SRWRS
Sacramento River Water Reliability Study

Initial Alternatives Report, Appendix A
Assessment of Water Supply Needs

Final Version, March 2005

SRWRS Partners

U. S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION

pcwa Placer County Water Agency

SACRAMENTO SUBURBAN WATER DISTRICT

CITY OF ROSEVILLE TRADITION·PRIDE·PROGRESS

CITY OF SACRAMENTO FOUNDED IN 1849

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SUMMARY

This Appendix provides a review of water supply needs in 2030 for the cost-sharing partners of Sacramento River Water Reliability Study (SRWRS) including Placer County Water Agency (PCWA), Sacramento Suburban Water District (SSWD), the City of Roseville (Roseville), and the City of Sacramento (Sacramento). Findings will be used as the basis in the SWRWS for developing a water supply strategy and alternatives. This March 2005 revision includes updates from the June 2003 version to reflect local planning development after the previous publication date.

INTRODUCTION

The review of water supply needs covered in the need assessment includes governing legal framework, water supply systems, sources of water supply (water rights, contract entitlements, groundwater, and other supplies), 2030 demand and water supply estimates, and the needs for balancing the 2030 demand and water supply and enhancing water supply reliability. The year 2030 was identified as a planning horizon for consistency with ongoing efforts of the California Department of Water Resources (DWR), the Bureau of Reclamation (Reclamation), and the CALFED Bay-Delta Program (CALFED).

For each purveyor, the latest information was gathered to estimate future demand that is consistent with that purveyor's existing policies and vision for the future. The availability of water supplies was estimated by using existing water rights and contract entitlements, existing and reasonably foreseeable infrastructure (i.e., projects and actions that are currently authorized, funded, permitted, and/or highly likely to be implemented), and commitments made in the Water Forum Agreement (WFA). [1]

For most water purveyors, the WFA limits diversions from the American River by year type (see **Table A-1** for definition). In most cases, limitations are the same for wet and average years and lowest in driest years. Thus, in this **Needs Assessment**, analysis focuses on conditions in wet/average years and driest years to bookend the potential gap between 2030 demand and water supply, and opportunities to enhance water supply reliability.

Table A-1. American River Basin Water Year Types Defined in the WFA

Water Forum Year Type	Unimpaired Inflow to Folsom Lake, March – November (acre-feet, AF)	Percentage of Total Years in the Period of 1901 through 2002[1]
Wet	Greater than 1,600,000	63 out of 102 years (62%)
Average	Greater than 950,000 and less than 1,600,000	25 out of 102 years (24%)
Drier	Greater than 400,000 and less than 950,000	12 out of 102 years (12%)
Driest	Less than 400,000	2[2] out of 102 years (2%)

[1] Data source: California Data Exchange Center (CDEC).
[2] 1924 and 1977.

To provide a more comprehensive perspective for available water supply, averages by Water Forum year type of deliveries from the Central Valley Project (CVP) and Pacific Gas and Electric Company (PG&E) were factored into the estimates of available water supply. The information about average deliveries was obtained from the CALSIM II Benchmark Study, dated September 2002, and Bear River HEC-3 Model developed by DWR. (See Attachment A for details.) Note that these modeling studies were not developed specifically for

[1] Begun in 1993, the Water Forum is a group composed of business and agricultural leaders, citizens groups, environmentalists, water managers, and local governments in the Sacramento Region who joined together to fulfill two co-equal objectives: (1) provide a reliable and safe water supply for the region's economic health and planned development to the year 2030; and (2) preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River. In 2000, Water Forum members approved the WFA, which consists of seven integrated actions necessary to provide a regional solution to water shortages, environmental damage, groundwater contamination, and limited economic prosperity.

the SRWRS, but provide a reasonable indicator of the reliability of these water sources for the needs assessment.

FINDINGS

SRWRS cost-sharing partners provide water service to respective service area for municipal and industrial (M&I) use and agricultural (Ag) use by using groundwater and surface water diverted under water rights or contract entitlements. A detailed assessment for each cost-sharing partner's water supply needs in 2030 is presented in the remainder of this Appendix. Major findings of the needs assessment are summarized as follows:

- The WFA sets different limitations on diversion from the American River for each purveyor, and was signed with certain agreed-on assumptions.
    - PCWA is limited by a total annual diversion volume with the assumption that PCWA would be able to acquire a Sacramento River diversion as an alternate diversion point for its CVP contract entitlement.
    - SSWD is limited by a total annual diversion volume that varies by Water Forum year type with the assumption that SSWD would pursue a Sacramento River diversion to offset the limitation on contract entitlement use.
    - Sacramento is limited by the allowable diversion rate at the Fairbairn Water Treatment Plant (WTP) depending on the bypass flow rate, and limited by the total annual diversion at Fairbairn WTP in driest years. It is assumed that Sacramento would capture those forgone diversions at a location downstream from the confluence with the Sacramento River.
    - No specific limitations apply to future diversions from the Sacramento River.
- Due to WFA limitations on diversions from the American River, the following would occur if no active measures are taken:
    - PCWA, SSWD, and Roseville would divert less than their water rights and/or contract entitlements, even in wet year with 100 percent CVP deliveries (see **Table A-2**).

Table A-2.
Summary of Affected Water Rights and Contract Entitlements for PCWA, SSWD, and Roseville due to WFA Limitations on Diversions from the American River

Water Purveyor	Affected Water Rights and Contract Entitlement due to WFA Limitations on Diversions from the American River[1] (acre-feet, AF)	Source	Note
PCWA	500	MFP[2]	As operations buffer
	35,000	CVP	
SSWD	29,000	MFP	Average/drier/driest years only
Roseville	7,100	MFP or CVP[3]	

[1] Assuming 100 percent CVP allocation.
[2] PCWA's Middle Fork Project.
[3] WFA limitations are on the total amount of diversions from these two contract entitlements.

    - PCWA and Roseville would have unmet water supply demands. **Table A-3** shows the demand and water supply conditions for Water Forum **wet**, **average** and **driest** years. The water supply condition of a Water Forum **drier** year is bracketed by those of an average year

and of a driest year, but varies according to the hydrologic condition in the American River Basin.

Table A-3. Summary of 2030 Demand and Water Supply for PCWA, SSWD, and Roseville

Water Forum Year Type	Water Purveyor	Type of Use	Demand (AF)	Supply (AF)			Unmet Demand (AF)
				Surface Water[1]	Groundwater	Others[3]	
Wet Years	PCWA	Ag	140,000	85,000	51,000	4,000	0
		M&I	85,400[2]	50,900	0	0	34,500[3]
	SSWD	M&I	99,289	55,064	44,225	0	0
	Roseville	M&I	64,020	58,900	0	2,773	2,347
Average Years	PCWA	Ag	140,000	82,992	53,008	4,000	0
		M&I	85,400[2]	50,900	0	0	34,500[3]
	SSWD	M&I	99,289	26,064	73,225	0	0
	Roseville	M&I	64,020	58,900	0	2,773	2,347
Driest Years	PCWA	Ag	140,000	57,892	66,000	4,000	12,108[4]
		M&I	85,400[2]	50,900	0	0	34,500[3]
	SSWD	M&I	99,289	0	99,289	0	0
	Roseville	M&I	64,020	39,800	7,300	11,993	4,927

[1] Surface water supply is limited by WFA when diverted from the American River. See Attachment A for details on assumed deficiencies of CVP North-of-Delta M&I and PG&E supply to PCWA.
[2] For PCWA, reclaimed water; for Roseville, reclaimed water and extra ordinary conservation.
[3] Demand and unmet amounts are based on a slow-growth projection. A future realized growth greater than the assumed slow-growth projection would result in additional unmet demand.
[4] Agricultural deficiency in areas without groundwater accessibility.

- Sacramento would have unmet water supply demands, especially on basis of maximum day (max-day) demand.[2] Although the deficiency in diversion capacity is easily demonstrated by using max-day demand (see **Table A-4**), the actual volume of unmet water supply demand due to WFA limitations varies by hydrologic conditions and is difficult to quantify.

Table A-4. Summary of 2030 Max-Day Demand and Supply for Sacramento

Water Forum Year Type	Hydrologic Condition	Type of Use	Annual Demand (AF per year)	Max-Day Demand (mgd)	Max-Day Supply (mgd)		Unmet Max-Day Demand (mgd)
					Surface Water	Groundwater	
Driest Years	All	M&I	239,804	402	260	24	118
All Other Years	Above Hodge[2]	M&I	239,804	402	360	1[1]	41
	Below Hodge[3]	M&I	239,804	402	260	1[1]	141

[1] Supply to Sacramento Regional County Sanitation District Wastewater Treatment Plant outside Sacramento's water right place of use.
[2] Above Hodge: The American River flow is above the flow thresholds set forth by the Hodge decision.
[3] Below Hodge: The American River flow is below the flow thresholds set forth by the Hodge decision.

- To balance 2030 demand and supply for each purveyor and enhance water supply reliability, cost-sharing partners are currently pursuing the following options that are consistent to the WFA:

  - PCWA, SSWD, and Roseville seek opportunities to exercise their contract entitlements in full and maintain consistency to their commitments in their WFA Purveyor Specific Agreement (PSA). The increased surface water delivery would meet the unmet municipal and industrial demands and further contribute regional groundwater stabilization for Ag and M&I purposes (see **Table A-5**).

[2] The estimated maximal daily use in a year, which is commonly presented in unit of million gallons per day (mgd) and used as the design capacity for water supply facilities.

- Sacramento seeks opportunities to increase max-day treated water supply capacity for diversions under its water rights and also opportunities to accommodate wheeling requests for increasing water supply reliability in all hydrologic conditions. The increased capacity would allow Sacramento to provide regional water wholesale and wheeling capabilities to areas currently relying solely on groundwater, resulting in significant in-lieu recharge opportunity (see **Table A-5**).

Table A-5.
Summary of Requests for Additional Surface Water Diversion and Treatment Capacity for Balancing 2030 Demand and Supply and Enhancing Water Supply Reliability

Water Purveyor	Requested Additional Surface Water Diversion (AF)	Source	Type of Use	Requested Treatment Capacity (mgd)	Purposes of Requested Treatment Capacity
PCWA	35,000	CVP	M&I	65	For max-day demand
SSWD	29,000[1]	MFP	M&I	15	For redundancy
Roseville	7,100[2]	MFP	M&I	10	For max-day demand
Sacramento	17,000[3]	Water rights, water wheeling requests	M&I	145	For max-day demand
Total	88,100			235	

[1] SSWD unused contract entitlement is limited in average, drier, and driest years only. SSWD has already had WFA to exercise this entitlement in wet years using diversion from the American River.
[2] Roseville would only consider additional diversion from rivers other than the American River.
[3] The WFA does not establish a volumetric limitation for Sacramento's total diversion. The estimate is based on the difference between the projected demand and the average diversions for Sacramento that can be realized using then-existing diversion facility simulated by CALSIM II in a 2020 Level of Development scenario.

PLACER COUNTY WATER AGENCY

The needs assessment for PCWA includes discussions on the legal framework governing PCWA, PCWA water system and water sources, and estimates of PCWA's 2030 water demand and supply.

LEGAL FRAMEWORK GOVERNING PCWA

PCWA's governing legal framework is largely set forth by California law (including the Placer County Water Agency Act) and the Placer County General Plan.

California Law

PCWA's operations and obligations are governed in part by the Placer County Water Agency Act, which is found in section 81-1 et seq. of the appendices to the California Water Code. Section 81-4 of that enabling legislation gives PCWA the power "to do any and every lawful act necessary in order that sufficient water may be available for any present or future beneficial use or uses of the lands or inhabitants within the agency, including, but not limited, to, irrigation, domestic, fire protection, municipal, commercial, industrial, and all other beneficial uses and purposes." Section 81-4.3 gives PCWA the authority to "appropriate and acquire water and . . . [to] utilize . . . water for any purpose useful to the agency." Section 81-6 gives PCWA the authority to cooperate and contract with Reclamation with respect to the "construction of works" for "water supply" and other purposes.

Although its enabling legislation essentially requires PCWA to serve planned growth within its service area, PCWA does not control local land use decisions creating the need for water supply. Rather, under California law, land use decisions are made only by elected boards of supervisors and city councils. PCWA, then, is subject to the traditional understanding of water suppliers under California law to be a "duty to serve" new development. As reflected in case law, this obligation has been understood to require water suppliers to find

and develop any new water supplies needed to meet projected growth levels in their service areas. (See Swanson v. Marin Municipal Water Dist. (1976) 56 Cal.App.3d 512, 524 (water district has a "continuing obligation to exert every reasonable effort to augment its available water supply in order to meet increasing demands"); Glenbrook Development Co. v. City of Brea (1967) 253 Cal.App.2d 267, 277 ("county water district has a mandatory duty of furnishing water to inhabitants within the district's boundaries"); see also Lukrawka v. Spring Valley Water Co. (1915) 169 Cal. 318, 332; Building Industry Assn. of Northern California v. Marin Municipal Water Dist. (1991) 235 Cal.App.3d 1641, 1648-1649; Slater, California Water Law and Policy (Michie Publications 1996), vol. 2, p. 14-11 (refers to water districts' "duty to serve").

Consistent with this traditional obligation, a "distributor of a public water supply" can refuse to supply water to new development only if the distributor "finds and determines that the ordinary demands and requirements of water customers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection." (California Water Code, § 350.)

PCWA is also subject to the Urban Water Management Planning Act (Water Code, § 10610 et seq.) as amended in 2001 in response to the California Legislature's concern that California's water supply agencies might not be engaged in adequate long-term planning. That Act requires PCWA, as an "urban water supplier," to maintain an "urban water management plan" that must identify existing water supply and demand, and must identify any new water sources required to satisfy demand as projected at least 20 years into the future. The projected 20-year supply must account for "average, single-dry, and multiple-dry water years."

In predicting 20-year water demands, PCWA, like other urban water agencies, must rely on "data from the state, regional, or local service agency population projections[.]" Thus, to the extent that Placer County and its incorporated cities (e.g., Roseville, Rocklin, Lincoln, Auburn, and Loomis) anticipate large population increases in their adopted general plans, PCWA is required to identify water sources necessary to serve such planned development, and is not in a position to refuse to comply with that legal obligation as a means of reducing the "growth-inducing" effects of obtaining new water supplies.

Under California Water Code sections 10910 through 10912 as amended in 2001 (also known as S.B. 610), PCWA must consult with Placer County and the cities within the PCWA service area when those entities propose development projects of a certain magnitude (e.g., residential projects with more than 500 dwelling units or a retail or business establishment employing more than 1,000 persons or having more than 250,000 square feet). PCWA must respond to these requests either by identifying the water sources available to serve such development, or by identifying the plans it would follow to obtain new water supplies for such developments. In the latter instance, such plans may include information concerning: (1) the estimated total costs, and the proposed method of financing the costs, associated with acquiring additional water supplies; (2) all federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional supplies; and (3) the estimated time frames within which PCWA expects to be able to acquire additional water supplies. (California Water Code, § 10911, subd. (a).)

PCWA is also subject to 2001 state legislation commonly known as the "Kuehl Bill" (SB 221), after its author State Senator Sheila Kuehl. (See Cal. Gov. Code, § 66473.7.) That bill requires any city or county considering the approval of a proposed tentative subdivision map for more than 500 units to consult with the relevant water supply agency to determine whether adequate water is available for the proposed subdivision, as well as for "existing and planned future uses" (including agriculture) over the next 20 years, under "normal, single-dry, and multiple-dry year" scenarios. This new legal scheme, like the Urban Water Management Planning Act, requires PCWA to constantly take the steps that will be necessary to accommodate the growth planned for the next 20 years by Placer County and its incorporated cities.

Placer County General Plan

With respect to water supply demands in the urbanizing unincorporated areas of Placer County, PCWA must operate within the regulatory framework created by the County General Plan, which generally disfavors any increasing reliance on groundwater. For example, General Plan policy 4.C.1 states that "[t]he County shall require proponents of new development to demonstrate the availability of a long-term, reliable water supply." Policy 4.C.2(a) provides that "[u]rban and suburban development should rely on public water systems using surface water." (Emphasis added.) As interpreted and applied by the Placer County Board of Supervisors, such policies effectively preclude PCWA either from serving newly developing urban and suburban unincorporated areas with groundwater or from refusing to serve those areas on the theory that proponents of development should develop their own groundwater supplies. PCWA is therefore somewhat legally constrained from participating in any conjunctive use program that would require new urban development in unincorporated Placer County to rely on groundwater except in exceptional situations.

PCWA'S WATER SYSTEM

Within the boundaries of PCWA's service area, there are five established zones as described below (see **Figure A-1**):

- Zone 1 was created in 1968 for financing the purchase of PG&E's Lower Drum Division Water System. That system included five water treatment plants and associated storage and distribution systems that provided water service to the communities of Auburn, Bowman, Ophir, Newcastle, Penryn, Loomis, Rocklin, and Lincoln. Zone 1 encompasses approximately 125 square miles. Today, Zone 1 includes territory under the land use authorities of the cities of Auburn, Rocklin, and Lincoln, a portion of the City of Roseville, the Town of Loomis, and Placer County. Zone 1 is further broken up into Upper Zone 1 and Lower Zone 1 to delineate the higher elevation service area of Auburn, Bowman, Ophir, and Newcastle from the lower elevation service areas.

- Zone 2 was created in 1979 to provide retail water service for a small residential development of 47 units located southwest of Roseville. Zone 2 is under the land use authority of Placer County. The source of water supply is currently groundwater; however, PCWA intends to serve this area with surface water in the future.

- Zone 3 is a water system acquired from PG&E in 1984 that serves the City of Colfax and portions of Placer County.

- Zone 4 was created in 1996 for the unincorporated Martis Valley portion of eastern Placer County. This zone is served entirely by groundwater.

- Zone 5 was created in 1999 and assumed the boundaries of Placer County Zone 29. It was created to reduce reliance on groundwater supplies by providing surface water for commercial agricultural in the westernmost section of Placer County. PCWA provides only raw surface water supplies to this region.

Currently, about 26 percent of the water supplied by PCWA is treated drinking water distributed through eight individual treated water systems. These systems include Alta, Applegate, Bianchi, Bowman-Auburn, Colfax, Foothill-Sunset, Lahontan and Monte Vista. Six of the systems are supplied through water treatment plants that treat surface water supplied via the PCWA canal system. The Bianchi and Lahontan systems are supplied by groundwater. The PCWA treated water systems supply over 26,000 service connections.