily water demand. As a direct function of these plumbing retrofits, demand for water would be reduced resulting in lower wastewater loads from the EDC Government Center. This project would also reduce energy consumption with complete replacement of an evaporative cooling tower unit with a modern, no water, high energy efficient cooling system to reduce water demand within the EDC Government Center. Based on the Assessment Report, over the next three-year period the following savings would occur:

- Up to 553,520 gallons in 2015;
- Up to 1,952,280 gallons in 2016;
- Up to 3,433,320 gallons in 2017 – after 2017, annual water use is expected to remain at approximately 11,354,640 gallons, which is an estimated savings of 735,284 annually.

Table 3-2 Technical and Scientific Documentation Table

Technical and Scientific Document Name	Document Description	Relevant page #
DWR. 2010. 20x2020 Water Conservation Plan	Statewide conservation plan.	Page 42 All pages.
Vanir Construction Management, Inc. 2013. El Dorado County compiled a Conditions Assessment Report	Provides detailed descriptions of the County facilities.	All pages
EDC Government Center Facilities CIP	Capital Improvement Plan for County facilities.	All pages
Graphs Total 2 - Excel Spreadsheets that	Summarize results of The Great Water Mystery Program implemented in 2004.	All tabs.

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 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 promote long-term water use efficiency through school programs.

Recent and Historical Conditions that Provide Background for Benefits Claimed

As described in the physical benefits tables, the project would result in water savings through retrofits and public education programs. Following describes the specific benefits achieved.

Benefit 1 - Water Conserved

Great Water Mystery Program. This water education program is designed to conserve water supplies and water use efficiency to achieve 20% demand reduction throughout El Dorado County. Through public education and other outreach activities, this program would help educate school children on the value of water, how to use it efficiently and the need to conserve water immediately. This program would conduct 90 assemblies with an estimated 100 children in each assembly (total 9,000). The program would conduct 30 audits with 60 students in each audit (1,800). **The grand total number of students reached is therefore estimated at 10,800.**

Government Building Retrofits. It is estimated the project would result in 20% demand reduction throughout El Dorado County buildings. The project would result in reduced energy consumption through elimination of an antiquated cooling tower and lower wastewater loads. In terms of gallons conserved (water supplies improved) over the next three year period:

- Up to 553,520 gallons in 2015;
- Up to 1,952,280 gallons in 2016;
- Up to 3,433,320 gallons in 2017 – after 2017 annual water use is expected to remain at approximately 11,354,640 gallons, which is a estimated savings of 735,284 annually.

Benefit 2 - Improvements to Aging Infrastructure: Project physical benefits are consistent with CABY IRWMP performance measures to reduce energy consumption within the EDC Government Center. This project responds to climate change by reducing energy consumption of water systems and uses through replacement of antiquated fixtures and hardware with modern, low or ultra low fixtures and high-efficiency models along with complete replacement of the cooling tower unit with a modern, no water, high energy efficient cooling system to reduce water demand within the EDC Government Center.

Benefit 3 - Implement DWR 20x2020 Drought Conservation Plan: As noted above, The Great Water Mystery Program would serve an estimated 10,800 students (assuming 90 assemblies with 100 children each, and 30 audits with 60 children each). The DWR 20x2020 Water Conservation Plan (page 42) strongly recommends that the state accelerate public outreach programs. Page 42 states: "A statewide water conservation campaign can communicate the need for water conservation, explain its importance within the context of the state's overall

water supply and demand situation, and help to build a conservation ethic among customers." The proposed project is designed in compliance with this recommendation.

This Project integrates with other CABY IRWMP projects in the following ways:

- Improves source water supply reliability
- Implementing the goals and objectives of the CABY IRWM Plan
- Improves landscape and agricultural irrigation efficiencies
- Achieves long term reduction of water use
- Assists water supplier and the region to implement conservation programs and measures that are not locally cost-effective

Estimates of without the Project Conditions

Great Water Mystery Program. Many parts of El Dorado County and the CABY region do not currently have a Great Water Mystery Water Conservation Assembly and School Audit Program. As a result, potable water is not used efficiently and through lack of understanding of the value of water is not used beneficially for the good of the region. The Great Water Mystery Water Conservation Assembly and School Audit Program in El Dorado County would help the County meet its raw water savings and 20x2020 water use efficiency goals.

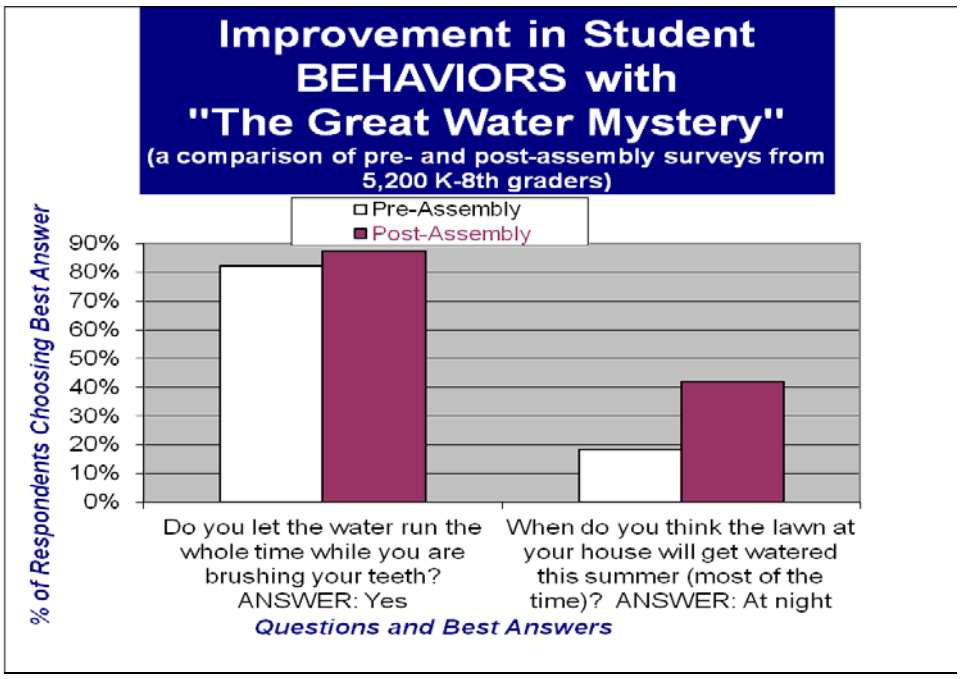
Government Building Retrofits. The average age of all owned buildings is approaching 40 years old. Buildings and facilities within the EDC government center complex were constructed over numerous years, most of which were built before 1992 and therefore, not compliant with 1992 or later federal plumbing code requirements. As a result, pre-1992 constructed facilities (EDC Government Center buildings, Jail and Library) are fitted with high-volume, inefficient toilets, urinals, sinks, showers and showerheads that contribute to gross water consumption and wasteful use of regional supplies. Without funding this EDC Government Center Water Conservation Retrofits project El Dorado County would not meet its 20x2020 water use efficiency goals, consume large quantities of energy and generate excessive wastewater that requires treatment and disposal.

The following bullet statements summarize the expected conditions **without the project**:

- High-volume, inefficient toilets, urinals, sinks, showers and showerheads that contribute to gross water consumption in El Dorado County and wasteful use of regional supplies would remain in place.
- Aging and inefficient facilities would remain in place indefinitely.
- An opportunity to implement an important goal and recommendations from the 20x2020 Water Conservation Plan for a County that includes rural DACs would be lost.

Methods for Estimation

Great Water Mystery Program. In 2004, DWR funded a Water Use Efficiency program with school assemblies and a water audit program and this program is modeled after this previous project. In 2004, pre- and post surveys were conducted of individual students and the results of the surveys were then plotted and graphed (see references folder - Graphs Totals2 "Behaviors" tab). As displayed in the example graph below, the students demonstrated a marked improvement in their understanding of water conservation needs and behaviors.



Source: "Graphs Total 2" Excel spreadsheet found in the "References" Folder.

Government Building Retrofits. Existing water use at the government center was determined by calculating water using fixtures (factor daily use/daily demand and employees) i.e. replace this many fixtures and using the same water demand from existing (without project) gallons per minute per use and came up with demand for project.

EDC staff and its consultant team developed an EDC Government Center Facilities CIP (all pages) that would be implemented over the next 3 to 4 years. As part of development of the CIP staff investigated potential energy savings achieved through equipment upgrades and replacements. The resulting investigations arrived at the potential energy savings of at least 20% annually after 2017.

Acknowledgement of New Facilities, Policies, and Actions Required

This project does not require new facilities or policies.

Adverse Physical Effects

The project may produce temporary impacts to EDC staff, employees and visitors while construction activities occur and restrooms are being modified. After construction facilities and access would be return to pre-construction or better conditions.

Table 5.3 – Annual Project Physical Benefits Project Name: EL DORADO COUNTY GOVERNMENT CENTER RETROFITS Type of Benefit Claimed: Increase Water Conserved Units of the Benefit Claimed: Gallons of Water Saved Additional Information About this Benefit: As a direct function of plumbing retrofits occur, demand for water would be reduced resulting in low wastewater loads from the EDC Government Center.			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014	0	0	0
2015	0	553,520	553,520
2016	0	1,952,280	1,952,280
Etc.	0	3,433,320	3,433,320
Last Year of Project Life			After 2017, annual water use is expected to remain at approximately 11,354,640 gallons, which is a estimated savings of 735,284 annually.
Sources: Gallons saved based on EDC Conditions Assessment (all pages).			

Table 5.3 – Annual Project Physical Benefits Project Name: EL DORADO COUNTY GOVERNMENT CENTER RETROFITS Type of Benefit Claimed: Increase Energy Efficiency Units of the Benefit Claimed: Percent Reduction in Energy Consumption Additional Information About this Benefit: Consistent with Objective CC-2 (Increase alternative energy and energy efficiency) of CABY plan			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2014	0	0	0
2015	0	~10%	~10%
2016	0	~20%	~20%
Etc.	0	~20%	~20%
Last Year of Project Life			
Comments: EDC staff and its consultant team developed a EDC Government Center Facilities CIP that would be implemented over the next 3 to 4 years. As part of development of the CIP staff investigated potential energy savings achieved through equipment upgrades and replacements. The resulting investigations arrived at the potential energy savings of at least 20% annually after 2017 (all pages).			

Table 5 – Annual Project Physical Benefits **Project Name: Great Water Mystery Water Conservation Assembly and School Audit Program** **Type of Benefit Claimed: Promote Water Conservation** **Units of the Benefit Claimed: Number of Children Reached** **Additional Information About this Benefit: Consistent with Objective WS-1 (Implement Urban Water Conservation Plans) of CABY plan**			
(a)	**(b)**	**(c)**	**(d)**
	Physical Benefits		
Year	**Without Project**	**With Project**	**Change Resulting from Project (c) – (b)**
2014	0		
2015	0	3,600	3,600
2016	0	7,200	7,200
2017	0	10,800	10,800
Last Year of Project Life			
The School Water Audit would reach 10,800 students over a three year timeframe. It would be used as part of the classroom teaching curriculum to have students conduct a school-wide water audit that would show existing school facilities water demands and demonstrate water conservation savings. Outreach and education programs do have direct quantifiable water saving and result in quantified changes in behavior and knowledge (see References Folder for Graphs that summarize the results of past programs). Moreover, this program is consistent with the 20x2020 statewide per capita water reduction (pages 41-43). The program would be developed to promote water use efficiency to achieve countywide 20% per capita water demand reduction**.**			

Table 5 – Annual Project Physical Benefits **Project Name: Great Water Mystery Water Conservation Assembly and School Audit Program** **Type of Benefit Claimed: Promote Water Conservation** **Units of the Benefit Claimed: Percent Decreased Demand** **Additional Information About this Benefit: Consistent with Objective WS-1 (Implement Urban Water Consveration Plans) of CABY plan**			
(a)	**(b)**	**(c)**	**(d)**
	Physical Benefits		
Year	**Without Project**	**With Project**	**Change Resulting from Project (b) – (c)**
2014	0	0%	0
2015	0	10%	10%
2016	0	20%	20%
Etc.	0	20%	20%
Last Year of Project Life			
Comments: The Great Water Mystery Water Conservation Program and School Audit Program is designed to promote life-long water conservation behaviors through the Great Water Mystery Water Conservation Program. The Great Water Mystery would be adapted by the South Yuba River Citizens League (SYRCL) to create an El Dorado County version of the Great Water Mystery. In 2004, DWR funded a Water Use Efficiency program with school assemblies and a water audit program and this program is modeled after this previous project. In 2004, pre- and post surveys were conducted of individual students and the results of the surveys were then plotted and graphed (see references folder - Graphs Totals2 "Behaviors" tab). As displayed in the example graph below, the students demonstrated a marked improvement in their understanding of water conservation needs and behaviors.			

	2a	3n	4b	5b	6corny	6pantsy	6compy	6papery	7a
K-8	0.203004	0.05276	0.215811	0.125379	0.086524	0.53793	0.553236	0.258939	0.067029
K	0.183867	0.071995	0.340455	0.249739	0.361056	0.353346	0.424885	0.419269	0.129222
1	0.196461	0.05642	0.286773	0.134362	0.224358	0.322767	0.326624	0.265607	0.087078
2	0.118635	0.057856	0.277618	0.121503	0.09336	0.46028	0.463734	0.327497	0.086999
3	0.231329	0.049788	0.295711	0.147127	0.042971	0.515476	0.5186	0.249007	0.076116
4	0.185338	0.063439	0.243318	0.106546	0.032128	0.643458	0.600302	0.239617	0.054924
5	0.237308	0.057502	0.134773	0.120917	0.051745	0.53431	0.636332	0.238804	0.043081
6	0.245054	0.047185	0.100626	0.106358	0.038513	0.552077	0.72067	0.186667	0.057191
7	0.327586	0.068966	0.068966	0.034483	0.068966	0.586207	0.827586	0.206897	0.017241
8	0.267935	-0.01685	-0.01613	0.112903	-0.03226	0.564516	0.645161	0.306452	0.016129

	K	1	2	3	4	5	6	7	8
1	28%	24%	29%	26%	20%	16%	12%	-2%	5%
2	18%	20%	12%	23%	19%	24%	25%	33%	27%
3	7%	6%	6%	5%	6%	6%	5%	7%	-2%
4	34%	29%	28%	30%	24%	13%	10%	7%	-2%
5	25%	13%	12%	15%	11%	12%	11%	3%	11%
6corn	36%	22%	9%	4%	3%	5%	4%	7%	-3%
6pants	35%	32%	46%	52%	64%	53%	55%	59%	56%
6comp	42%	33%	46%	52%	60%	64%	72%	83%	65%
6paper	42%	27%	33%	25%	24%	24%	19%	21%	31%
7shower	13%	9%	9%	8%	5%	4%	6%	2%	2%
7b	-5%	-5%	-4%	5%	0%	4%	5%	7%	2%
7c	5%	-3%	-2%	-4%	-2%	0%	-4%	-2%	-2%
7d	-4%	-2%	-4%	-7%	-2%	-4%	-3%	-5%	-3%
7e	-12%	-5%	-1%	-5%	-4%	-3%	-4%	0%	2%
7f	-8%	-9%	-5%	-3%	-2%	0%	-2%	-7%	-2%
7g	-13%	-3%	-4%	-7%	-6%	-6%	-10%	-2%	10%
7h	4%	3%	1%	-1%	0%	0%	2%	5%	-2%
7bath	7%	-5%	4%	6%	5%	4%	10%	-3%	2%
8	11%	20%	14%	12%	11%	10%	16%	5%	29%
9	19%	15%	27%	24%	23%	26%	24%	38%	23%

1b	7b	7c	7d	7e	7f	7g	7h	7i	8c
0.202254	0.009789	-0.01821	-0.03858	-0.03855	-0.03263	-0.06213	0.007106	0.043517	0.129
0.276904	-0.04528	0.045755	-0.0442	-0.11564	-0.08163	-0.12853	0.039912	0.072823	0.114302
0.235728	-0.04565	-0.03344	-0.02347	-0.04656	-0.09274	-0.02697	0.031941	-0.05045	0.201283
0.287616	-0.03603	-0.01895	-0.04027	-0.01144	-0.05291	-0.04063	0.006778	0.04429	0.138864
0.258461	0.048677	-0.03697	-0.06764	-0.04577	-0.03204	-0.06562	-0.00975	0.055494	0.119725
0.204108	0.004092	-0.02233	-0.02047	-0.04074	-0.01785	-0.065	0.003145	0.047718	0.114834
0.162793	0.037789	-0.00285	-0.04273	-0.02666	-0.00052	-0.05991	-0.00383	0.044593	0.096044
0.11526	0.048928	-0.04104	-0.02661	-0.04042	-0.02304	-0.09595	0.02303	0.100478	0.158277
-0.01724	0.068966	-0.01724	-0.05172	0	-0.06897	-0.01724	0.051724	-0.03448	0.051724
0.048387	0.016129	-0.01613	-0.03226	0.016129	-0.01613	0.096774	-0.01613	0.016129	0.290323

K-8

20%
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-2%
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1%
4%
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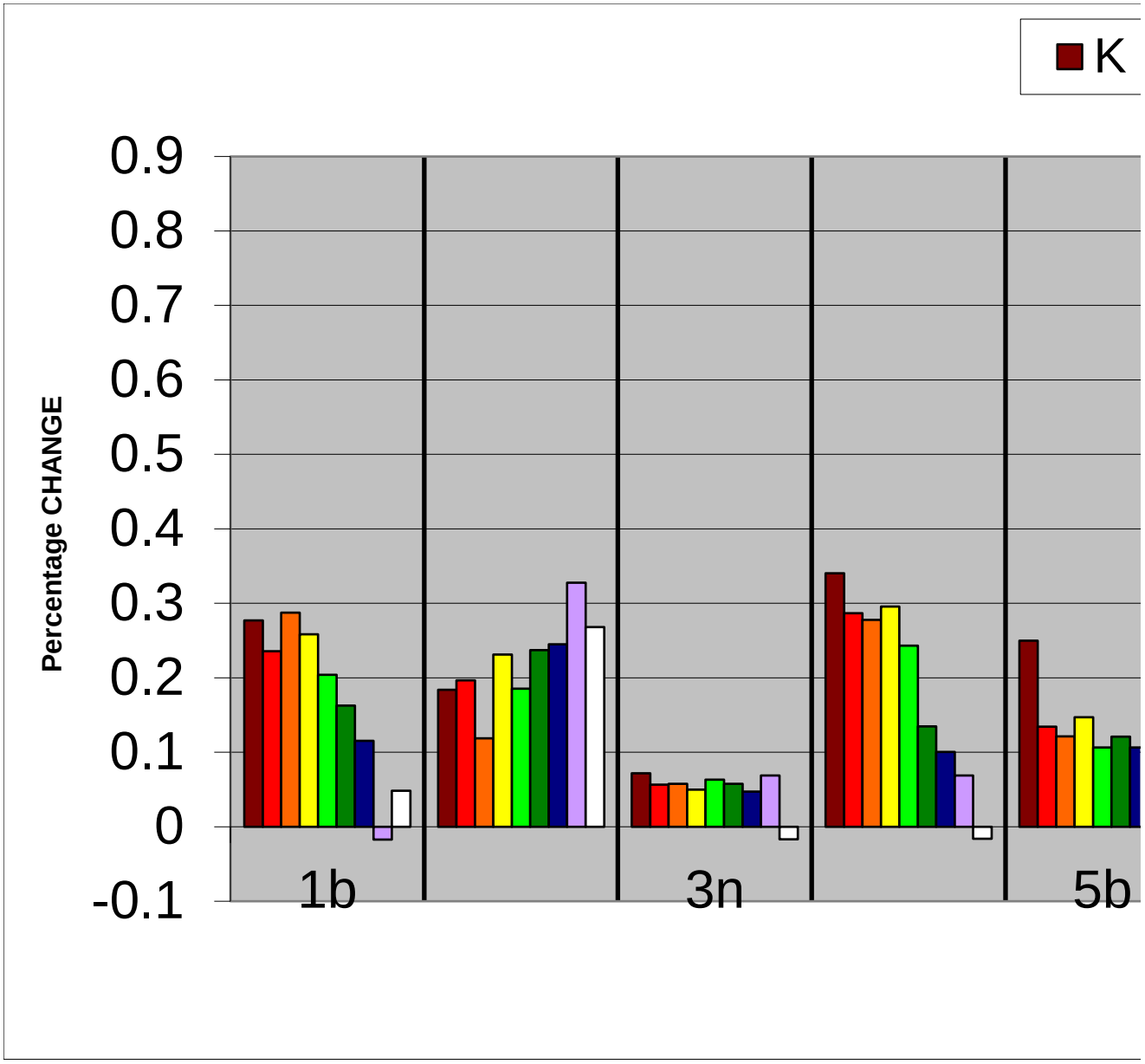
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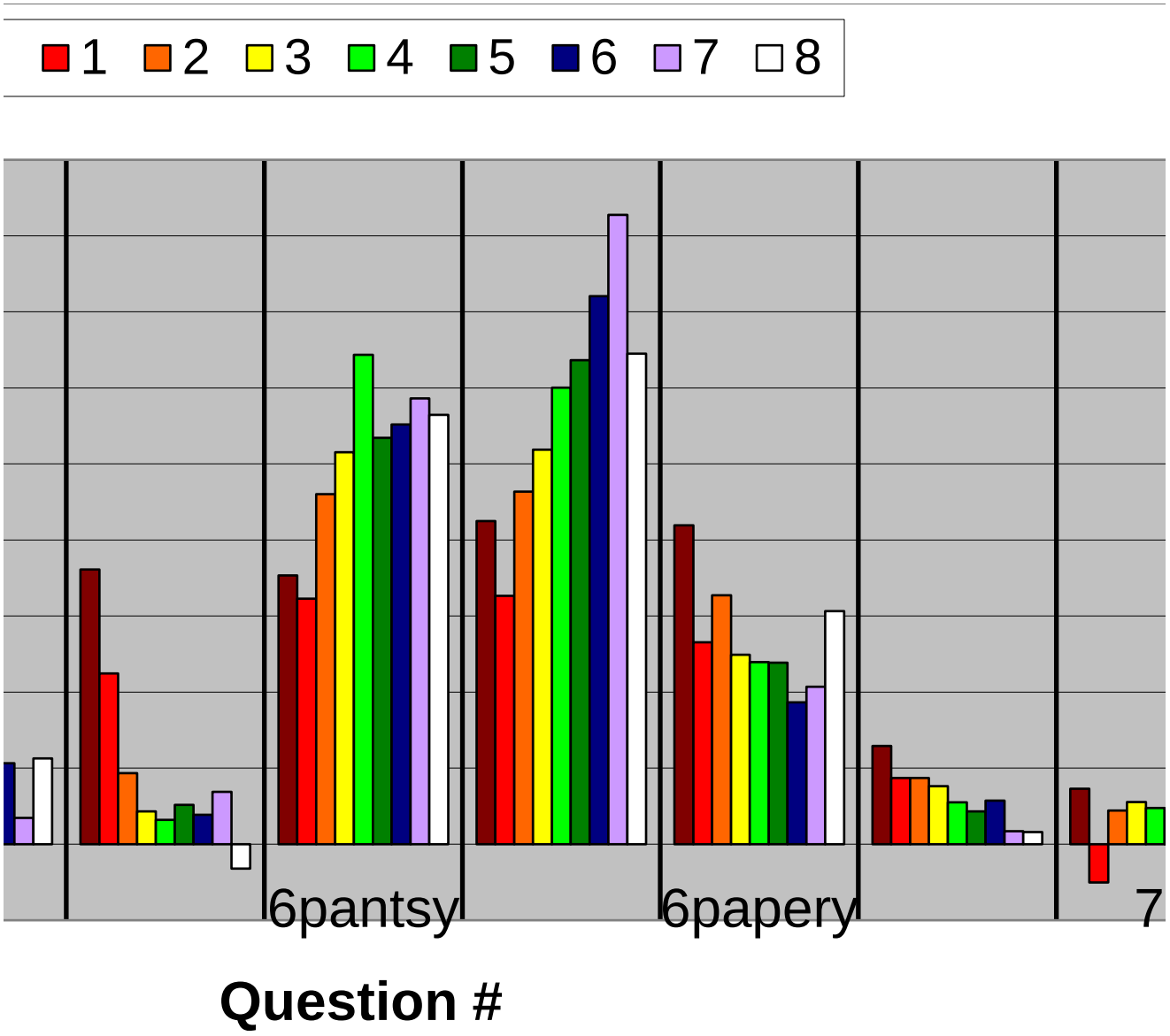
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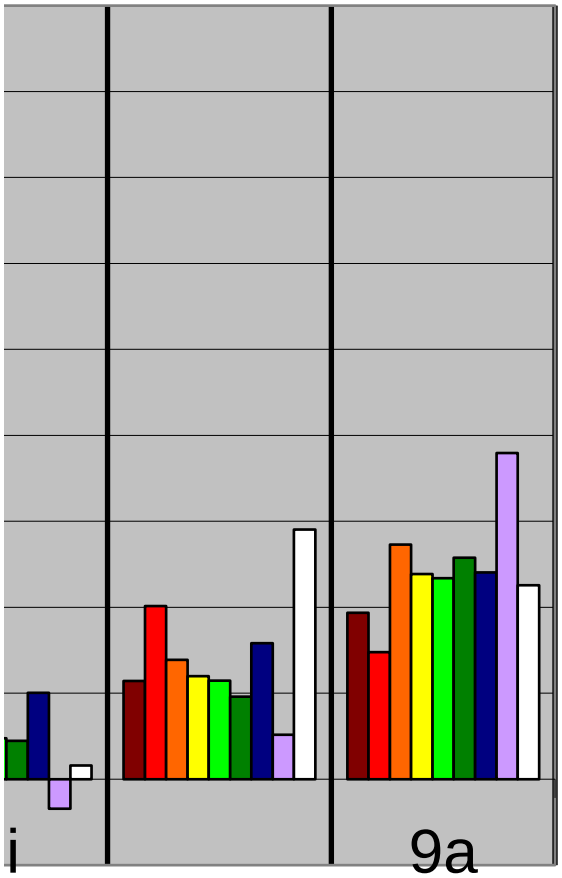
Question #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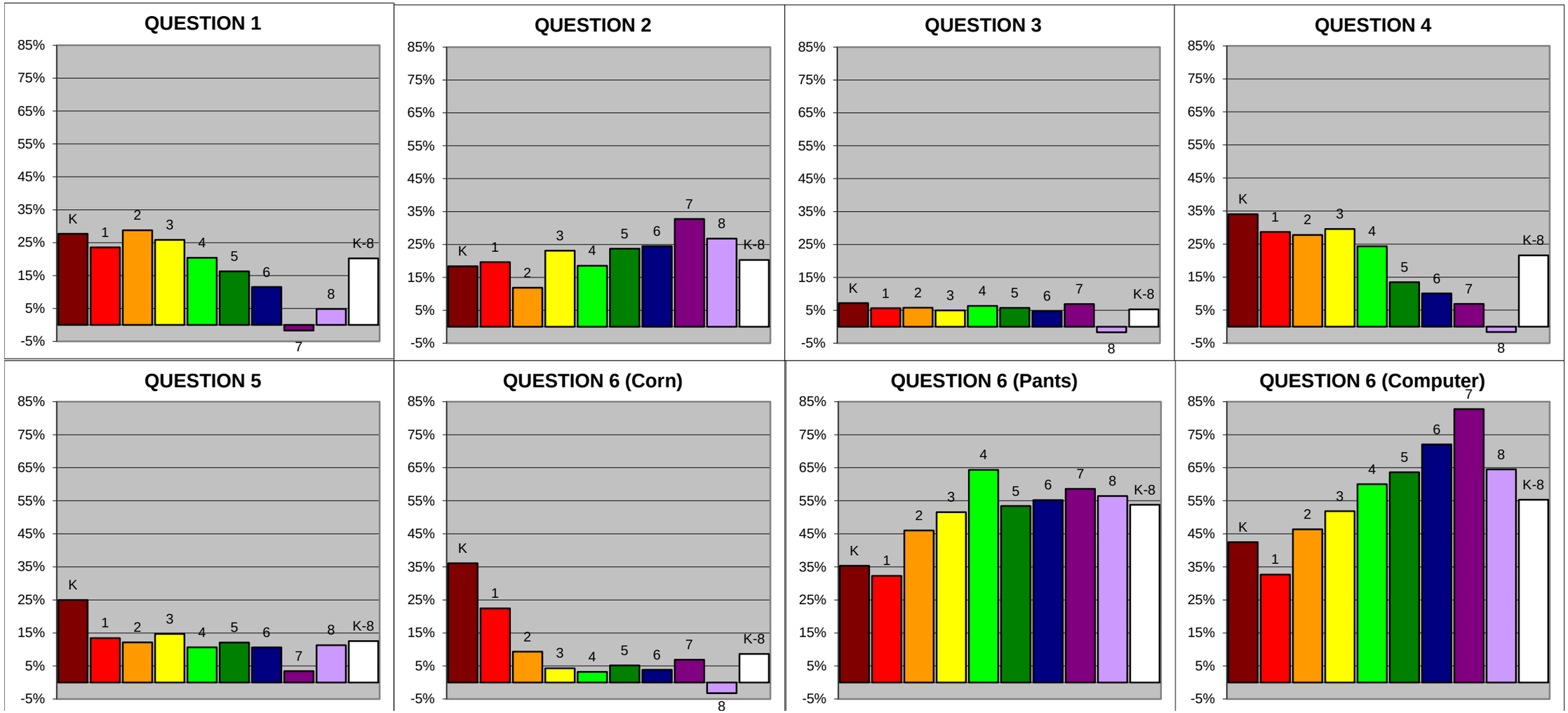
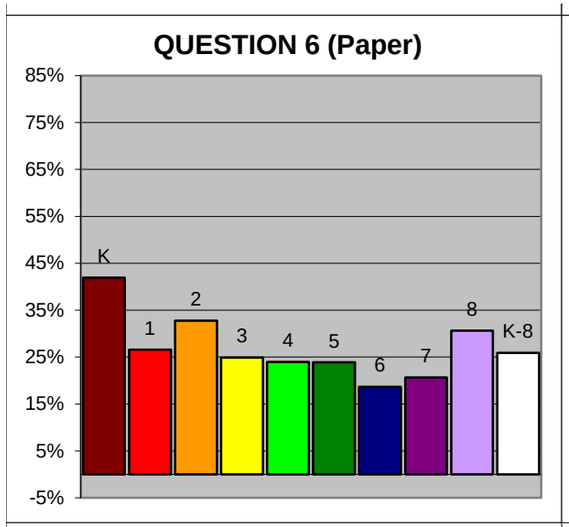
% Increase in "Best" Answers By Grade Level




QUESTION 6 (Paper)
85%
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K
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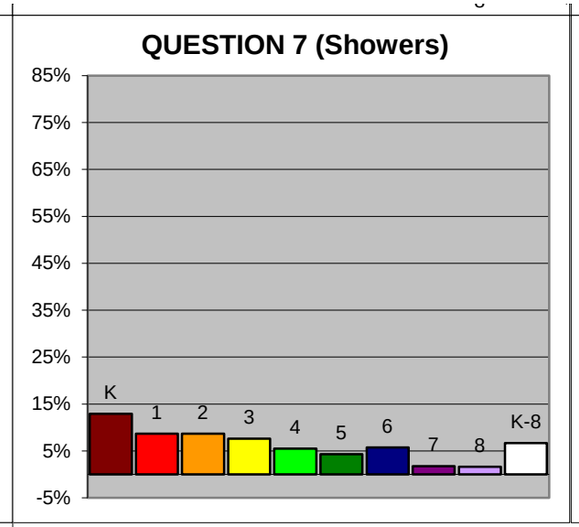
QUESTION 7 (Showers)
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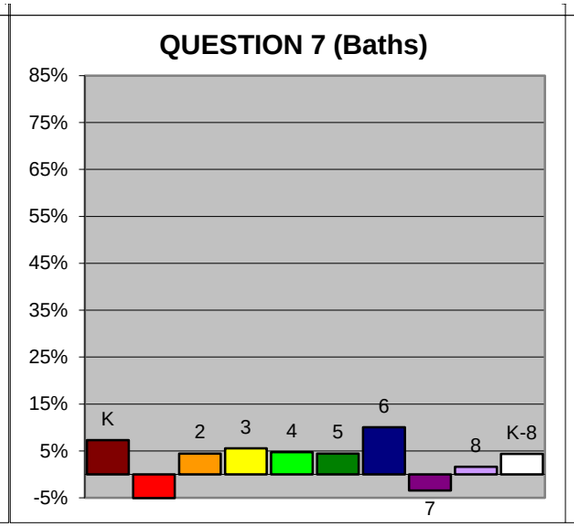
QUESTION 7 (Baths)
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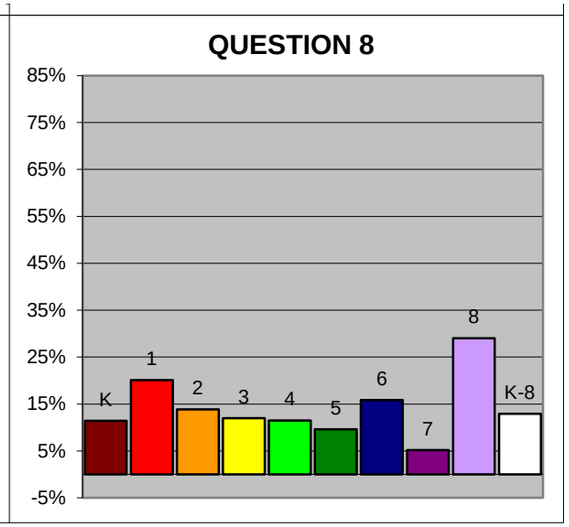
QUESTION 8
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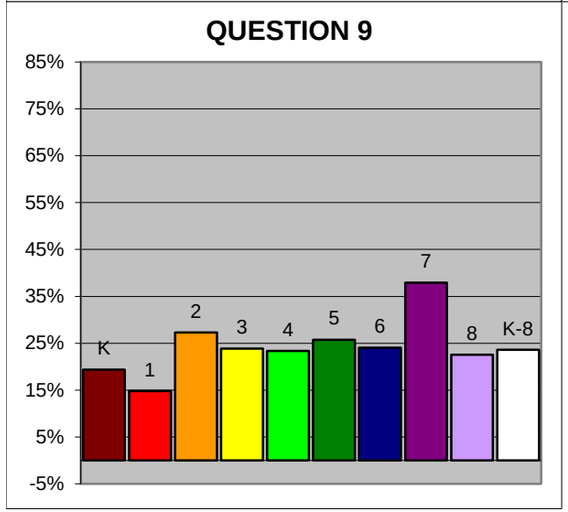
QUESTION 9
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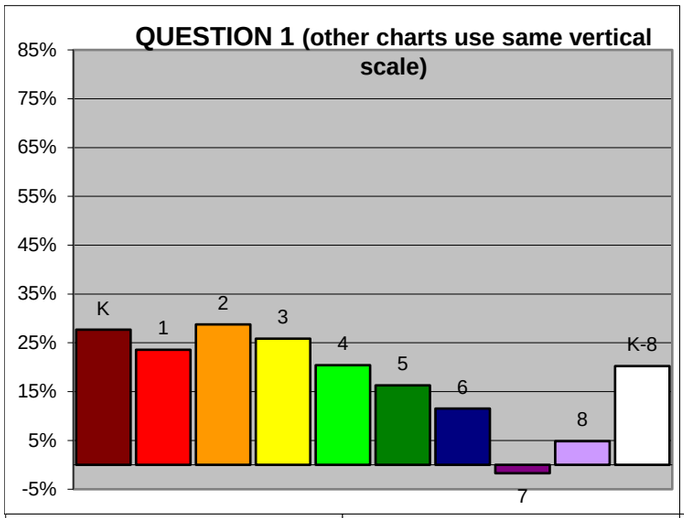
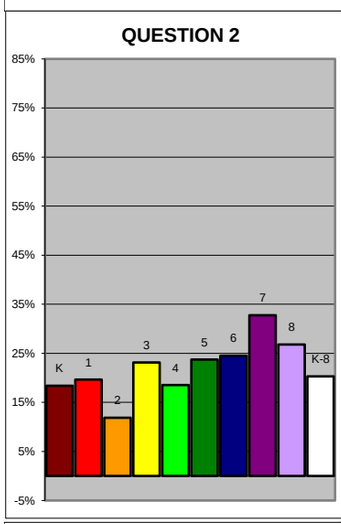
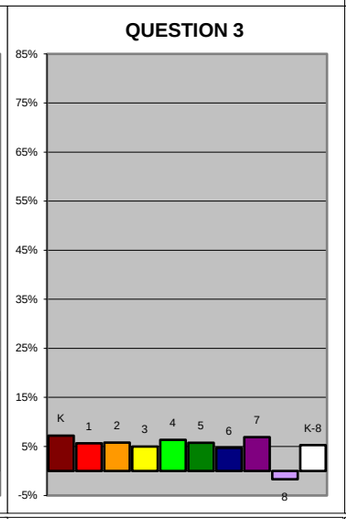
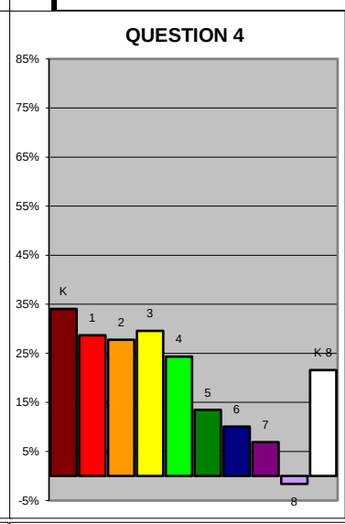
% Increase in "Best" Answers By Grade Level

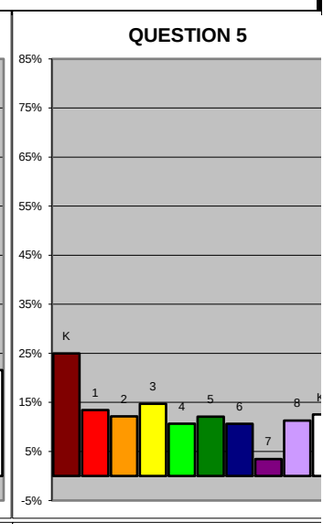


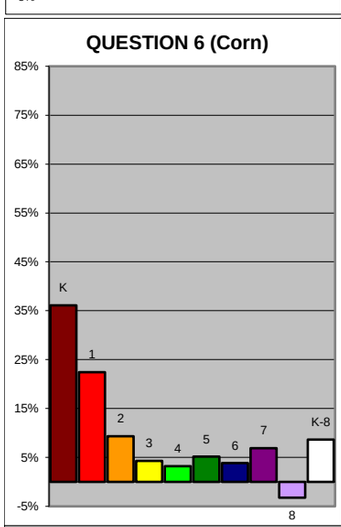
	Question	"Best" Response:
Q1	People use water for l	People should try to u
Q2	Out of ALL the water i	Only a little bit
Q3	Do you let the water r	No
Q4	If the sun heats up a p	It goes into the air
Q5	Some people think we	We need to save wate
Q6 Corn	Does it take water to r	yes
Q6 Pants	Does it take water to r	yes
Q6 Comp	Does it take water to r	yes
Q6 Paper	Does it take water to r	yes
Q7 Showe	How long do you sper	5 min
Q7 Bath	How full do you fill you	Less than halfway
Q8	Which of the following	I believe that the amou
Q9	When do you think lav	At night

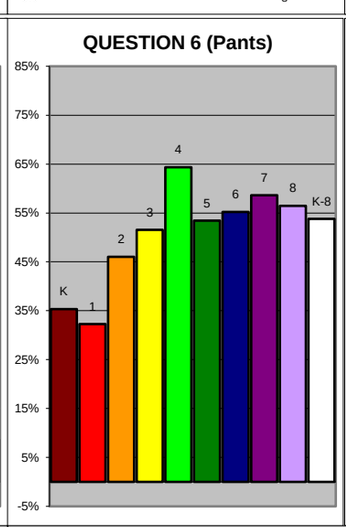


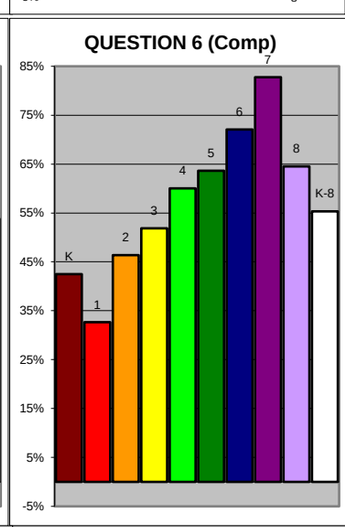


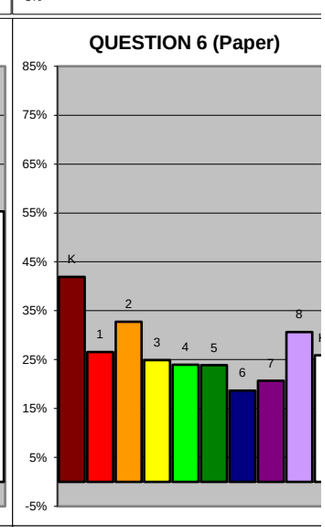


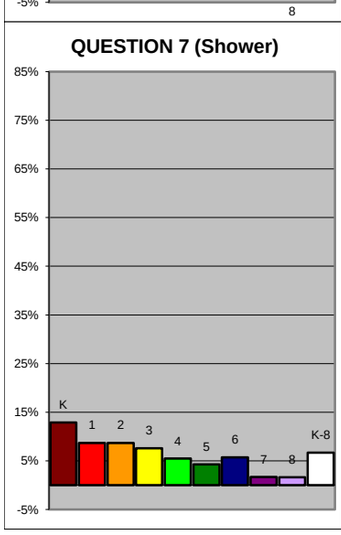


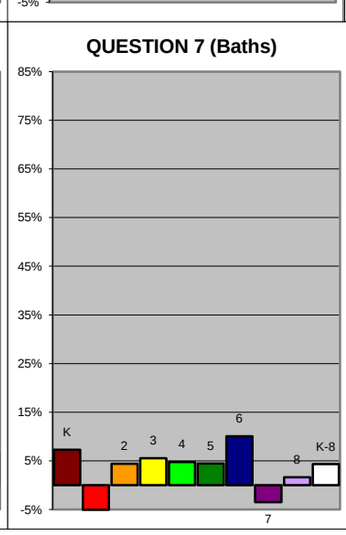


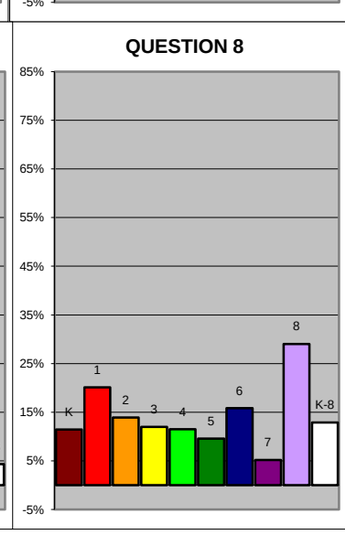


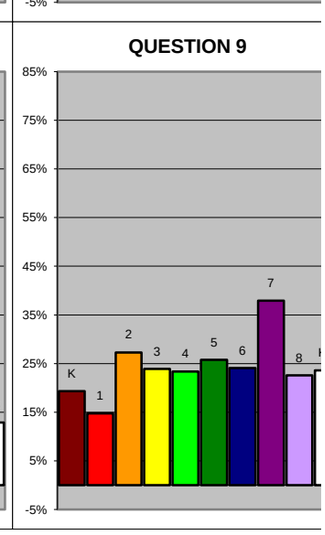












	People use	Out of ALL	Do you let	If the sun h	Some peo	3a. Yes	Does it tak	3c. Yes	3d. Yes
	1	**2**	**3**	**4**	**5**	**6 (Corn)**	**6 (Pants)**	**6 (Comp)**	**6 (Paper)**
% Change	20%	20%	5%	22%	13%	9%	54%	55%	26%
Pre	63%	22%	82%	57%	76%	78%	14%	6%	42%
Post	83%	43%	87%	79%	89%	87%	68%	61%	68%

									Which of tl
7 (Shower)	**7b**	**7c**	**7d**	**7e**	**7 (Bath)**	**7h**	**7g**	**7f**	**8**
7%	1%	-2%	-4%	-4%	4%	1%	-6%	-3%	13%
20%	26%	22%	11%	14%	16%	30%	21%	13%	21%
27%	27%	20%	7%	11%	20%	30%	15%	10%	34%
5min	**10min**	**15min**	**20min**	**25min**	**Less than Halfway**		**More than To Top**		

-3%	-6%	1%	4%
13%	21%	30%	16%
10%	15%	30%	20%
To Top	**More than Halfway**		**Less than Half**

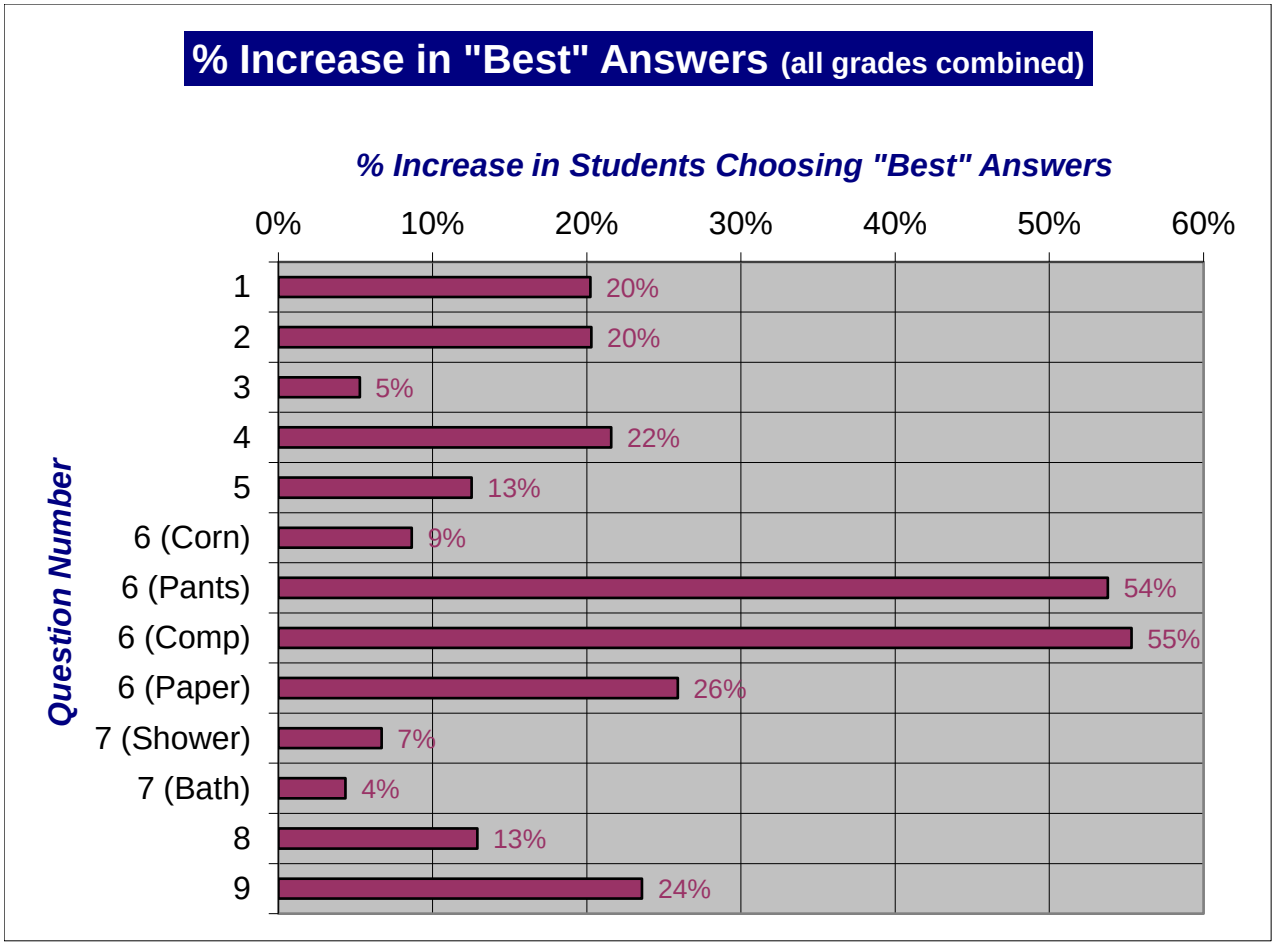
When do you think the lawn at your house will get watered this summer (most of the time)? ANSWER: At night

9

24%

18%

42%


% Increase in "Best" Answers (all grades combined)
% Increase in Students Choosing "Best" Answers
0%
10%
20%
30%
40%
50%
60%
Question Number
1
2
3
4
5
6 (Corn)
6 (Pants)
6 (Comp)
6 (Paper)
7 (Shower)
7 (Bath)
8
9
20%
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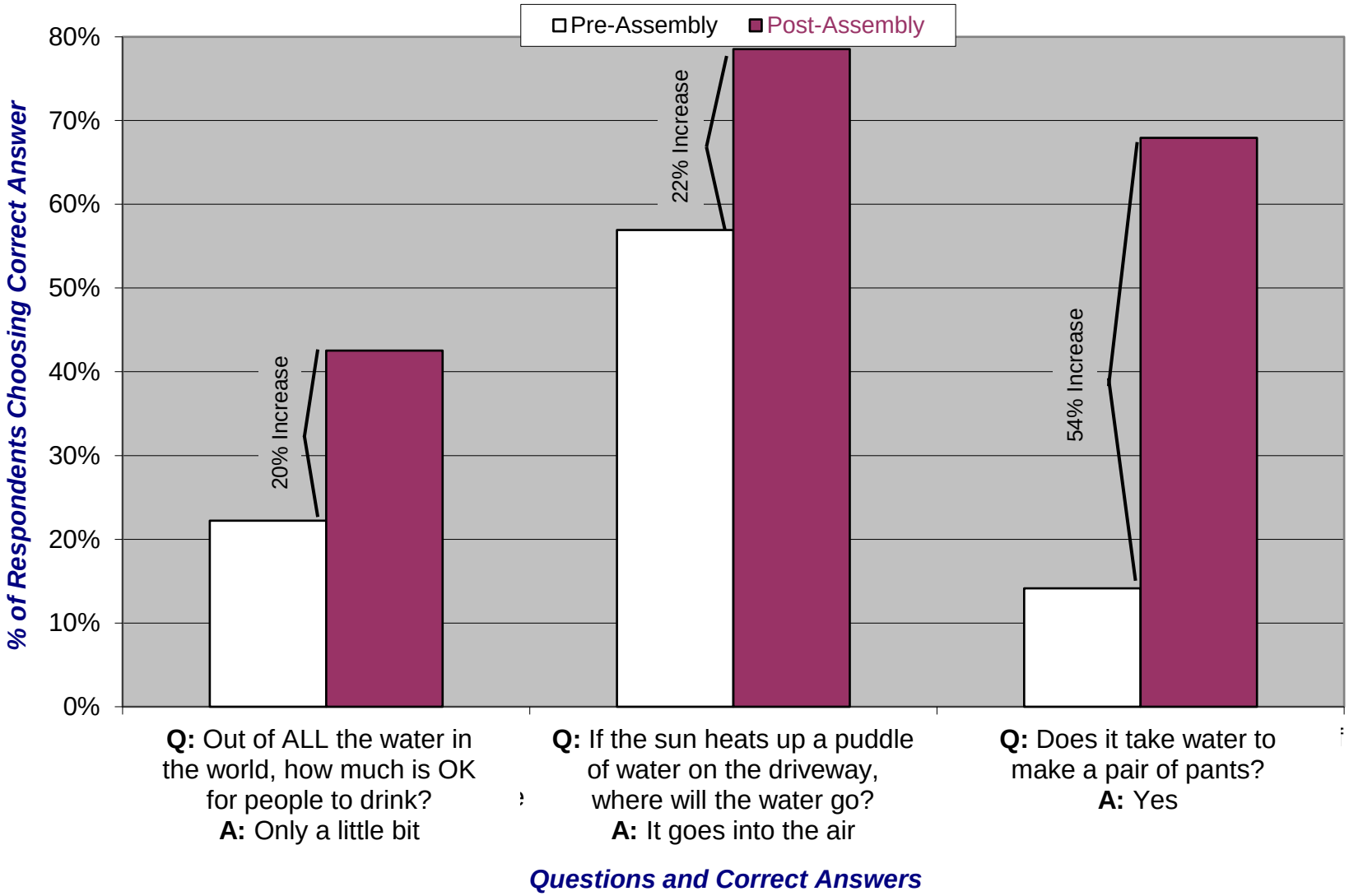
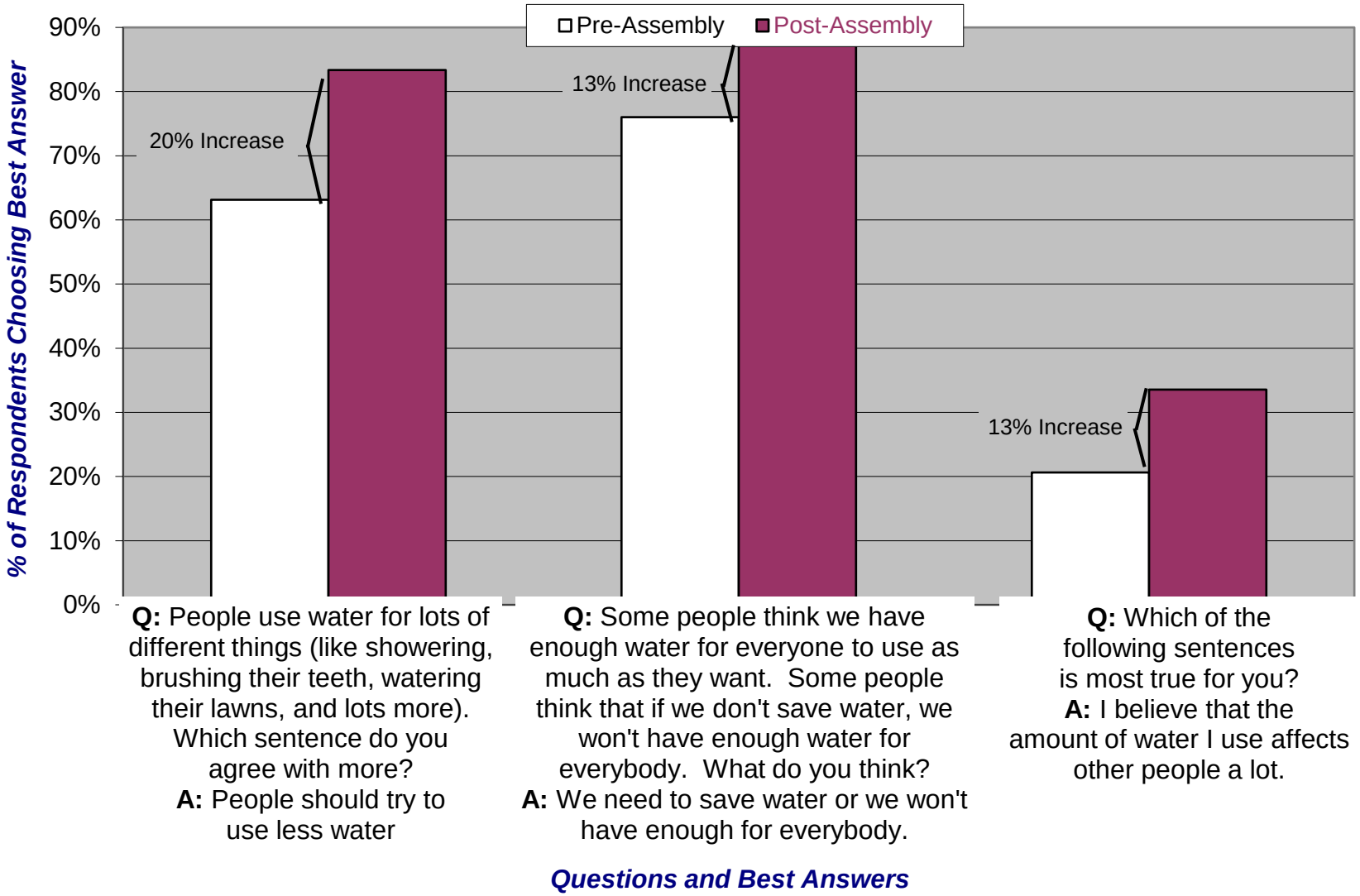
Increase in Student KNOWLEDGE with "The Great Water Mystery"

(a comparison of pre- and post-assembly surveys from 5,200 K-8th graders)



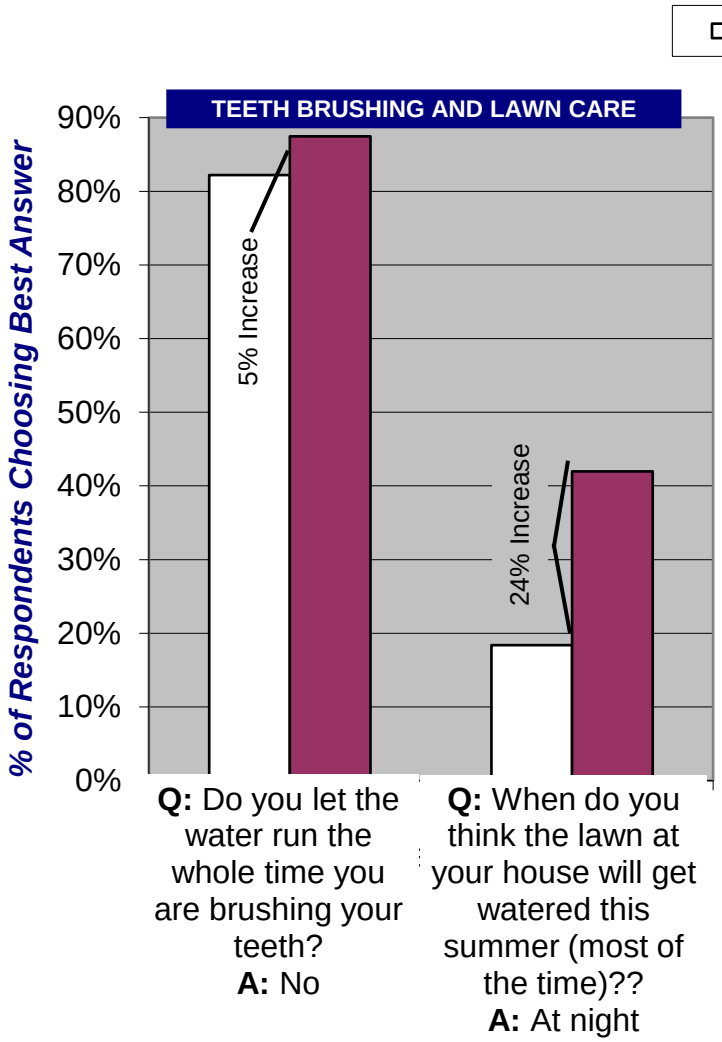
Improvement of Student ATTITUDES with "The Great Water Mystery"

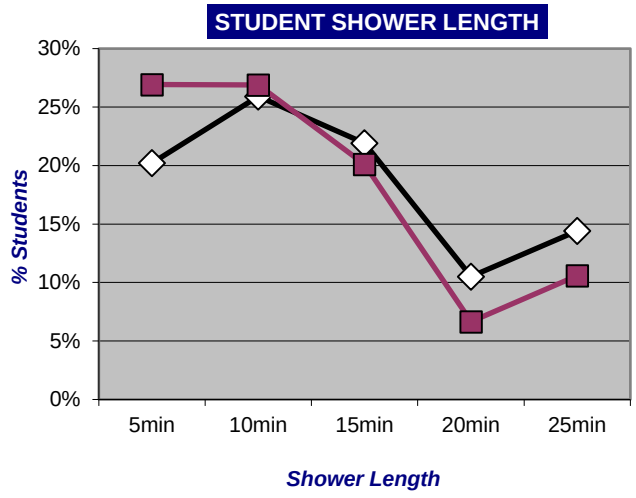
(a comparison of pre- and post-assembly surveys from 5,200 K-8th graders)

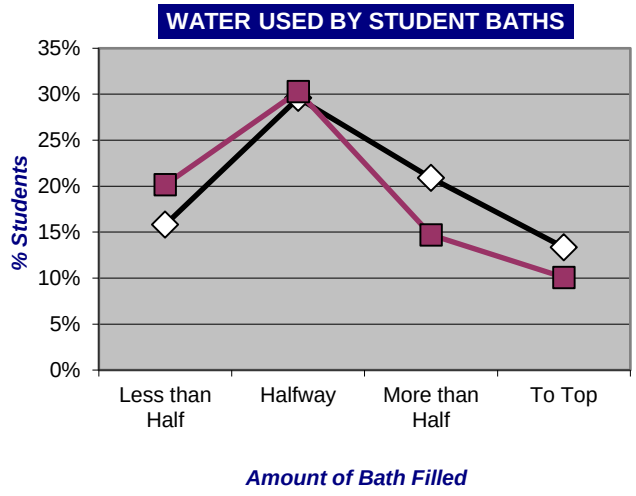


Improvement in Student BEHAVIORS with "The Great Water Mystery"

(a comparison of pre- and post-assembly surveys from 5,200 K-8th graders)







Q: Do you let the water run the whole time while you are brushing your teeth?
A: No

Q: When do you think the lawn at your house will get watered this summer (most of the time)?
A: At night

CABY Integrated Regional Water Management Group
2014 IRWM Drought Grant Solicitation

Attachment 3: Project Physical Benefits Table 5-- References

Attached are the references that relate to Table 5 Project Physical Benefits Tables for project:

- Greeley Canal Drought Measures Optimization

Canal and Reservoir Feasibility Study Report

Submitted by
Placer County Water Agency

to the
California Department of Water Resources

Pursuant to
Water Conservation Feasibility Study
Grant Contract F63108
(as amended)

DRAFT

pcwa
Placer County Water Agency

DAVIDS
ENGINEERING, INC

May 2005

Canal and Reservoir Feasibility Study Report

Submitted by
Placer County Water Agency

to the
California Department of Water Resources

Pursuant to
Water Conservation Feasibility Study
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DRAFT

May 2005

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Technical Memorandum 2 – Canal Lining Feasibility

I. Purpose of Investigation

Placer County Water Agency's (PCWA) "raw water" conveyance system consists primarily of canals and ditches. Conveyance losses associated with this system are primarily from spillage, seepage and evaporation. The agency has instituted a program for lining the canals and ditches with gunite to reduce seepage losses (and maintenance requirements and costs).

Historically the lining of canals and ditches has been performed based on field observations and the opinions and judgment of field operators and engineering staff. Seepage tests were not performed prior to lining since there was no need to quantify savings.

Through this study, the cost effectiveness of canal lining that has been performed to date was assessed and a basis for selecting and prioritizing canal reaches for future lining was developed.

II. Existing Systems and Operations

PCWA is located on the western side of the Sierra Nevada Mountain Range in California. The agency covers about 1,500 square miles of mountainous terrain. A large portion of the water system was constructed during the California Gold Rush of the 1800's. PCWA provides water for agricultural, industrial and municipal use.

The PCWA distribution system consists of approximately 165 miles of canals, approximately 31% of which have been lined with gunite. The majority of the lining has been performed in the southern portion of the district. Many of the lined sections are short (less than 50 feet long) with lined and unlined sections interspersed. Additionally some have lining on only the downhill side.

PCWA provides water to customers year round. The delivery schedule is broken down into two seasons: High Flow (during the summer from 4/15 – 10/15) and Low Flow (during the winter from 10/15 – 4/15). The High and Low flow deliveries are regulated by switching orifice plates at each delivery point; large orifice plates are used during the High Flow period and small orifice plates are used during the Low Flow period. PCWA takes advantage of the decreased winter demand by scheduling maintenance and lining activities during this period.

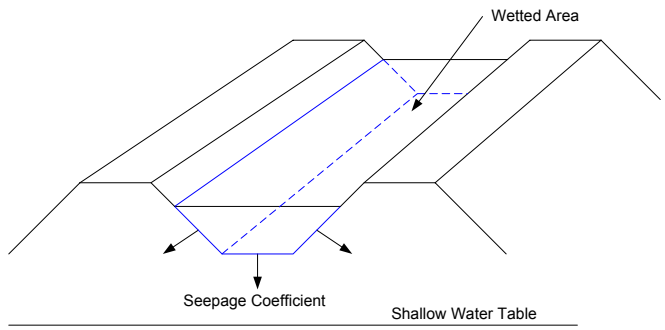
III. Methodology

A. Overview

Water is lost from unlined canals through the soil/water interface. The total amount of water lost to seepage during an irrigation season depends upon the following factors:

- The seepage coefficient (K), typically expressed in units of ft^3/ft^2-day, which represents the average rate of loss per unit of wetted canal area for a specific reach
- The canal wetted area (A), expressed in ft^2, and
- The seepage opportunity time (T), expressed in days.

Figure 1. Conceptual Seepage Diagram



Thus, the volume of seepage (V) in ft^3 for any time interval is computed as:

Equation 1

$$V = K * A * T$$

The seepage coefficient, K, is influenced by many factors, the dominant ones being:

- Soil permeability, which affects how fast water flows through the soil
- Depth to shallow water table, and how this influences "mounding" and subsurface flow of water seeping from canals
- Depth of water in the canal, which relates to the "driving" head
- "Clogging" of the water-soil interface, such as from siltation or biological growth.

These parameters tend to reach steady state conditions within a few days or weeks after canal filling. Once this condition is reached, seepage does not change appreciably with time, but typically varies widely from place to place, because soils, groundwater conditions and clogging tendencies are all spatially variable.

B. Canal Classification

The programmatic approach to canal seepage estimation used in this analysis required that canals be segmented into reaches with similar seepage potential and grouped accordingly. For this analysis the canals were grouped by the two factors that have significant effects on the seepage coefficient and for which data are available. These are the presence of lining and soil permeability.

Due to data limitations, the classification process did not take into consideration other factors that can appreciably affect seepage such as the capacity of the canal, average operating depth, depth to shallow groundwater and possible clogging of the water-soil interface.

1. Permeability Classification

Soils information for the study area was obtained from the Soil Survey of Placer County, California Western Part published by the United States Department of Agriculture, Soil Conservation Service. This information was obtained in both hard copy and GIS compatible format.

The lengths of canals in each soil type were obtained by overlaying the canal information provided by PCWA on the soils map. GIS was used to capture the soils that were overlaid by the canal. A map showing the soil types and canals has been included as Figure 2.

To reduce the soil types into a manageable number of categories, the soils were grouped according to permeability. The soil survey information provides typical permeability rates for each soil including the low, representative and high permeability rates at various depths. These permeability rates are developed using laboratory analysis of the soil and are generally not accurate for assessing the seepage from canals. Therefore, the permeability information was used to categorize the canals, but can not be used to estimate the seepage from the canals.

Using a soils database the representative permeability from the soil layer at 24 inches deep was selected for each soil type. The permeability of the deepest zone was used for soils that were shallower than 24 inches. Some soil types were a mixture of two different soils that were intermixed; these soils had two descriptions provided in the Soil Survey. In this case, information from the most prevalent soil (by percentage provided by the Soil Survey) within the soil type was used.

This preliminary grouping by soil permeability resulted in ten categories, some of which contained very small sections of canal. As a result, these ten categories were reduced into six categories; low, moderately low, moderate, moderately high, high and disturbed[1]. The permeability ranges for these groupings are provided in Table 1. Seepage tests were performed on these categories to establish an estimate of the seepage coefficients for unlined sections of canals in these soil permeability categories.

Table 1. Soil Survey Permeability Ranges of Canal Categories

Canal Categories	Permeability (in/day)	Length (miles)
Low	.21-3	38.7
Moderately Low	7.7-9	22.6
Moderate	26-31	35.6
Moderately High	71-95	48.2
High	242-480	1.6

2. Lined Canal Locations

The locations of lined canals were used to asses the water savings achieved by historical lining projects and prioritize the future lining of canal reaches. To establish a seepage coefficient for the lined sections of canal ponding tests were performed on reaches that had gunite with minimal cracking. These tests provided seepage coefficient estimates for lining in good condition, however, variations in the thickness of gunite applied and the condition of the lining can influence the seepage through lined canals.

[1] Disturbed soils occur when the native soil profile has been disrupted due to either construction or a similar activity. In these cases, the soil survey does not provide permeability information.

Figure 2. PCWA Soil Types

Davids Engineering

March 26, 2005
Data PCWA, CA DWR, USDA-NCRS

2 1 0 2 4 Miles

Legend

PCWA Boundary

Canals

- Unlined
- Gunite, good
- Gunite, fair
- Gunite, poor

N E S W

Soil Types

- ALAMO VARIANT CLAY
- ALAMO-FIDDYMENT COMPLEX
- ANDREGG-SHENANDOAH COMPLEX
- AUBURN-ARGONAUT COMPLEX
- COARSE SANDY LOAM: ANDREGG; CAPERTON; CAPERTON-ANDREGG
- COBBLY LOAM: AIKEN; COHASSET; INKS; MARIPOSA; MCCARTHY; REDDING AND CORNING
- COMETA-FIDDYMENT COMPLEX
- DAMS
- FIDDYMENT-KASEBERG LOAMS
- HORSESHOE GRAVELLY LOAM
- LOAM: AIKEN; BOOMER; COHASSET; FIDDYMENT; JOSEPHINE; KILAGA LOAM
- INKS-EXCHEQUER COMPLEX
- MARIPOSA-JOSEPHINE COMPLEX
- PARDEE-RANCHOSECO COMPLEX
- PITS AND DUMPS; PLACER DIGGINGS; RIVERWASH
- ROCK OUTCROP
- RUBBLE
- SANDY LOAM: COMETA; RAMONA; SAN JOAQUIN; SIERRA
- SILT LOAM: AUBURN; AUBURN-SOBRANTE; SAN JOAQUIN; SOBRANTE SILT LOAM
- STONY SANDY LOAM: BOOMER; DUBAKELLA ; EXCHEQUER
- URBAN LAND COMPLEX
- WATER
- XEROFLUVENTS
- XERORTHENTS

The lined canal reaches were determined using information provided by PCWA. PCWA provided a map showing the locations of lined canals and the relative condition of the lining. Lining condition was rated as good, fair or poor.

C. Seepage Coefficient Estimate Methods

For each canal category a minimum of one seepage test was performed. The seepage coefficient estimates for this analysis was performed using the following two methods:

1. **Ponding tests** – A program of ponding tests was performed along the canal reaches in the permeability classifications selected. A sufficient number of tests should be performed to be representative of the variability in canal conditions.
2. **Inflow/outflow testing (instantaneous)** – A program of inflow/outflow measurement designed and conducted specifically to determine seepage losses in the canal reach proposed for lining may be acceptable. The reliability of this type of testing is evaluated by comparing the magnitude of the measurement error to the computed seepage rate.

1. Ponding Method Procedures

The accuracy of seepage rates estimated by the ponding method are highly dependent on the attention given to conducting the tests. Ponding tests were performed in accordance with the guidelines published by the Bureau of Reclamation in Bulletin No. 65 (1968). The following parameters were taken into consideration when performing the ponding tests.

- **Length –** The length of reach the ponding test is performed on it an important consideration. The length of canal sections tests was maximized to ensure that leakage through the upstream and downstream dam was minimized. However, the length of the canal reaches available was constrained by numerous factors. The mountainous terrain and the resulting slope of the canals limited the length of canal sections that could be tested. Additionally, the ponding test sections were chosen so that there were no deliveries, spill or other leaks from the section. Longer reaches would have been ideal, but the tests had to be performed within the boundaries of the physical constraints.
- **Location –** The locations of the ponding tests were determined by the category of the canal section, ability to divert upstream flows after the canal section was filled, and the ability to interrupt flows during the ponding test.
- **End Structures –** Leaking from the ends of the pond can introduce error into the ponding test. The canal sections were blocked using a mixture of soil, sand bags and plastic sheeting. The ponding tests were not started until the dams had been sufficiently constructed so that there was no evidence of water leaking through the barriers.
- **Water Surface Elevations –** Changes in pond depth were measured using a pressure transducer equipped with a data logger. Because the canal sections were relatively short and were performed when water stacking from wind was not a possibility, one data logger per stretch was used. Measurements were logged on 15 minute intervals and were recorded to the nearest 0.01 ft.

- **Wetted Perimeter –** The average wetted perimeter was calculated by measuring the along the soil-water interface at different stations along the canal reach. Cross sections were measured every 10 ft and at every point of change in canal geometry. The drop in pond water surface elevation and resulting change in wetted perimeter was taken into consideration in the seepage coefficient calculations.
- **Test Redundancy –** The results from a single qualifying ponding test were required to be used in this analysis. Ponding tests that resulted in poor results including water surface elevations that rose during the test were removed from the data set.
- **Evaporation –** Evaporation during the ponding tests periods was reviewed using CIMIS station data. Due to the location of the ponding tests and the time of year, the evaporation during the ponding tests was insignificant.
- **Depth –** The average starting depth in the pond was slightly higher than normal operating depths. The slope of the canals created a starting depth that was higher than normal on the downstream end and lower than normal on the upstream end.
- **Measurement –** Measurement of the rate of drop in the water surface began after the pond is filled, the gages had been set and the recorder was operating
- **Duration –** Ponding tests were conducted for 6 to 12 hrs. . In most ponding tests, the pond will drop quickly during the initial stages of the test and will then level off and remain relatively constant. Data from the ponding tests was reviewed for this phenomenon; however, the change in seepage rates was not evident during the ponding tests.

2. Inflow/Outflow Method Procedure

The inflow/outflow method was performed on one canal reach. In the inflow/outflow method the seepage is calculated by finding the difference between the measured inflow and outflow, including evaporation. The equation used to calculate seepage is as follows:

Equation 3

$$Seepage = Inflow - Outflow - Evaporation$$

The inflow/outflow method for determining seepage is highly sensitive to inaccuracies in flow measurement because the seepage volume is often of a magnitude similar to flow measurement inaccuracies. The following criteria were used on the inflow/outflow test:

- **Steady-state Flow -** To eliminate the effect of unsteady flow and bank channel storage on the accuracy of the test, the stage of the canal should be kept constant throughout the test period. To ensure that bank storage was accounted for in the seepage coefficient calculation the inflow/outflow test was performed for a period of several months.
- **Single Inflow -** The canal reach had a single, measured inflow. However, runoff from the surrounding watershed affected the quality of the test.
- **Single Outflow -** The canal had one primary quantifiable outflow that was measured. However, several smaller spill sites with leaking weir boards were noted along the canal stretch. These spill sites can cause the seepage coefficient

to be overestimated. Due to the small flow rates through the canal and the small amount of seepage that typically occurs, these unmeasured outflows introduce a large amount of error into the seepage coefficient determination.

- **Flow Measurement Method –** Flow measurement structures were placed in the canal section. These structures provide accurate flow measurements and allow the tests to be repeated throughout the season to verify the seepage rates.
- **Deliveries –** There were three metered deliveries along the canal reach. The meters were installed on September 27, 2004. The first meter reading was performed on February 28, 2005. Following this reading, the meter reading frequency was increased to weekly, daily and multiple times per day with a final reading on March 11, 2005.
- **Test Redundancy -** A minimum of three periods of time should be analyzed. Due to the errors that can occur in inflow/outflow tests, a single inflow/outflow test is not sufficient. Due to errors caused by stormwater runoff and seepage through the canal banks due to rainfall and the infrequency of the meter readings, there was only one portion of the test that could be used for the seepage study.
- **Seepage Losses to Error Ratio –** To provide sufficiently accurate estimates of seepage coefficient, the seepage losses have to be much greater than the error in the inflow/outflow measuring devices. If seepage rates are small compared to the inaccuracy in measurement associated with the flow measurement devices, the seepage can be masked by the inaccuracy. As a rule of thumb, seepage losses should be 5 times greater than the inaccuracy in the measurement devices. The seepage loss to inaccuracy ratio for this test does not pass this requirement.

Due to the test not meeting all of the requirements for a successful inflow/outflow test, the test does not provide an accurate assessment of seepage. Future seepage investigations performed by the Agency should be performed using the ponding method. This method provides more accurate assessment of seepage coefficients and is less prone to accuracy problems than the inflow/outflow test.

IV. Findings

A. Seepage Estimates

Two methods of determining seepage estimates were selected for this study: ponding tests and inflow/outflow tests. Ponding tests are generally considered to be the most accurate method of determining seepage. Inflow/outflow tests are less accurate than ponding tests.

1. Ponding Method

Ponding tests were attempted on eleven canal reaches. Nine of these tests provided acceptable results that can be used to estimate the seepage coefficient. Two test reaches were not properly sealed during the tests and had unmeasured inflows. These tests could be not used in developing the seepage estimates.

Although more tests were scheduled, rainfall events prevented these tests from being completed in time for inclusion in this study. Additional ponding tests would lead to increased confidence in the estimated seepage coefficients for the various canal categories.

Locations of the acceptable ponding tests are shown in Figure 3. The seepage coefficients for the acceptable ponding tests are shown below.

Table 2. Ponding Test Results

Test Number	Canal	Canal Category	Seepage Coefficient from Ponding Test (ft^3/ft^2-day)
1	Boardman 1	Lined	0.064
2	Shirland	Lined	0.022
3	Caperton	Low	0.014
4	Penryn	Moderately Low	0.16
5	Upper Bowman	Moderate	0.36
6	Bowman Feeder	Moderate	1.7
7	Stahlman	Moderately High	0.050
8	Boardman 2	Moderately High	0.33
9	Antelope	High	0.073

As shown in the seepage coefficient table, there is a substantial variability between seepage coefficients for canals within the same permeability categories. The variability is not unexpected due to the influence of other factors that are not taken into consideration in the canal categories. The graphical representation of the ponding test results is provided in Figure 4**.**

The results from the Moderate, Moderately High and High categories show no clear trend between the results. Because the results from these three categories are grouped around a common average, these categories have been combined into one category designated Moderate-Moderately High-High (M-MH-H) for the analysis of cost effectiveness of historical lining and the prioritization of future lining efforts.

The average of the test results was calculated for the categories that had more than one test performed. The resulting seepage coefficients for the soil categories are shown in Table 3.

Figure 3. Seepage Test Locations

Davids Engineering

March 26, 2005
Data PCWA, CA DWR, USDA-NCRS

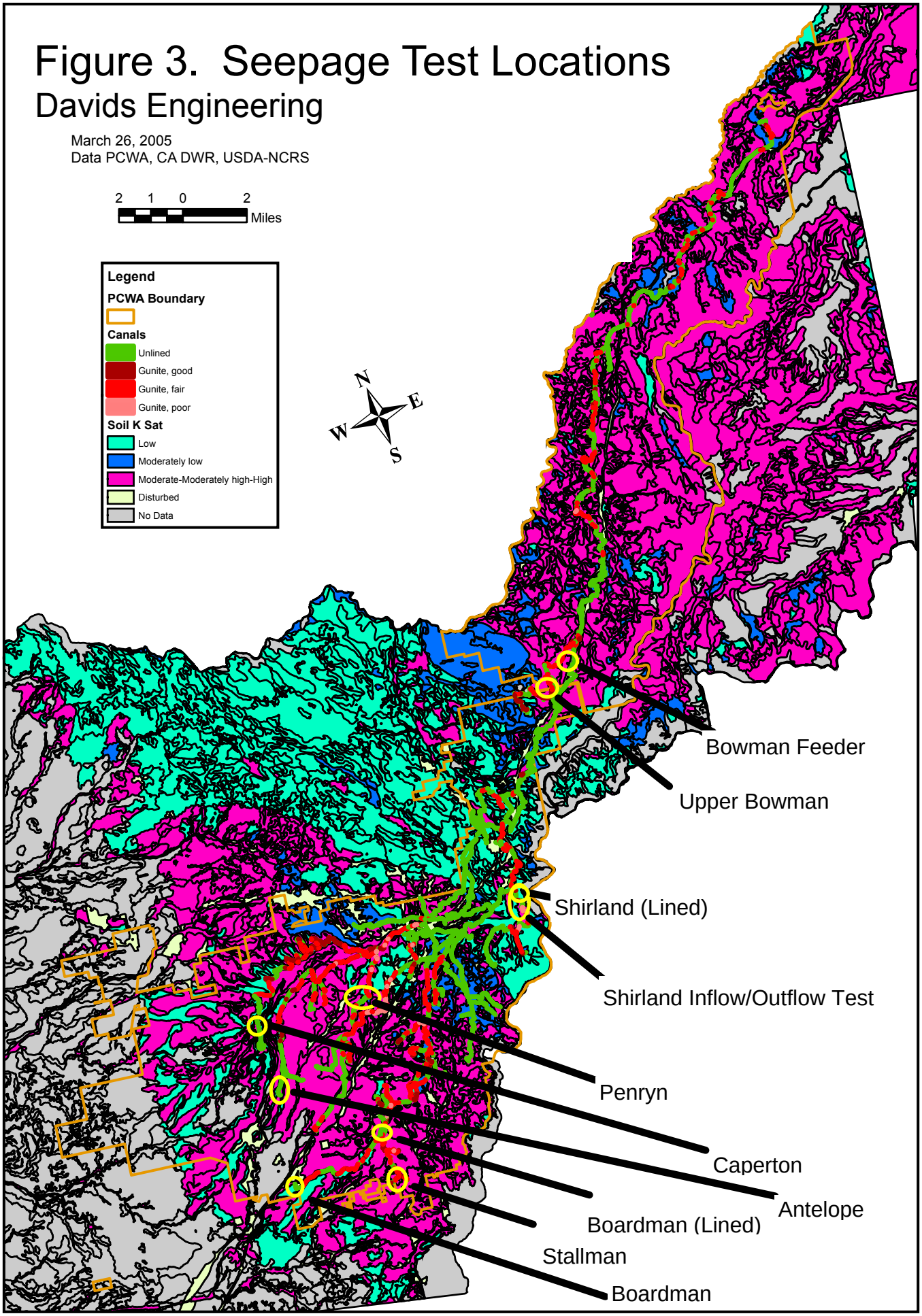


Figure 4. Ponding Test Results

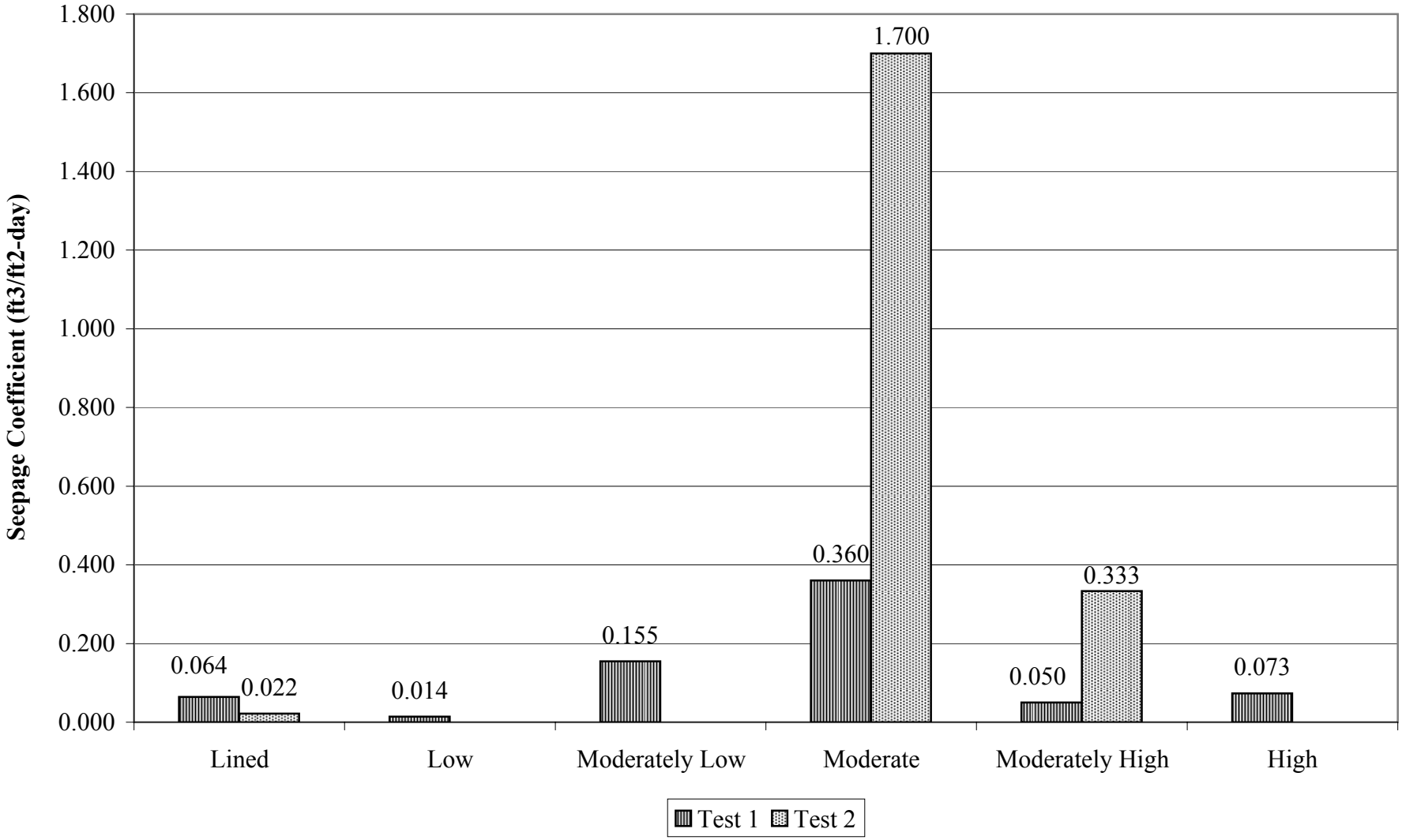


Table 3. Permeability Category Seepage Test Summary

Permeability Category	Number of Tests	Maximum Seepage Coefficient (ft^3/ft^2-day)	Minimum Seepage Coefficient (ft^3/ft^2-day)	Average Seepage Coefficient (ft^3/ft^2-day)
Lined	2	.064	0.22	0.043
Low	1			0.014
Moderately Low	1			0.16
M-MH-H	5	1.7	0.050	0.50

2. Inflow/Outflow Method

An inflow/outflow test was performed on the Shirland Canal. The canal reach selected was approximately 3 miles long and consisted of both lined and unlined sections. Flow measurement stations were installed at the head and tail of the system. The canal section had three customer turnouts that were installed with meters.

Data was collected from the upstream and downstream flow measurement stations from September 27, 2004 to March 28, 2005. Due to rainfall events, the downstream gage had higher flow readings than the upstream gage on several occasions. Flow measurements from this time period are shown in Figures 5-8.

Meter readings from the three turnouts equipped with flow meters were obtained on a more frequent basis between 3/1/05 and 3/11/05. Deliveries to customers were calculated using the meter reading information. Deliveries between meter readings were assumed to be constant. The upstream flow rate was adjusted downward using the delivery information. Adjusted upstream and downstream flows during this period are shown in Figure 6.

Precipitation during the early portion of this period caused the downstream flows to be greater than the upstream flows. Inflows caused by rainfall events can not be quantified. Accurately measurement of the seepage from the canal requires that all inflows and outflows be quantifiable. Therefore, a shorter period of time where the upstream flows are greater than the downstream flows was selected from Figure 6 time period to eliminate the unmeasured inflows caused by precipitation (Figure 7).

The inaccuracies associated with the open channel measuring devices used on the Shirland Canal are 5% to 10%, as provided by Watermark Engineering. That is, the actual flows are within +/- 5% to 10% of the measured flows. Essentially, there is an error band for each measurement that the true flow value resides in. This error is shown graphically by the bars on Figure 8.

The error bands of the upstream and downstream measurements overlap; therefore, it is impossible to determine if differences in upstream and downstream flows are due to canal seepage or from measurement errors. The overlap of flow measurement errors occurs frequently with inflow/outflow seepage studies.

Figure 5. Flow Measurements from Shirland Canal Inflow/Outflow Test (9/27/02 to 3/28/02)

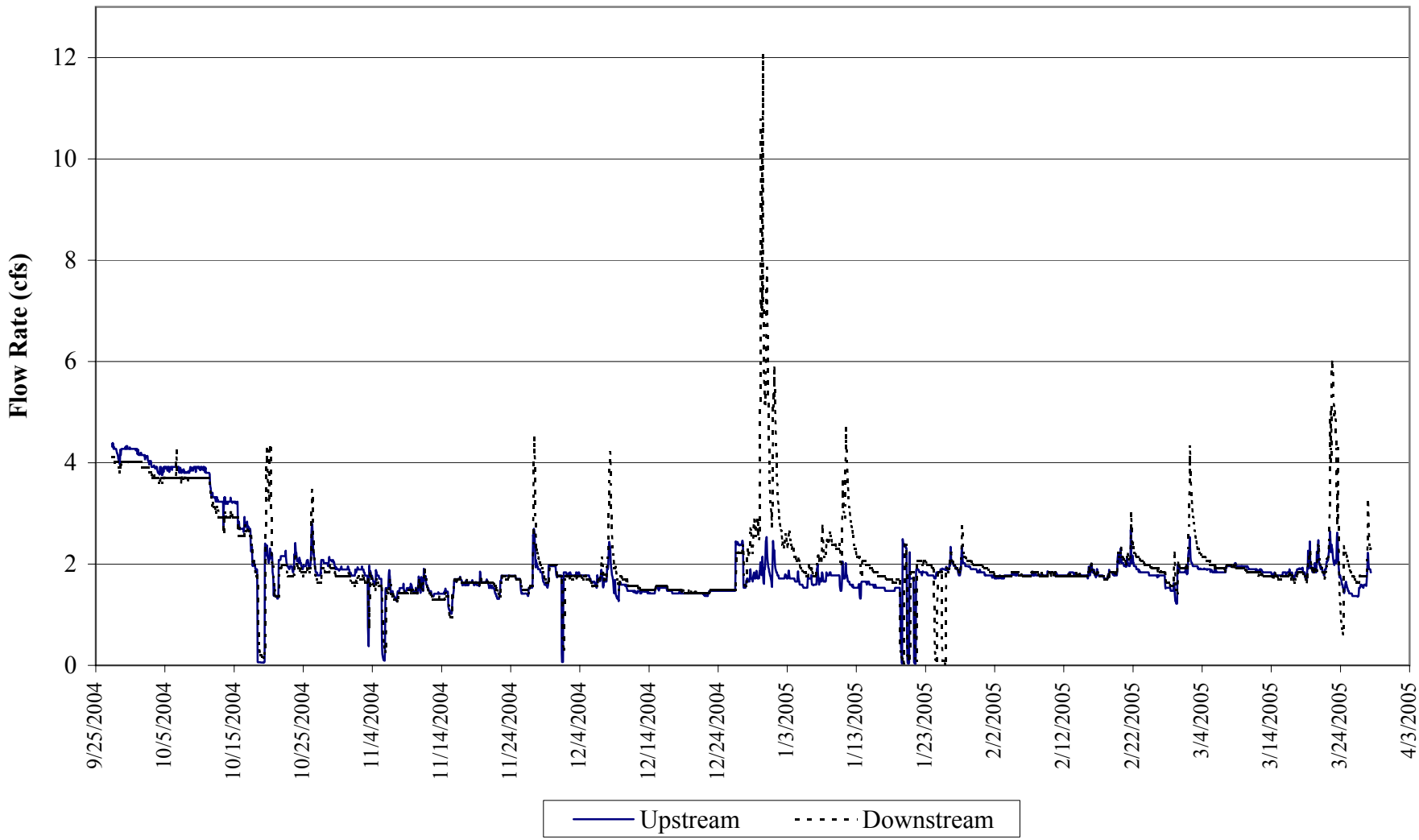


Figure 6. Flow Measurements from Shirland Canal Inflow/Outflow Test
(3/1/05 to 3/11/05)

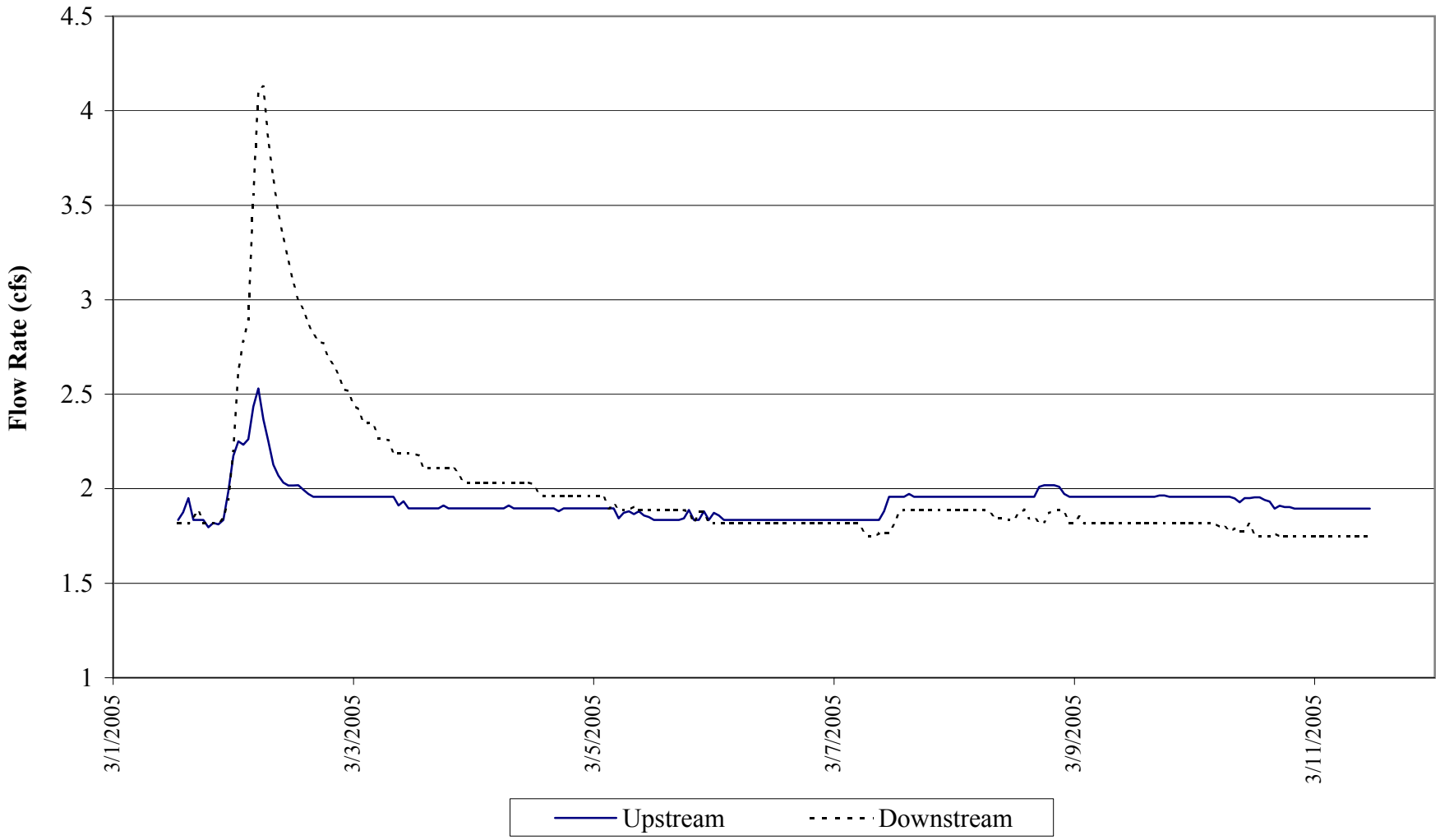


Figure 7. Flow Measurements from Shirland Canal Inflow/Outflow Test
(3/9/05 to 3/11/05)

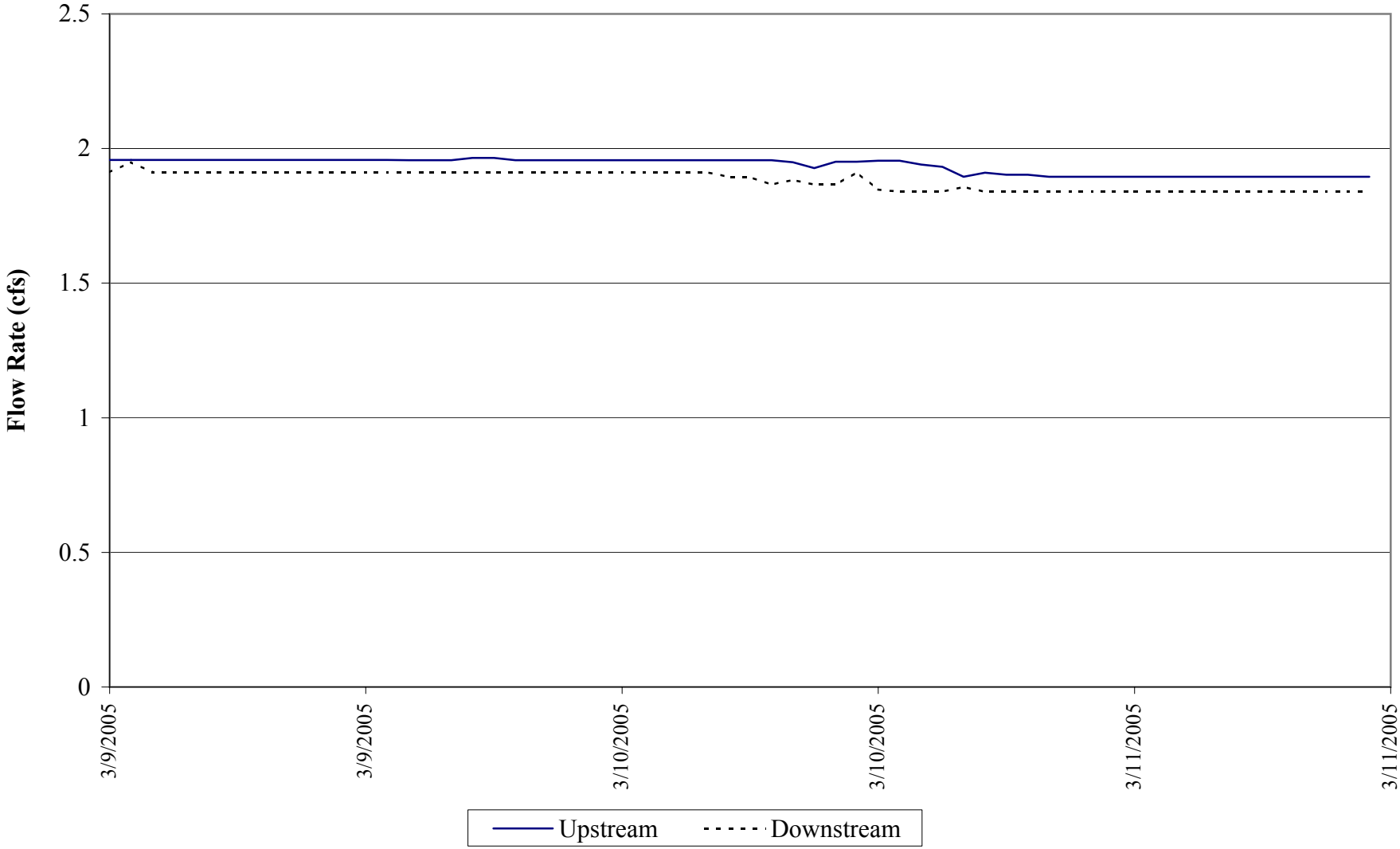
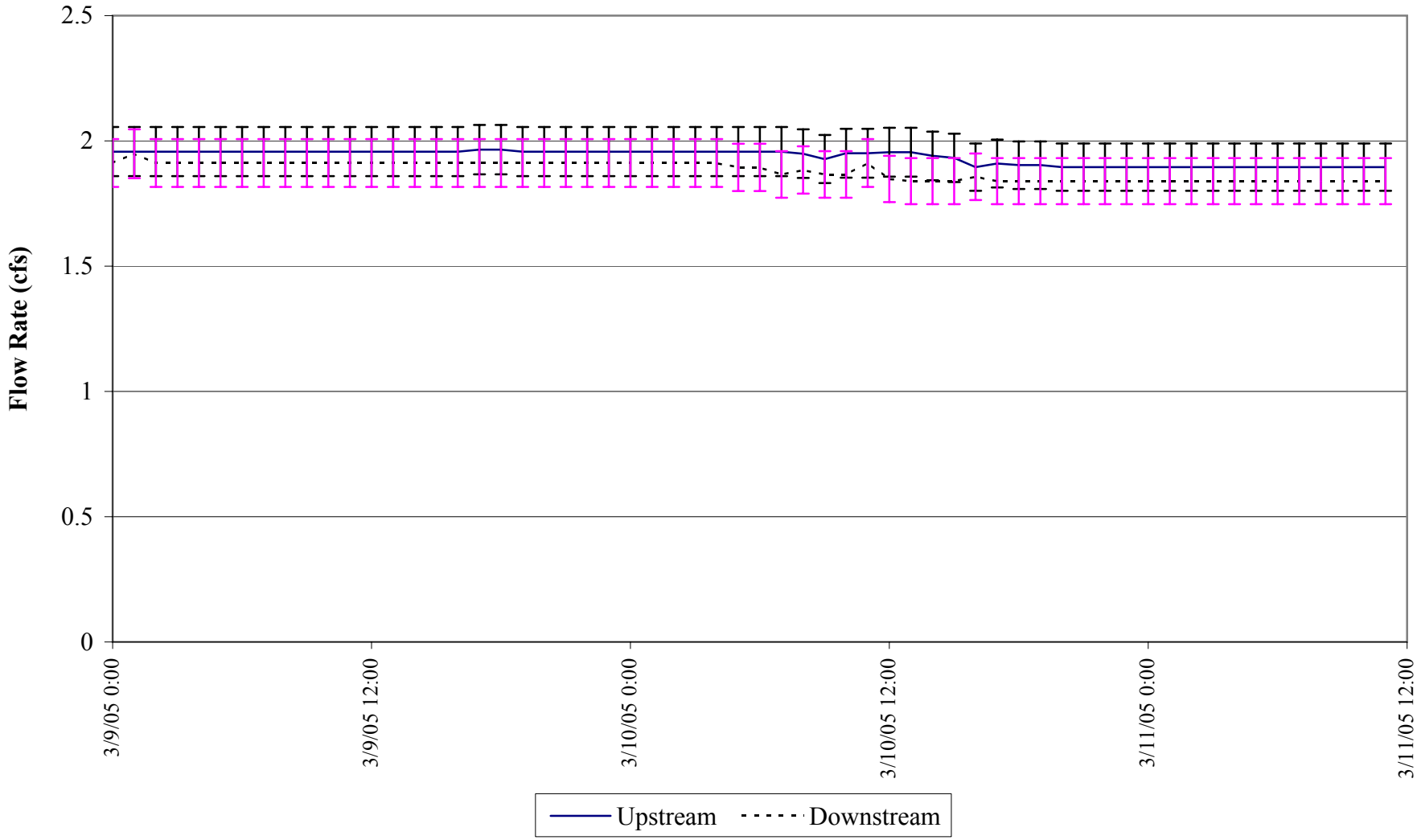


Figure 8. Flow Measurement and Associated Error from Shirland Canal Inflow/Outflow Test (3/9/05 to 3/11/05)



B. Existing Canal Lining Effectiveness

An assessment of canal lining effectiveness requires two factors to be considered. The first is to develop an estimate of the amount of water saved by lining the canal reaches. The second is the cost associated with the lining.

1. Canal Lining within Permeability Categories

The location of lined canals relative to the permeability category designations was determined to evaluate where canal lining had been most frequently performed. The percentage of the canal lining performed in each permeability category is shown in the Figure 9.

As shown in the Figure 9, PCWA has focused its canal lining activities on the canals located in the higher permeability soils. Approximately 60% of the canal lining has occurred on canals located in M-MH-H soils. Approximately 26% of the canal lining has occurred in canals located in Low permeability soils.

The percent of lined canal in each category provides an indication of how effective the PCWA canal lining has been at targeting reaches with higher seepage coefficients. To determine how much of each category has been lined, the lined and unlined percentages of each category were calculated. The results are shown in Figure 10.

2. Historical Canal Lining Effectiveness

The annual water savings achieved by the PCWA canal lining program was calculated based on difference between the seepage coefficients established for the permeability categories that contained the lined canals and the seepage coefficient established for lined canals.

The seepage rate for the disturbed soils category was not established by ponding tests. The disturbed soils category consists of different types of soil with different permeability rates that have been grouped into one category because the soil horizons have been disrupted due to construction or mining activities. The seepage coefficient of the reaches is inconsistent due to variations in the soil types. To assess seepage reduction opportunities from lining canals in these soils a ponding test must be performed on the reach to be lined.

The analysis of water savings from lining activities provided in this report is a conservative estimate of water savings. Actual water savings achieved through lining are most likely greater than the estimate provided in this report because most of the lining activities have focused on canals with noticeable localized seepage.

The Low permeability category had a seepage rate that was less than the seepage through lined canals. In this case, the water conserved through lining was considered to be zero. Although lining of these reaches is assumed to have provided minimal water savings, localized areas of high seepage may have been significantly reduced due to lining activities. Water savings from lining the canals along with estimated costs are provided in Table 4.

Figure 9. Lengths of Lined Canals by Seepage Category

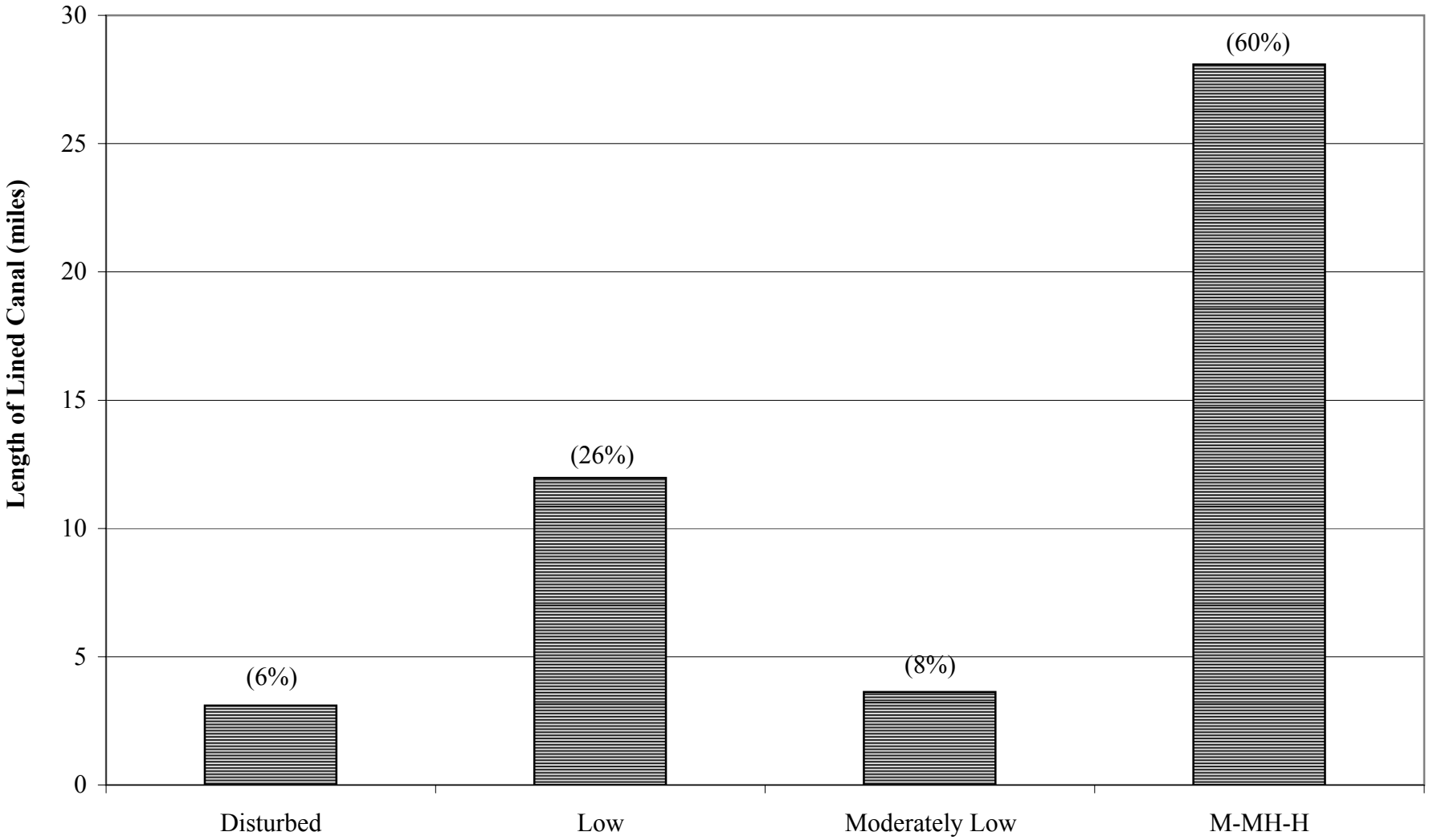


Figure 10. Length of Lined and Unlined Canals by Seepage Category

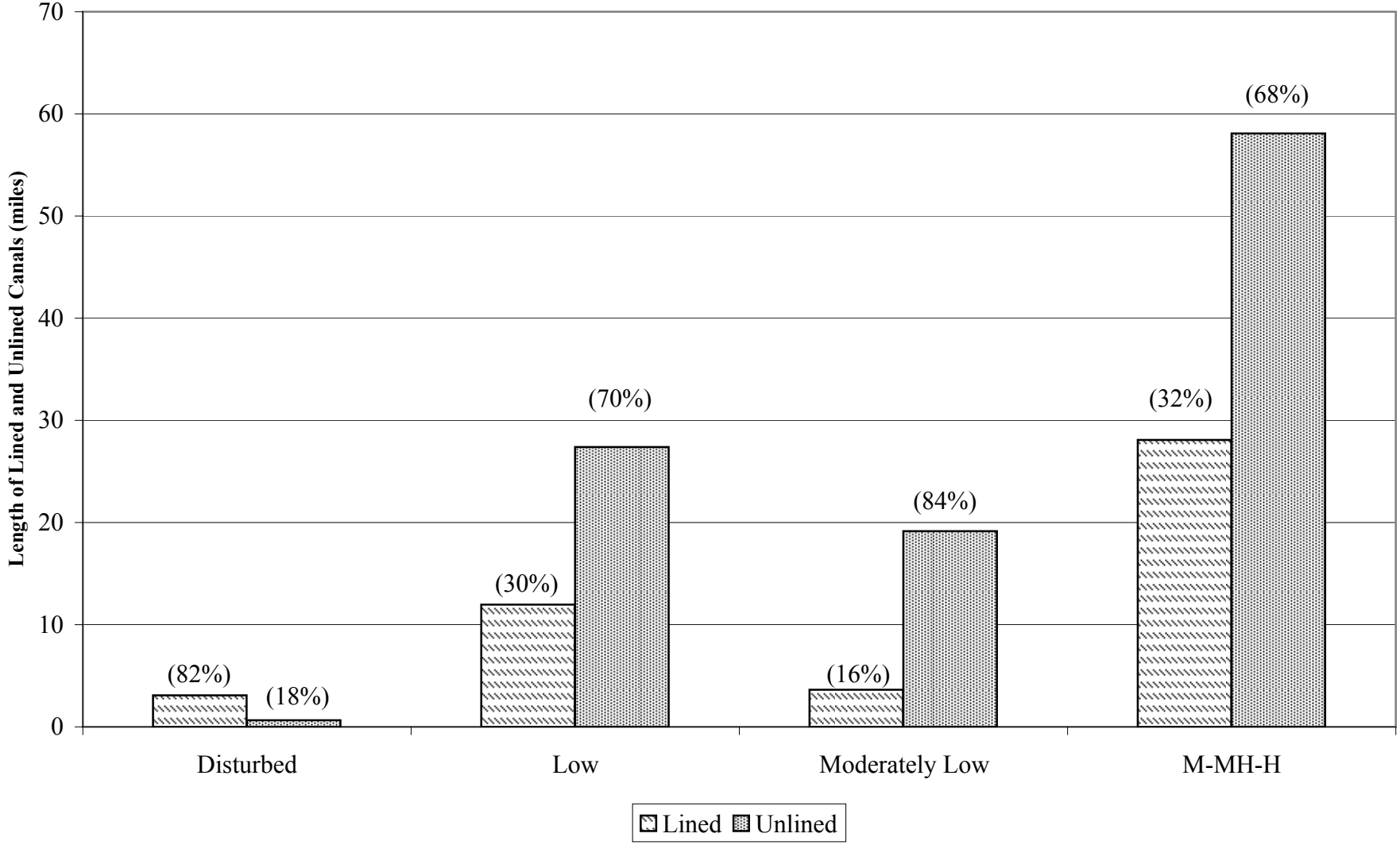


Table 4. Canal Lining Cost Effectiveness

Permeability Category	Length Lined (ft)	Soil Seepage Coefficient (ft^3/ft^2-day)	Lined Canal Seepage Coefficient (ft^3/ft^2-day)	Seepage Savings (ft^3/ft^2-day)	Water Savings (af/yr)	Estimated Cost of Lining	Estimated Capital Cost of Water Savings ($/af)
Disturbed	16,325	Not Available	0.043				
Low	63,179	0.014	0.043	0	0	$3,790,740	
Moderately Low	19,126	0.16	0.043	0.12	131	$1,147,560	$8,743.04
M-MH-H	148,309	0.50	0.043	0.46	3,975	$8,898,540	$2,238.37
				Total Savings	**4,107**	**Average**	**$3,369.33**

The approximate cost for canal lining as provided by PCWA is $6 per square ft. This typical cost of lining was assessed over all of the lined reaches. The actual cost of lining individual reaches will vary depending upon the thickness of gunite applied and the area surfaced. The extensive length of canals analyzed in this investigation allows the use of the average to accurately assess the cost of lining.

C. Future Canal Lining Efforts

1. Potential Water Savings from Future Canal Lining

PCWA can continue to reduce seepage losses by continuing their canal lining program. Approximately 8,900 af of additional water savings can be achieved by lining all canals located in the M-MH-H and Moderately Low categories. The potential water savings are presented in Table 5.

Table 5. Water Savings Potential

Permeability Category	Length Remaining Unlined (ft)	Soil Seepage Coefficient (ft^3/ft^2-day)	Lined Canal Seepage Coefficient (ft^3/ft^2-day)	Seepage Savings (ft^3/ft^2-day)	Water Savings (af/yr)	Estimated Cost of Lining	Estimated Capital Cost of Water Savings ($/af)
Disturbed		Not Available	0.043				
Low	144,669	0.014	0.043	0	0	$8,680,140	
Moderately Low	101,083	0.16	0.043	0.12	694	$6,064,980	$8,743.04
M-MH-H	306,672	0.50	0.043	0.46	8,220	$18,400,320	$2,238.37
				Total Savings	**8,914**	**Average**	**$3,718.32**

2. Selection of Candidate Reaches

This report provides a framework PCWA can use in determining which canal reaches should be targeted for lining. The water savings resulting from canal lining will depend on the following factors:

- **Soil Permeability –** Canals located in areas with high permeability soil should be considered prime candidates for canal lining. Canals in the M-MH-H Permeability Category that should be given priority for canal lining activities are shown in Figure 11.
- **Opportunity Time –** Because seepage occurs over time, the amount of time that water is in the canal should also be taken into consideration.
- **Soil-Water Interface –** Seepage is directly affected by the area of soil that the water is in contact with. Therefore the area of the soil-water interface should be taken into consideration when determining candidate reaches for canal lining.

The most accurate way to estimate the water savings achieved from lining a canal reach is to perform a ponding test on the candidate reach. However, this is not always possible. A less accurate, but still viable method of determining the water savings is to use the following formula:

Equation 3

$$V = K * A * T$$

Where V is the annual seepage calculated using the following factors. The wetted area (A) can be found by calculating the weighted average of wetted perimeter measurements taken along the canal reach and multiplying by the length of the canal. The annual opportunity time (T) is number of days per year that the canal is filled with water. The seepage coefficient (k) is the rate of seepage associated with the soil permeability category.

Once the annual seepage estimate is determined, the cost of lining the reach should be considered. Reaches should be selected for lining projects by calculating the cost per volume of water conserved. This can be calculated using the following formula:

Equation 4

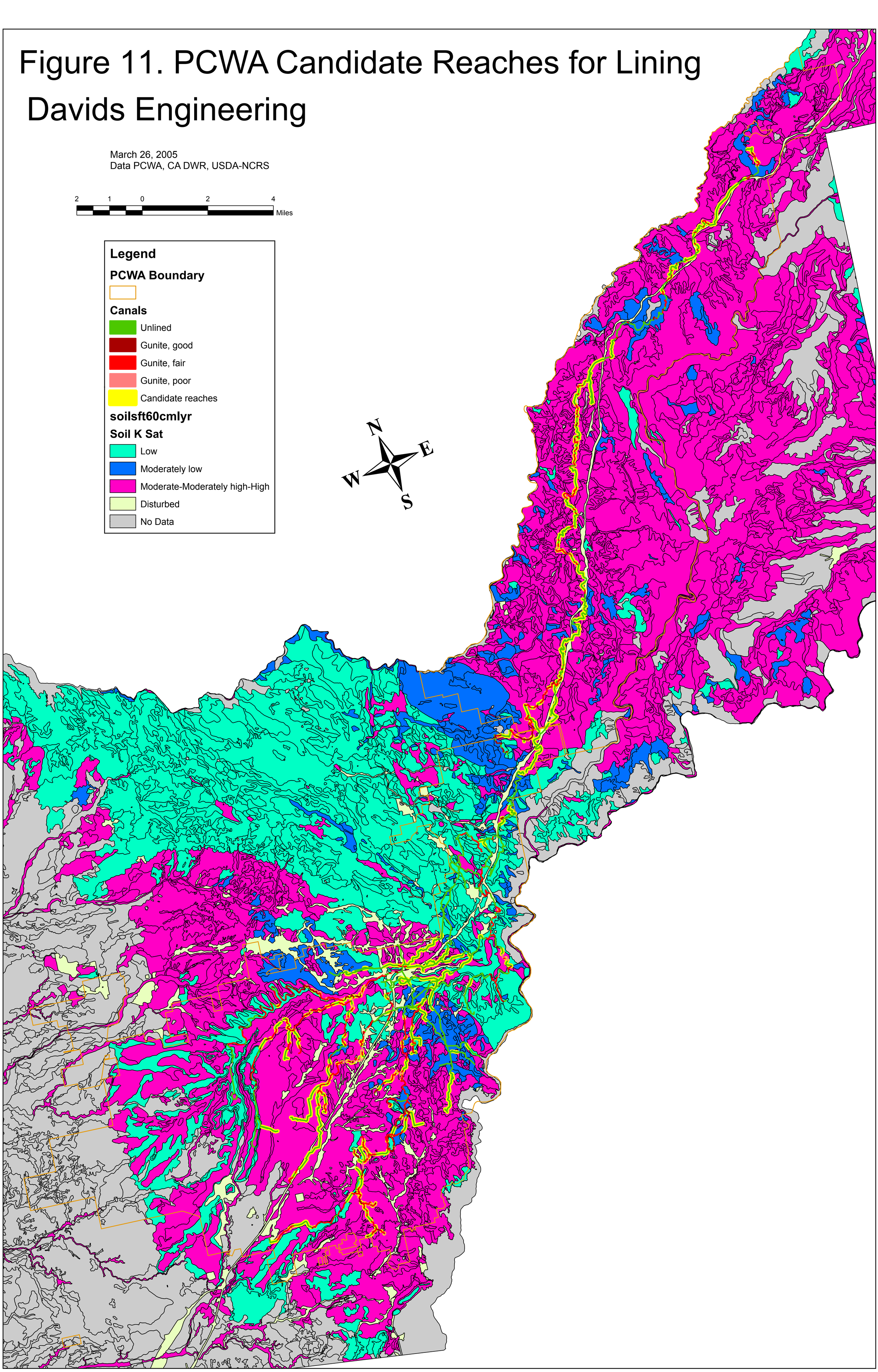
$$Cost / V = TotalCostofLiningReach / V$$

Reaches with the lowest cost to water savings ratio should be selected for lining.

Figure 11. PCWA Candidate Reaches for Lining

Davids Engineering

March 26, 2005
Data PCWA, CA DWR, USDA-NCRS



V. Recommendations

Due to weather and timing constraints, a limited number of seepage tests were performed. More ponding tests should be performed to increase the accuracy of the seepage coefficients for the canal categories.

By comparing the seepage category map with future ponding tests, the information on the typical seepage rates for the various categories can be improved. This will help the agency in applying for future funding.

Appendix A:
Site Pictures

Construction Dam

Construction of Dam 2

Lined Canal Ponding Test 2

Lined Canal Ponding Test

Ponding Test Dam

Lined Canal Ponding Test Dam

Spill and Dry Section Upstream of Test

Staff Gage