

APPENDIX X

PLACER VINEYARDS SPECIFIC PLAN EIR HYDROLOGIC MODELING SIMULATION AND IMPACT ASSESSMENT COMPARISONS

This memorandum identifies the modeling simulations and assumptions conducted for the Placer Vineyards Specific Plan EIR hydrologic analyses. Individual model simulations are identified and described, along with the impact assessment comparisons between simulations consistent with CEQA.

All simulations were conducted using the most recent version of the U.S. Bureau of Reclamation (Reclamation) operations and planning model for the CVP, "PROSIM 2000", as provided by Reclamation. This version of PROSIM has been used in all of Reclamation's most recent documentation efforts (e.g., PCWA Pump Station Project; American River Basin Cumulative Study) and is currently being used to support all of Reclamation's long-term contract renewal efforts across the CVP. This model version and its assumptions framework for both the existing and future-level conditions, has the support of both the U.S. Fish & Wildlife Service and the National Marine Fisheries Service, through an extensive cooperative development process.

MODEL SIMULATIONS

In consideration of the alternatives identified in the *Placer Vineyards Specific Plan EIR – Water Supply Alternatives Briefing Memorandum* (dated April 26, 2001), key alternatives were carried forward for analysis in the EIR. Each of these alternatives is represented by a distinct model simulation. The new revised interim water supply alternative (referred to hereinafter as the "Proposed Interim Water Supply"), as recently proposed by the project proponents is also included (even though it was not identified in the *Placer Vineyards Specific Plan EIR – Water Supply Alternatives Briefing Memorandum*). The numbering system for alternatives/sub-alternatives has been abandoned from that used previously since new proposed alternatives, as well as conditioned variations of the original alternatives now exist. All proposed model simulations are described below and are noted for identification purposes by their appropriate narrative label:

Current (2000-level hydrology) Condition Simulations

Two simulations were performed under current condition hydrology.

1. **Existing Condition/No-Project** – no use by Placer Vineyards of PCWA MFP water rights or PCWA CVP contract water, in the context of 2000-level hydrology;
2. **Proposed Interim Water Supply** – use by Placer Vineyards of 6 TAF/yr PCWA MFP water rights supply through diversion at Folsom Dam, with no dry-year constraint, in the context of 2000-level hydrology; and,

Future (2020-level hydrology) Condition Simulations

Initially, three simulations were performed under future condition hydrology.

1. **Sacramento River Diversion** – use by Placer Vineyards of 13TAF/yr of PCWA’s 35 TAF/yr CVP supply through diversion from the Sacramento River north of the confluence with the American River, with no dry-year constraint. PCWA’s full CVP water contract is assumed diverted under this simulation. Assumed use of 35.5 TAF/yr by PCWA of its MFP water rights supply through diversion at the Auburn Dam site with dry-year constraint. All assumptions in the context of 2020-level hydrology;
2. **Folsom Reservoir Diversion** – use by Placer Vineyards of 13 TAF/yr of PCWA's 35 TAF/yr CVP contract water supply through a diversion at Folsom Dam, with no dry-year constraints. PCWA’s full CVP contract is assumed diverted under this simulation. Assumed use by PCWA of 35.5 TAF/yr of MFP water rights water through diversion at the Auburn Dam site with dry-year constraints. All assumptions in the context of 2020-level hydrology; and,
3. **Future No-Project** – no use by either Placer Vineyards or PCWA of any part of the 35 TAF/yr PCWA CVP contract water supply. Assumed use by PCWA of 35.5 TAF/yr of MFP water rights water through diversion at the Auburn Pump station site. All assumptions in the context of 2020-level hydrology.

The annual acre-foot supplies for Placer Vineyards incorporated in the simulations are identified in the following table.

Placer Vineyards Assumed Supply				
	MFP Water Rights (AFA)	CVP Contract (AFA)	Diversion Location	Context
Existing/No-Project	0	0	-	Current
Proposed Interim Water Supply	6,000	0	Folsom Dam	Current
Sacramento River Diversion	0	13,000	Sac R. NOC ¹	Future
Folsom Reservoir Diversion	0	13,000	Folsom Dam	Future
Future No-Project	0	0	-	Future

¹ – refers to North of the Confluence with the American River
 Dry year restrictions agreed to under Water Forum (linear reduction from FUI of 950 TAF to FUI of 400 TAF) are applied as specified.

The total annual PCWA diversions (in acre-feet) incorporated in the simulations including those allocated to Placer Vineyards are identified in the following table.

Total PCWA Supply					
	MFP Water Rights (AFA)			CVP Contract (AFA)	
	Auburn Dam Site	Folsom Dam	Sac R. NOC ^{1,2}	Sac R. NOC ¹	Folsom Dam
Existing/No-Project	8,500	0	0	0	0
Proposed Interim Water Supply	8,500	6,000	0	0	0
Sacramento River Diversion ³	35,500	0	0	35,000	0
Folsom Reservoir Diversion	35,500	0	0	0	35,000
Future No-Project	35,500	0	0	0	0

1 – refers to North of the Confluence with the American River
2 – through an exchange with a Sacramento River purveyor
3 – this model simulation is identical to the Cumulative Condition simulation developed by SWRI under the direction of Reclamation for the *American River Basin Cumulative Study*.
Dry year restrictions agreed to under Water Forum (replacement water linearly increased from FUI of 950 TAF to FUI of 400 TAF) are applied as specified.

REFERENCE NOTATIONS

The **Existing/No-Project** model simulation is identical to the Existing Condition simulation developed by SWRI under the direction of Reclamation for the *American River Basin Cumulative Study*.

The **Sacramento River Diversion** model simulation is identical to the Cumulative Condition simulation developed by SWRI under the direction of Reclamation for the *American River Basin Cumulative Study*.

IMPACT ASSESSMENT – MODEL SIMULATION COMPARISONS

The following initial comparisons between model simulations were performed consistent with the requirements of CEQA:

Proposed Interim Water Supply versus Existing/No-Project – to analyze the current condition or current level potential impacts of the proposed interim water supply.

Sacramento River Diversion versus Existing/No-Project – to analyze the potential future impacts under an assumed 35 TAF/yr of PCWA CVP contract water diverted from the Sacramento River and 35.5 TAF/yr of PCWA MFP water diverted from the Auburn Dam site. This comparison represents a future cumulative analysis and is identical to the *American River Basin Cumulative Study*.

Folsom Reservoir Diversion versus Existing/No-Project – to analyze the potential future impacts under an assumed 35 TAF/yr of PCWA CVP contract water diverted from Folsom Reservoir and 35.5 TAF/yr of PCWA MFP water diverted from the Auburn Dam site. This comparison represents an alternative future cumulative analysis.

To determine the increment of the potential impact that either future alternative could have on the future cumulative condition, the following comparisons were performed:

Sacramento River Diversion versus Future No-Project

Folsom Reservoir Diversion versus Future No-Project

Depending on the level of impacts identified in the incremental impact analyses, Conditional Model Simulations (see below) that isolated the Placer Vineyards component of either the Sacramento River or Folsom Reservoir diversions for PCWA's future entitlements could be compared against the **Future No-Project** simulation. This analysis would specifically identify the potential incremental contribution of the Placer Vineyards component (i.e., 13 TAF/yr) within the context of the entire projected cumulative impacts.

CONDITIONAL MODEL SIMULATIONS

As noted, two additional simulations were potentially required. This necessity could have resulted, depending on the incremental impacts identified in either the **Sacramento River Diversion or Folsom Reservoir Diversion**, relative to the **Future No-Project** simulation. Where no impacts are identified, additional conditional model simulations would not be required. If, however, some level of impact were identified, the extent to which the Placer Vineyards project (through a Sacramento River diversion or Folsom Reservoir diversion) would contribute to the significant cumulative impact would need to be ascertained. This would be accomplished through revised simulations that would isolate the Placer Vineyards component. No other PCWA CVP contract water diversions would be assumed to maintain the isolation of the Placer Vineyards component.

PROSIM Simulation Assumptions

The attached **Table 1**, Placer Vineyards Specific Plan EIR Modeling Assumptions, summarizes the modeling assumptions utilized in PROSIM to represent the seven simulations. The five simulations are organized by column. Important modeling assumptions are organized by row. The major categories of modeling assumptions are demands, facilities and operations, Central Valley Project (CVP) allocation, and regulatory standards. Expanded information on demands is included in **Table 2 through Table 5**.

Hydrology

The hydrology used is based on Department of Water Resources (DWR) Bulletin 160-98. The 2020 hydrology is consistent with 2020 land use projections (CO9C). The 2000 hydrology was developed from a linear interpolation of land use between 1995 land use (DO6E) and 2020 land use.

Demands

CVP demands, except for the American River Basin and Contra Costa Water District (CCWD), are based on assumed future contract levels consistent with maximum historical use. CVP demands north of the Delta, excluding the American River Basin, are summarized for each

purveyor in Table 2. CVP demands south of the Delta total approximately 3.4 MAF/year and are summarized for each purveyor in Table 3. CVP refuge demand corresponds to Firm Level 2. CCWD demand is defined by a time series that reflects operation of Los Vaqueros Reservoir. A contract of 140 TAF/year in the existing context simulations and 195 TAF/year in the future context simulations is assumed.

State Water Project (SWP) demand is modeled as variable depending on water supply and precipitation indices. The full demand approximates 3.6 MAF/year in the existing context simulations and 4.2 MAF/year in the future context simulations.

American River Basin demands, not including the proposed interim water supply or long-term water supply alternatives, are shown in detail in Tables 4 and 5. Demands for the existing context simulations, shown in Table 4, are the same as in the Water Forum Agreement EIR Base condition except for a few purveyors where water use information has been updated since 1998.

Demands in the American River Basin for the future context simulation, not including the proposed project or alternatives, (Table 5) also are consistent with the Water Forum Agreement. Reduced diversions or replacement for diversion is represented in the model when the Folsom Reservoir unimpaired inflow drops below 950 TAF for March through November.

Modeling of East Bay Municipal Utility District (EBMUD) diversions is handled as directed by Reclamation. Diversions are simulated as being from the Sacramento River near Freeport. Diversions are subject to contract terms of 133 TAF/year, CVP M&I deficiencies, projected October 1st EBMUD Mokelumne River Total System Storage (TSS) not exceeding 500 TAF, and 165,000 AF total diversion in any three consecutive years. Diversions are restricted to 155 cfs and not restricted by Hodge Decision terms. Implementation of these constraints is based on the EBMUD Supplemental Water Supply Study #6174 representation of Mokelumne River operations.

The monthly pattern of diversion and delivery applied in the model for Placer Vineyards are summarized as follows.

Placer Vineyards Diversion Pattern

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Percent of Annual	4.2	3.8	5.5	7.1	9.2	10.5	14.3	13.9	12.6	8.8	5.5	4.6	100.0

Facilities/Operations

Table 1 summarizes the pertinent assumptions in the modeling regarding reservoir facilities and operations. In this regard, the simulations are identical except for the temperature control device for the El Dorado Irrigation District at Folsom Reservoir. This proposed facility is not included in the existing condition simulation.

Cold water pool management is an important part of Folsom Reservoir operations. These simulations all assume implementation of operations designed to balance the temperature objectives for steelhead and fall-run chinook salmon.

CVP Water Allocation

In years when water supply is deficient, water allocation is reduced based on specific water indices or the sufficiency of water supply. The settlement and exchange contractors and the wildlife refuges receive a 75% allocation in years when the Shasta index indicates a critical year. The other CVP contracts receive allocations based on a comparison of forecast supply and demand for the March through September period. CVP municipal and industrial (M&I) contracts receive allocations ranging from 100% to 50%. CVP agricultural contracts receive allocations ranging from 100% to 0%. Agricultural allocations are reduced first; reductions to the M&I allocations start after the agricultural allocations have been reduced to 75% of contract.

Regulatory Standards

State and federal standards mandate minimum river and reservoir conditions to ensure environmental protection. Those modeled are listed in Table 1. The standards are the same for all simulations except on the Trinity River. On the Trinity River, the minimum streamflow requirement below Lewiston Dam is 340 TAF/year for the Existing/No Project simulation. All other simulations incorporate the higher minimum streamflow requirements found in the Preferred Alternative in the Trinity River Mainstem Fishery Restoration FEIS/EIR.

Simulation of water operations on the Mokelumne, Stanislaus, Tuolumne, and San Joaquin rivers is handled outside of PROSIM and becomes an input to the PROSIM simulations. SANJASM and STANMOD are the primary models used to represent these river basins. Additional, spreadsheet analyses compliment and extend the SANJASM and STANMOD modeling. On the Mokelumne River, simulated operation performed by EBMUD under the 1996 Joint Settlement Agreement was used to modify SANJASM representation of Mokelumne River flows.

Attachments

**Table 1
Placer Vineyards Specific Plan EIR
Modeling Assumptions**

	Existing		Proposed Interim Water Supply		Sacramento River Diversion (PCWA CVP)		Sub-alt Sacramento River Diversion (PCWA CVP)	
	1922-1991	2000	1922-1991	2000	1922-1991	2020	1922-1991	2020
Period of Record	1922-1991	2000	1922-1991	2000	1922-1991	2020	1922-1991	2020
Hydrology/Level of Land Use								
Demands								
North of Delta (exc American R basin):								
CVP Refuges	Maximum Historic Use Firm Level 2	2000	Maximum Historic Use Firm Level 2	2000	Maximum Historic Use Firm Level 2	2025	Maximum Historic Use Firm Level 2	2025
PCWA MFP water rights supply diverted on the Sacramento River upstream of the confluence with the American River through an exchange	None							
PCWA CVP contract supply diverted on the Sacramento River upstream of the confluence with the American River	None	None	None	None	35 TAF/YR	35 TAF/YR	13 TAF/YR	13 TAF/YR
American River Basin:								
MFP water rights supply diverted at Folsom Dam	2000 (note a)	2000 (note a)	2000 (note a)	2000 (note a)	2025 (note b)	2025 (note b)	2025 (note b)	2025 (note b)
	None	None	6 TAF/YR	6 TAF/YR	None	None	None	None
MFP water rights supply diverted at Auburn Dam Site	8.5 TAF/YR	8.5 TAF/YR	8.5 TAF/YR	8.5 TAF/YR	35.5 TAF/YR	35.5 TAF/YR	35.5 TAF/YR	35.5 TAF/YR
EBMUD	None	None	None	None	(note c)	(note c)	(note c)	(note c)
South of Delta:								
CVP	3.4 MAF/YR							
CCWD	140 TAF/YR (note d)	195 TAF/YR (note d)						
SWP (w/ North Bay Aqueduct)	2.6-3.6 MAF/YR	2.6-3.6 MAF/YR	2.6-3.6 MAF/YR	2.6-3.6 MAF/YR	3.4-4.2 MAF/YR	3.4-4.2 MAF/YR	3.4-4.2 MAF/YR	3.4-4.2 MAF/YR
SWP Interruptible Demand	None							
Facilities/Operations								
Folsom Lake:								
Flood Control Diagram	Variable 400/670 non-linear (without outlet modifications) 3-2-4							
Temperature Control Shutters	Multi-species Balance (note e)							
Cold Water Pool Management	Yes							
M&I Temperature Control Device	No	No	No	No	Yes	Yes	Yes	Yes
EID Temperature Control Device	Yes							
Shasta Lake:								
Temperature Control Device	Yes							
Whiskeytown Reservoir:								
Temperature Control Curtain	Yes							

**Table 1
Placer Vineyards Specific Plan EIR
Modeling Assumptions**

	Existing	Proposed Interim Water Supply	Sacramento River Diversion (PCWA CVP)	Sub-alt Sacramento River Diversion (PCWA CVP)
CVP Water Allocation				
CVP Settlement/Exchange	100%, 75% based on Shasta Index			
CVP Agriculture	100% - 0% based on supply			
CVP Municipal & Industrial	100% - 50% based on supply			
CVP Refuges	100%, 75% based on Shasta Index			
Regulatory Standards				
Trinity River:				
Instream Flow Requirement	1991 DOI Secretarial Decision (340 TAF/YR)	1991 DOI Secretarial Decision (340 TAF/YR)	Trinity EIS Preferred Alternative (369-815 TAF/YR variable)	Trinity EIS Preferred Alternative (369-815 TAF/YR variable)
Trinity Reservoir End-of-September Minimum Storage	(No requirement)	(No requirement)	600 TAF as able	600 TAF as able
Clear Creek:				
Instream Flow Requirement	CVPIA Nov. 20, 1997 AFRP Upstream Action #1	CVPIA Nov. 20, 1997 AFRP Upstream Action #1	CVPIA Nov. 20, 1997 AFRP Upstream Action #1	CVPIA Nov. 20, 1997 AFRP Upstream Action #1
Upper Sacramento River:				
Shasta Lake End-of-September Minimum Storage	1993 Winter-run Biological Opinion (1900 TAF)			
Instream Flow Requirement @ Keswick	SWRCB WR 90-5; 1993 Winter-run Biological Opinion; and CVPIA Nov. 20, 1997 AFRP Upstream Action #2	SWRCB WR 90-5; 1993 Winter-run Biological Opinion; and CVPIA Nov. 20, 1997 AFRP Upstream Action #2	SWRCB WR 90-5; 1993 Winter-run Biological Opinion; and CVPIA Nov. 20, 1997 AFRP Upstream Action #2	SWRCB WR 90-5; 1993 Winter-run Biological Opinion; and CVPIA Nov. 20, 1997 AFRP Upstream Action #2
River Flow Objective for NCP	(3,250 – 5,000 cfs based on supply)			
American River:				
Instream Flow Requirement @ Nimbus	CVPIA Nov. 20, 1997 AFRP Upstream Action #3	CVPIA Nov. 20, 1997 AFRP Upstream Action #3	CVPIA Nov. 20, 1997 AFRP Upstream Action #3	CVPIA Nov. 20, 1997 AFRP Upstream Action #3
Instream Flow Requirement @ H St	SWRCB D-893	SWRCB D-893	SWRCB D-893	SWRCB D-893

<p align="center">Table 1 Placer Vineyards Specific Plan EIR Modeling Assumptions</p>				
	Existing	Proposed Interim Water Supply	Sacramento River Diversion (PCWA CVP)	Sub-alt Sacramento River Diversion (PCWA CVP)
<u>Lower Sacramento River</u>				
Instream Flow Requirement @ Freesport	CVPIA Nov. 20, 1997 AFRP Delta Action #4	CVPIA Nov. 20, 1997 AFRP Delta Action #4	CVPIA Nov. 20, 1997 AFRP Delta Action #4	CVPIA Nov. 20, 1997 AFRP Delta Action #4
Instream Flow Requirement @ Rio Vista	SWRCB D-1641	SWRCB D-1641	SWRCB D-1641	SWRCB D-1641
<u>Mokelumne River</u>				
Instream Flow Requirement	1996 Joint Settlement Agreement (note f)			
<u>Stanislaus River (STANMOD/SANJASM)</u>				
Instream Flow Requirement	New Melones Interim Operations Plan, 1997 (note g)	New Melones Interim Operations Plan, 1997 (note g)	New Melones Interim Operations Plan, 1997 (note g)	New Melones Interim Operations Plan, 1997 (note g)
<u>Tuolumne River (SANJASM)</u>				
Instream Flow Requirement	1995 FERC 2299-024 (94 – 301 TAF/YR)			
<u>San Joaquin River (SANJASM)</u>				
Instream Flow Requirement @ Vernalis	SWRCB D-1422, SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #1	SWRCB D-1422, SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #1	SWRCB D-1422, SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #1	SWRCB D-1422, SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #1
<u>Delta</u>				
Delta Outflow Index/Salinity Requirements	SWRCB D-1641 (MDO Implementation); CVPIA Nov. 20, 1997 AFRP Delta Action #3	SWRCB D-1641 (MDO Implementation); CVPIA Nov. 20, 1997 AFRP Delta Action #3	SWRCB D-1641 (MDO Implementation); CVPIA Nov. 20, 1997 AFRP Delta Action #3	SWRCB D-1641 (MDO Implementation); CVPIA Nov. 20, 1997 AFRP Delta Action #3
Delta Cross Channel Gate Operation	SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #6	SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #6	SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #6	SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #6
Delta Export Restrictions	SWRCB D-1641 (Export/Inflow Ratio); CVPIA Nov. 20, 1997 AFRP Delta Actions #1, #5 and #7 (Delta Action #8 not modeled)	SWRCB D-1641 (Export/Inflow Ratio); CVPIA Nov. 20, 1997 AFRP Delta Actions #1, #5 and #7 (Delta Action #8 not modeled)	SWRCB D-1641 (Export/Inflow Ratio); CVPIA Nov. 20, 1997 AFRP Delta Actions #1, #5 and #7 (Delta Action #8 not modeled)	SWRCB D-1641 (Export/Inflow Ratio); CVPIA Nov. 20, 1997 AFRP Delta Actions #1, #5 and #7 (Delta Action #8 not modeled)

**Table 1
Sacramento Municipal Utility District CVP Water Service Contract EIR
Modeling Assumptions**

	Folsom Reservoir Diversion		Subalt Folsom Reservoir Diversion		Future No-Project	
	1922-1991	2020	1922-1991	2020	1922-1991	2020
Period of Record						
Hydrology/Level of Land Use						
Demands						
North of Delta (exc. American R. basin):						
CVP Refuges	Maximum Historic Use Firm Level 2	None	Maximum Historic Use Firm Level 2	None	Maximum Historic Use Firm Level 2	None
PCWA MFP water rights supply diverted on the Sacramento River upstream of the confluence with the American River through an exchange	None	None	None	None	None	None
PCWA CVP contract supply diverted on the Sacramento River upstream of the confluence with the American River	None	None	None	None	None	None
American River Basin:						
PCWA CVP contract water supply diverted at Folsom Dam	2025 (note b) 35 TAF/YR	(note c)	2025 (note b) 13 TAF/YR	(note c)	2025 (note b) none	(note c)
PCWA MFP water rights supply diverted at Auburn Pump Station	35.5 TAF/YR	(note c)	35.5 TAF/YR	(note c)	35.5 TAF/YR	(note c)
EBMUD	(note c)					
South of Delta:						
CVP	3.4 MAF/YR					
CCWD	195 TAF/YR (note d)					
SWP (w/ North Bay Aqueduct)	3.4-4.2 MAF/YR					
SWP Interruptible Demand	None	None	None	None	None	None
Facilities/Operations						
Folsom Lake:						
Flood Control Diagram	Variable 400/670 non-linear (without outlet modifications) 3-2-4					
Temperature Control Shutters	Multi-species Balance (note e)					
Cold Water Pool Management	Yes	Yes	Yes	Yes	Yes	Yes
M&I Temperature Control Device	Yes	Yes	Yes	Yes	Yes	Yes
EID Temperature Control Device	Yes	Yes	Yes	Yes	Yes	Yes
Shasta Lake:						
Temperature Control Device	Yes	Yes	Yes	Yes	Yes	Yes
Whiskeytown Reservoir:						
Temperature Control Curtain	Yes	Yes	Yes	Yes	Yes	Yes

**Table 1
Sacramento Municipal Utility District CVP Water Service Contract EIR
Modeling Assumptions**

	Folsom Reservoir Diversion	Subalt Folsom Reservoir Diversion	Future No-Project
CVP Water Allocation			
CVP Settlement/Exchange	100%, 75% based on Shasta Index	100%, 75% based on Shasta Index	100%, 75% based on Shasta Index
CVP Agriculture	100% - 0% based on supply	100% - 0% based on supply	100% - 0% based on supply
CVP Municipal & Industrial	100% - 50% based on supply	100% - 50% based on supply	100% - 50% based on supply
CVP Refuges	100%, 75% based on Shasta Index	100%, 75% based on Shasta Index	100%, 75% based on Shasta Index
Regulatory Standards			
Trinity River:			
Instream Flow Requirement	Trinity EIS Preferred Alternative (369-815 TAF/YR variable)	Trinity EIS Preferred Alternative (369-815 TAF/YR variable)	Trinity EIS Preferred Alternative (369-815 TAF/YR variable)
Trinity Reservoir End-of-September Minimum Storage	600 TAF as able	600 TAF as able	600 TAF as able
Clear Creek:			
Instream Flow Requirement	CVPIA Nov. 20, 1997 AFRP Upstream Action #1	CVPIA Nov. 20, 1997 AFRP Upstream Action #1	CVPIA Nov. 20, 1997 AFRP Upstream Action #1
Upper Sacramento River:			
Shasta Lake End-of-September Minimum Storage	1993 Winter-run Biological Opinion (1900 TAF)	1993 Winter-run Biological Opinion (1900 TAF)	1993 Winter-run Biological Opinion (1900 TAF)
Instream Flow Requirement @ Keswick	SWRCB WR 90-5; 1993 Winter-run Biological Opinion; and CVPIA Nov. 20, 1997 AFRP Upstream Action #2	SWRCB WR 90-5; 1993 Winter-run Biological Opinion; and CVPIA Nov. 20, 1997 AFRP Upstream Action #2	SWRCB WR 90-5; 1993 Winter-run Biological Opinion; and CVPIA Nov. 20, 1997 AFRP Upstream Action #2
River Flow Objective for NCP	(3,250 – 5,000 cfs based on supply)	(3,250 – 5,000 cfs based on supply)	(3,250 – 5,000 cfs based on supply)
American River:			
Instream Flow Requirement @ Nimbus	CVPIA Nov. 20, 1997 AFRP Upstream Action #3	CVPIA Nov. 20, 1997 AFRP Upstream Action #3	CVPIA Nov. 20, 1997 AFRP Upstream Action #3
Instream Flow Requirement @ H St	SWRCB D-893	SWRCB D-893	SWRCB D-893

**Table 1
Sacramento Municipal Utility District CVP Water Service Contract EIR
Modeling Assumptions**

	Folsom Reservoir Diversion	Subalt Folsom Reservoir Diversion	Future No-Project
Lower Sacramento River			
Instream Flow Requirement @ Fresno	CVPIA Nov. 20, 1997 AFRP Delta Action #4	CVPIA Nov. 20, 1997 AFRP Delta Action #4	CVPIA Nov. 20, 1997 AFRP Delta Action #4
Instream Flow Requirement @ Rio Vista	SWRCB D-1641	SWRCB D-1641	SWRCB D-1641
Mokelumne River			
Instream Flow Requirement	1996 Joint Settlement Agreement (note f)	1996 Joint Settlement Agreement (note f)	1996 Joint Settlement Agreement (note f)
Stanislaus River (STANMOD/SANJASM)			
Instream Flow Requirement	New Melones Interim Operations Plan, 1997 (note g)	New Melones Interim Operations Plan, 1997 (note g)	New Melones Interim Operations Plan, 1997 (note g)
Tuolumne River (SANJASM)			
Instream Flow Requirement	1995 FERC 2299-024 (94 – 301 TAF/YR)	1995 FERC 2299-024 (94 – 301 TAF/YR)	1995 FERC 2299-024 (94 – 301 TAF/YR)
San Joaquin River (SANJASM)			
Instream Flow Requirement @ Vernalis	SWRCB D-1422, SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #1	SWRCB D-1422, SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #1	SWRCB D-1422, SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #1
Delta			
Delta Outflow Index/Salinity Requirements	SWRCB D-1641 (MDO Implementation); CVPIA Nov. 20, 1997 AFRP Delta Action #3	SWRCB D-1641 (MDO Implementation); CVPIA Nov. 20, 1997 AFRP Delta Action #3	SWRCB D-1641 (MDO Implementation); CVPIA Nov. 20, 1997 AFRP Delta Action #3
Delta Cross Channel Gate Operation	SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #6	SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #6	SWRCB D-1641 and CVPIA Nov. 20, 1997 AFRP Delta Action #6
Delta Export Restrictions	SWRCB D-1641 (Export/Inflow Ratio); CVPIA Nov. 20, 1997 AFRP Delta Actions #1, #5 and #7 (Delta Action #8 not modeled)	SWRCB D-1641 (Export/Inflow Ratio); CVPIA Nov. 20, 1997 AFRP Delta Actions #1, #5 and #7 (Delta Action #8 not modeled)	SWRCB D-1641 (Export/Inflow Ratio); CVPIA Nov. 20, 1997 AFRP Delta Actions #1, #5 and #7 (Delta Action #8 not modeled)

Notes on following page

Notes:

- a) American Basin 2000 demands same as Base condition in Water Forum EIR with a few updated entries. For demand associated with each purveyor, see table titled "American River Basin Demand Assumptions, Current Condition (2000)". At these levels of demand, there is no need for reduced or replaced diversions in dry years.
- b) American Basin 2025 demands consistent with Water Forum Proposal. For demand associated with each purveyor, see table titled "American River Basin Demand Assumptions, Cumulative Condition (2025)".
- c) Diversions from Sacramento River near Freeport as represented in EBMUD Supplemental Water Supply Project REIR/SEIS. Diversions subject to contract terms of 133,000 AF/year, CVP M&I deficiencies, projected October 1st EBMUD Mokelumne River Total System Storage (TSS) not exceeding 500 TAF, and 165,000 AF total diversion in any three consecutive years. Diversion restricted to 155 cfs and not restricted by Hodge Decision terms. Implementation of these constraints based on EBMUD Supplemental Water Supply study #6174 representation of Mokelumne River operations.
- d) CCWD demand is a time series that reflects operation of Los Vaqueros Reservoir.
- e) Multi-species Balance refers to automated temperature selection procedure and schedule as utilized in modeling for SAFCA. This is slightly different than the schedule used for the Water Forum EIR.
- f) As defined by Reclamation staff for PEIS Preferred Alternative.
- g) Long-term operation plan envisioned in CVPIA November 20, 1997 AFRP Upstream Action #4 not yet determined.

Table 2. Sacramento Valley Demand Assumptions, Maximum Historic Use (2000/2025)

Location / Purveyor	ALLOCATION TYPE (AF MAXIMUM)					Total	Maximum Historic Use Based Demand (AF)	Notes
	CVP AG	CVP MI	CVP Settlement / Exchange	Water Rights / Non-CVP / No Cuts	CVP Refuge			
Node 61								
Anderson Cottonwood ID	0	0	169,343	0	0	169,343	169,343	
Total	0	0	169,343	0	0	169,343	169,343	
Node 62								
Clear Creek CSD	15,300	0	0	0	0	15,300	15,300	
Bella Vista WD	24,000	0	0	0	0	24,000	24,000	
Shasta CSD	1,000	0	0	0	0	1,000	1,000	
Keswick CSD	500	0	0	0	0	500	500	
Sac R. Misc Users	0	0	0	1,961	0	1,961	1,961	
Redding, City of	0	0	21,000	0	0	21,000	21,000	
Shasta Dam PUD	2,750	0	0	0	0	2,750	2,750	
Mountain Gate CSD	350	0	0	0	0	350	350	
Shasta County Water Agency	5,000	0	0	0	0	5,000	5,000	
Redding, City of/Buckeye	0	6,140	0	0	0	6,140	6,140	
Total	48,900	6,140	21,000	1,961	0	78,001	78,001	
Node 8 (Corning Canal)								
Corning WD	25,300	0	0	0	0	25,300	25,300	
Elder Creek WD	0	0	0	0	0	0	0	
Proberta WD	5,500	0	0	0	0	5,500	5,500	
Thomes Creek WD	8,400	0	0	0	0	8,400	8,400	
Kirkwood WD	2,100	0	0	0	0	2,100	2,100	
Tehama WD	0	0	0	0	0	0	0	
Total	41,300	0	0	0	0	41,300	41,300	
Node 9 (Tehama Colusa Canal)								
Colusa, County of	59,999	0	0	0	0	59,999	59,999	
Colusa County WD	62,200	0	0	0	0	62,200	62,200	
Davis WD	4,000	0	0	0	0	4,000	4,000	
Dunnigan WD	19,000	0	0	0	0	19,000	19,000	
Glide WD	10,500	0	0	0	0	10,500	10,500	
Kanawha WD	45,000	0	0	0	0	45,000	45,000	
La Grande WD	5,000	0	0	0	0	5,000	5,000	
Orland-Artois WD	53,000	0	0	0	0	53,000	53,000	
Westside WD	25,000	0	0	0	0	25,000	25,000	
Total	283,699	0	0	0	0	283,699	283,699	
Node 6								
Sacramento River Misc. Users	0	0	0	5,590	0	5,590	5,590	
Total	0	0	0	5,590	0	5,590	5,590	
Node 67 (GCID Canal)								
Glenn Colusa ID	0	0	825,000	0	0	825,000	825,000	
Sacramento NWR	0	0	0	0	54,588	54,588	54,588	Firm Level 2 plus 15% loss
Delevan NWR	0	0	0	0	24,647	24,647	24,647	Firm Level 2 plus 15% loss
Colusa NWR	0	0	0	0	29,412	29,412	29,412	Firm Level 2 plus 15% loss
Total	0	0	825,000	0	108,647	933,647	933,647	

Table 2. (continued) Sacramento Valley Demand Assumptions, Maximum Historic Use (2000/2025)

Location / Purveyor	ALLOCATION TYPE (AF MAXIMUM)						Maximum Historic Use Based Demand (AF)	Notes
	CVP AG	CVP MI	CVP Settlement / Exchange	Water Rights / Non-CVP / No Cuts	CVP Refuge	Total		
Node 7								
Cotusa Irrigation Company	0	0	720	0	0	720	720	
Meridian Farms WC	0	0	29,212	0	0	29,212	29,212	
Pelger Mutual WC	0	0	6,635	0	0	6,635	6,635	
Reclamation District 1004	0	0	71,400	0	0	71,400	71,400	
Reclamation District 108	0	0	213,106	0	0	213,106	213,106	
Roberts Ditch IC	0	0	2,838	0	0	2,838	2,838	
Sartain MWD	0	0	4,554	0	0	4,554	4,554	
Sutter MWC	0	0	248,989	0	0	248,989	248,989	
Swinford Tract Irrigation Co.	0	0	225	0	0	225	225	
Tisdale Irrigation & Drainage Co.	0	0	9,163	0	0	9,163	9,163	
Sac R. Misc Users	0	0	0	128,223	0	128,223	128,223	
Feather River WD export	20,000	0	0	0	0	20,000	20,000	
Total	20,000	0	586,842	128,223	0	735,065	735,065	
Node 59								
Maxwell ID	0	0	9,125	0	0	9,125	9,125	
Princeton-Codora-Glenn ID	0	0	67,810	0	0	67,810	67,810	
Provident ID	0	0	48,747	0	0	48,747	48,747	
Total	0	0	125,682	0	0	125,682	125,682	
Node 11								
Sutter NWR	0	0	0	0	26,111	26,111	26,111	Firm Level 2 plus 11% loss
Gray Lodge WMA	0	0	0	0	40,602	40,602	40,602	Firm Level 2 plus 15% loss
Total	0	0	0	0	66,713	66,713	66,713	
Node 13								
Sac R. Misc Users	0	0	0	9,803	0	9,803	9,803	
Natomas Central MWC	0	0	120,200	0	0	120,200	120,200	
Pleasant Grove-Verona MWC	0	0	19,110	0	0	19,110	19,110	
Total	0	0	139,310	9,803	0	149,113	149,113	
Node 50								
West Sacramento, City of	0	0	23,600	0	0	23,600	23,600	
Sac R. Misc Users	0	0	0	52,446	0	52,446	52,446	
Total	0	0	23,600	52,446	0	76,046	76,046	
Node 28								
City of Vallejo	0	0	0	16,000	0	16,000	16,000	
Total	0	0	0	16,000	0	16,000	16,000	
Total	393,899	6,140	1,890,777	214,023	108,647	2,613,486	2,613,486	

Table 3. South of Delta Demand Assumptions, 3.4 MAF (2000/2025)

Location / Purveyor	ALLOCATION TYPE (AF MAXIMUM)						3.4 MAF Demand (AF)	Notes
	CVP AG	CVP MI	CVP Settlement / Exchange	Water Rights / Non-CVP / No Cuts	CVP Refuge	Total		
Node 29								
Contra Costa Water District	0	195,000	0	0	0	195,000	195,000	140 TAF in Year 2000.
Total	0	195,000	0	0	0	195,000	195,000	
Node 45								
Plainview WD	20,600	0	0	0	0	20,600	20,600	
Tracy, City of	0	10,000	0	0	0	10,000	10,000	
Banta Carbona ID	25,000	0	0	0	0	25,000	25,000	
West Side ID	7,500	0	0	0	0	7,500	7,500	
Estimated Pro-rated Losses	0	0	0	5,500	0	5,500	5,500	
Total	53,100	10,000	0	5,500	0	68,600	68,600	
Node 51								
Davis WD	5,400	0	0	0	0	5,400	5,400	
Del Puerto WD	12,060	0	0	0	0	12,060	12,060	
Hospital WD	34,105	0	0	0	0	34,105	34,105	
Kern Canon WD	7,700	0	0	0	0	7,700	7,700	
Salado WD	9,130	0	0	0	0	9,130	9,130	
Sunflower WD	16,625	0	0	0	0	16,625	16,625	
West Stanislaus WD	50,000	0	0	0	0	50,000	50,000	
Mustang WD	14,680	0	0	0	0	14,680	14,680	
Orestimba WD	15,860	0	0	0	0	15,860	15,860	
Patterson WD	16,500	0	0	0	0	16,500	16,500	
Patterson WD (Water Rights)	0	0	6,000	0	0	6,000	6,000	
Foothill WD	10,840	0	0	0	0	10,840	10,840	
Estimated Pro-rated Losses	0	0	0	10,100	0	10,100	10,100	
Total	192,900	0	6,000	10,100	0	209,000	209,000	
Node 52								
Quinto WD	8,620	0	0	0	0	8,620	8,620	
Romero WD	5,190	0	0	0	0	5,190	5,190	
Centinella WD	2,500	0	0	0	0	2,500	2,500	
Estimated Pro-rated Losses	0	0	0	2,900	0	2,900	2,900	
Total	16,310	0	0	2,900	0	19,210	19,210	
Node 47								
Central California ID	0	0	216,000	0	0	216,000	216,000	
Grasslands via CCID	0	0	0	0	83,824	83,824	83,824	Firm Level 2 plus 15% loss
Los Banos WMA	0	0	0	0	7,501	7,501	7,501	Firm Level 2 plus 21% loss
Kesterson NWR	0	0	0	0	11,147	11,147	11,147	Firm Level 2 plus 15% loss
Freitas - SJBAP	0	0	0	0	7,053	7,053	7,053	Firm Level 2 plus 25% loss
Salt Slough - SJBAP	0	0	0	0	7,859	7,859	7,859	Firm Level 2 plus 15% loss
China Island - SJBAP	0	0	0	0	8,196	8,196	8,196	Firm Level 2 plus 15% loss
Volta WMA	0	0	0	0	13,000	13,000	13,000	Firm Level 2 plus 0% loss
Grassland via Volta Wasteway	0	0	0	0	44,118	44,118	44,118	Firm Level 2 plus 15% loss
Total	0	0	216,000	0	182,697	398,697	398,697	
Node 53								
Panoche WD	27,000	0	0	0	0	27,000	27,000	
San Luis WD	65,000	0	0	0	0	65,000	65,000	
Broadview WD	27,000	0	0	0	0	27,000	27,000	
Laguna WD	800	0	0	0	0	800	800	
Eagle Field WD	4,550	0	0	0	0	4,550	4,550	
Mercy Springs WD	13,300	0	0	0	0	13,300	13,300	
Oro Loma WD	4,600	0	0	0	0	4,600	4,600	
Widren WD	2,990	0	0	0	0	2,990	2,990	
Total	145,240	0	0	0	0	145,240	145,240	

Table 3. (continued) South of Delta Demand Assumptions, 3.4 MAF (2000/2025)

Location / Purveyor	ALLOCATION TYPE (AF MAXIMUM)					Total	3.4 MAF Demand (AF)	Notes
	CVP AG	CVP MI	CVP Settlement / Exchange	Water Rights / Non-CVP / No Cuts	CVP Refuge			
Node 54								
Westlands WD (incl. Barcellos)	50,000	0	0	0	0	50,000	50,000	
Fresno Slough WD	4,000	0	0	0	0	4,000	4,000	
James ID	35,300	0	0	0	0	35,300	35,300	
Traction Ranch/F&G	2,080	0	0	0	0	2,080	2,080	
Tranquillity ID	13,800	0	0	0	0	13,800	13,800	
Hughes, Melvin	70	0	0	0	0	70	70	
R.D. 1606	228	0	0	0	0	228	228	
Total	105,478	0	0	0	0	105,478	105,478	
Node 55								
Lower DMC Losses	0	0	0	101,500	0	101,500	101,500	
Total	0	0	0	101,500	0	101,500	101,500	
Node 48								
Exchange Contractors	0	0	624,000	0	0	624,000	624,000	
Sch. II W.R.	0	0	34,813	0	0	34,813	34,813	
Grasslands WD	0	0	0	0	19,118	19,118	19,118	Firm Level 2 plus 15% loss
Los Banos WMA	0	0	0	0	7,952	7,952	7,952	Firm Level 2 plus 21% loss
San Luis NWR	0	0	0	0	25,333	25,333	25,333	Firm Level 2 plus 25% loss
Mendota WMA	0	0	0	0	27,594	27,594	27,594	Firm Level 2 plus 0% loss
West Gallo - SJBAP	0	0	0	0	14,413	14,413	14,413	Firm Level 2 plus 25% loss
East Gallo - SJBAP	0	0	0	0	0	0	0	
Total	0	0	658,813	0	94,410	753,223	753,223	
Node 34								
San Benito County WD	0	8,250	0	0	0	8,250	8,250	
Santa Clara Valley WD	0	119,400	0	0	0	119,400	119,400	
San Benito County WD	35,550	0	0	0	0	35,550	35,550	
Santa Clara Valley WD	33,100	0	0	0	0	33,100	33,100	
Pajaro Valley Wtr Mgmt Agency	19,900	0	0	0	0	19,900	19,900	
Total	88,550	127,650	0	0	0	216,200	216,200	
Node 35								
Westlands WD	1,100,000	0	0	0	0	1,100,000	1,100,000	
San Luis WD	59,580	440	0	0	0	60,000	60,000	
Panoche WD	66,937	63	0	0	0	67,000	67,000	
Pacheco WD	10,000	80	0	0	0	10,080	10,080	
Grasslands WD	0	0	0	3,500	0	3,500	3,500	
CA, State Parks and Rec	0	0	2,250	0	0	2,250	2,250	
Affonso/Los Banos Gravel Co.	0	0	250	0	0	250	250	
Avenal, City of	0	3,500	0	0	0	3,500	3,500	
Coalinga, City of	0	10,000	0	0	0	10,000	10,000	
Huron, City of	0	3,000	0	0	0	3,000	3,000	
Total	1,238,497	17,083	2,500	3,500	0	1,259,580	1,259,580	
Node 37								
CVC Users	127,995	0	0	0	0	127,995	127,995	
Kern NWR	0	0	0	0	11,437	11,437	11,437	Firm Level 2 plus 13% loss
Pixley NWR	0	0	0	0	0	0	0	
Total	127,995	0	0	0	11,437	139,432	139,432	
Total (excluding Node 29)	1,966,070	154,733	883,313	123,500	288,545	3,416,161	3,416,161	

Table 4. American River Basin Demand Assumptions, Current Condition (2000)

Location / Purveyor	ALLOCATION TYPE (AF MAXIMUM)						2000 Level Demand (AF)
	CVP AG	CVP MI	CVP Settlement / Exchange	Water Rights / Non-CVP / No Cuts	CVP Refuge	Total	
Pilot Creek (Modeled by Upper American River Model)							
Georgetown	0	0	0	10,000	0	10,000	10,000
Auburn Dam Site (Modeled by Upper American River Model)							
Placer County Water Agency	0	0	0	8,500	0	8,500	8,500
Georgetown	0	0	0	0	0	0	0
Total	0	0	0	8,500	0	8,500	8,500
South Fork American River (Modeled by Upper American River Model)							
El Dorado Irrigation District	0	0	0	16,350	0	16,350	16,350
Node 14 (Folsom Reservoir)							
Northridge Water District	0	0	0	0	0	0	0
City of Folsom	0	0	0	20,000	0	20,000	20,000
Folsom Prison	0	0	0	2,000	0	2,000	2,000
San Juan Water District (Placer County)	0	0	0	10,000	0	10,000	10,000
San Juan Water District (Sac County)	0	11,200	0	33,000	0	44,200	44,200
El Dorado Irrigation District	0	7,550	0	0	0	7,550	5,000
El Dorado Irrigation District	0	0	0	0	0	0	0
City of Roseville	0	32,000	0	0	0	32,000	26,633
Placer County Water Agency	0	0	0	0	0	0	0
Total	0	50,750	0	65,000	0	115,750	107,833
Node 15 (Folsom South Canal)							
So. Cal. WC/ Arden Cordova WC	0	0	0	3,500	0	3,500	3,500
California Parks and Recreation	0	100	0	0	0	100	100
SMUD	0	0	0	15,000	0	15,000	15,000
South Sac. County Agriculture	0	0	0	0	0	0	0
EBMUD	0	0	0	0	0	0	0
Canal Losses	0	0	0	1,000	0	1,000	1,000
Total	0	100	0	19,500	0	19,600	19,600
Node 16 (Nimbus to Mouth)							
City of Sacramento	0	0	0	63,335	0	63,335	63,335
Arcade Water District	0	0	0	2,000	0	2,000	2,000
Carmichael Water District	0	0	0	8,000	0	8,000	8,000
EBMUD	0	0	0	0	0	0	0
Total	0	0	0	73,335	0	73,335	73,335

Table 4. (continued) American River Basin Demand Assumptions, Current Condition (2000)

Location / Purveyor	ALLOCATION TYPE (AF MAXIMUM)							2000 Level Demand (AF)	Notes
	CVP AG	CVP MI	CVP Settlement / Exchange	Water Rights / Non-CVP / No Cuts	CVP Refuge	Total			
Node 13 (Sacramento River)									
Placer County Water Agency	0	0	0	0	0	0	0	0	
Northridge Water District	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	
Node 17 (Sacramento River)									
City of Sacramento	0	0	0	38,665	0	0	38,665	38,665	
Sacramento County Water Agency (SMUD Transfer)	0	0	0	0	0	0	0	0	
Sacramento County Water Agency (P.L. 101-514)	0	15,000	0	0	0	0	15,000	3,200	
Total	0	15,000	0	38,665	0	0	53,665	41,865	
Replacement Water									
Placer County Water Agency	0	0	0	0	0	0	0	0	
City of Roseville	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	
Total (excluding replacement water)	0	65,850	0	231,350	0	0	297,200	277,463	

Table 5. American River Basin Demand Assumptions, Cumulative Condition (2025)

Location / Purveyor	ALLOCATION TYPE (AF MAXIMUM)					2025 Level Demand (AF)	
	CVP AG	CVP MI	CVP Settlement / Exchange	Water Rights / Non-CVP / No Cuts	CVP Refuge	(Note a)	
					Total	> 1600	< 400
						> 950	< 400
Pilot Creek (Modeled by Upper American River Model)							
Georgetown	0	0	0	11,200	0	11,200	11,200
Auburn Dam Site (Modeled by Upper American River Model)							
Placer County Water Agency	0	0	0	35,500	0	35,500	35,500
Georgetown (P.L. 101-514, 5000 AF)	0	5,000	0	0	0	5,000	1,300
Total	0	5,000	0	35,500	0	40,500	36,800
South Fork American River (Modeled by Upper American River Model)							
El Dorado Irrigation District	0	0	0	16,350	0	16,350	16,350
Node 14 (Folsom Reservoir)							
Northridge Water District	0	0	0	29,000	0	29,000	0
City of Folsom (includes P.L. 101-514, 7000 AF)	0	7,000	0	27,000	0	34,000	20,000
Folsom Prison	0	0	0	2,000	0	2,000	2,000
San Juan Water District (Placer County)	0	0	0	25,000	0	25,000	10,000
San Juan Water District (Sac County) (includes P.L. 101-514, 13,000 AF)	0	24,200	0	33,000	0	57,200	44,200
El Dorado Irrigation District	0	7,550	0	17,000	0	24,550	22,550
El Dorado Irrigation District (P.L. 101-514, 10,000 AF)	0	10,000	0	0	0	10,000	0
City of Roseville	0	32,000	0	30,000	0	62,000	54,900
Placer County Water Agency	0	0	0	0	0	0	0
Total	0	80,750	0	163,000	0	243,750	207,650
Node 15 (Folsom South Canal)							
So. Cal WC/ Arden Cordova WC	0	0	0	5,000	0	5,000	5,000
California Parks and Recreation	0	100	0	0	0	100	100
SMUD	0	15,000	0	15,000	0	30,000	30,000
South Sacramento County Agriculture (SMUD assignment)	15,000	0	0	0	0	15,000	0
EBMUD	0	0	0	0	0	0	0
Canal Losses	0	0	0	1,000	0	1,000	1,000
Total	15,000	15,100	0	21,000	0	51,100	36,100
Node 16 (Nimbus to Mouth)							
City of Sacramento	0	0	0	96,300	0	96,300	50,000
Arcade Water District	0	0	0	11,200	0	11,200	3,500
Carmichael Water District	0	0	0	12,000	0	12,000	12,000
Total	0	0	0	119,500	0	119,500	65,500

Table 5. (continued) American River Basin Demand Assumptions, Cumulative Condition (2025)

Location / Purveyor	ALLOCATION TYPE (AF MAXIMUM)					2025 Level Demand (AF) (Note a)		
	CVP AG	CVP MI	CVP Settlement / Exchange	Water Rights / Non-CVP / No Cuts	CVP Refuge	Total	FUJ (Mar - Nov) > 1600	FUJ (Mar - Nov) > 950 < 400
Node 13 (Sacramento River)								
Placer County Water Agency	0	35,000	0	0	0	35,000	35,000	35,000
Northridge Water District	0	0	0	0	0	0	0	0
Total	0	35,000	0	0	0	35,000	35,000	35,000
Node 17 (Sacramento River)								
City of Sacramento	0	0	0	34,300	0	34,300	34,300	80,600 Note f
Sacramento County Water Agency (SMUD assignment)	0	30,000	0	0	0	30,000	30,000	30,000
Sacramento County Water Agency (P.L. 101-514)	0	15,000	0	0	0	15,000	15,000	15,000
EBMUD	0	0	0	0	0	0	0	0
Total	0	45,000	0	34,300	0	79,300	79,300	125,600 Note h
Replacement Water								
Placer County Water Agency	0	0	0	27,000	0	27,000	0	27,000
City of Roseville	0	0	0	20,000	0	20,000	0	20,000
Total	0	0	0	47,000	0	47,000	0	47,000
Total (excluding replacement water)	15,000	180,850	0	400,850	0	596,700	589,600	450,100

Notes:

- (a) 2025 Level demand varies according to Folsom Unimpaired Inflow, (in TAF, March - November), as shown. Also, when 950 > FUJ > 400, demand is linearly interpolated between demand at 950 TAF and demand at 400 TAF.
- (b) Values have been updated slightly from Water Forum amounts.
- (c) When FUJ < 950 TAF, these diversions require equivalent release of Replacement Water from Middle Fork Project (MFP) to lower American River.
- (d) Demand provided from PCWA MFP; consistent assumptions required in Upper American River model.
- (e) Demand only when FUJ > 1600 TAF.
- (f) City of Sacramento diversions are modeled in accordance with the Water Forum Proposal wherein the City agreed to restrict diversions at the Fairbairn WTP when diversions would cause the river flow to drop below the Hodge Flow Criteria in EDF v. EBMUD and when FUJ < 400 TAF. It is assumed that City of Sacramento demand not diverted from the American River would be diverted from the Sacramento River and that the combined diversions would be 130,600 AF/year.
- (g) Demand is not interpolated when 950 > FUJ > 400 TAF; instead demand is a step function at FUJ = 400 TAF.
- (h) The Hodge decision in EDF v. EBMUD set minimum instream flows which cannot be impacted by EBMUD diversions. Other constraints apply to EBMUD demand; it will be modeled by time series input.

Placer Vineyards Specific Plan EIR

Water Supply Alternatives Briefing Memorandum

INTRODUCTION

Placer County is preparing an Environmental Impact Report (EIR) as required under the California Environmental Quality Act (CEQA) to evaluate potential impacts associated with the implementation of the Placer Vineyards Specific Plan in southwestern Placer County, California. As part of the Placer Vineyards Specific Plan, potential water supply and related impacts must be evaluated. The purpose of this briefing memorandum is to describe the interim water supply proposed for the project as well as develop a reasonable range of water supply alternatives. Interim and long-term water supply alternatives that pass a screening process and the Proposed Interim Water Supply will be evaluated in the EIR. Both interim and long-term water supply alternatives are included in the screening process because many of the long-term alternatives cannot be operational until after the proposed first phase of development of this project.

This briefing memorandum describes the range of potential water supply alternatives, the screening process that is subsequently applied to eliminate infeasible alternatives, and the relative merits of each alternative in the context of the applied screening criteria. The interim water supply alternatives will be subject to the same CEQA screening criteria and evaluation process as the long-term alternatives.

The information contained in this memorandum is an important part of the project's administrative record, serving as documentation for the selection of the EIR water supply alternatives. It is intended that this memorandum be distributed to relevant public trust resource agencies and other interested or affected parties, as determined by the lead agency and project team. Comment and/or input will be solicited from all recipients, carefully considered within the project team decision-making process, and included in the EIR documentation record.

SCREENING CRITERIA

The criteria used to screen the water supply alternatives are applied to determine which alternatives are practicable and warrant further detailed consideration in the EIR. The specific screening criteria are identified below, followed by a summary of the considerations associated with each criterion. Notably, an alternative may turn out to be viable without necessarily satisfying all criteria. An optimal alternative may reflect a balancing of the various criteria.

RELIABILITY CRITERION

An alternative alone, or in combination with another alternative or other alternatives, must be capable of supplying water during all years.

Water supply reliability is a critical element within urban water supply planning. Providing a consistently available water supply to customers is an underlying objective of all water purveyors. However, providing a "guaranteed" water supply under all circumstances is not

always possible, and thus reliability planning requires the investigation of the relationship between the risk of shortage, the consequences of incurring that shortage, the cost of minimizing the effects of that shortage, and the cost of avoiding the shortage.

Meteorological conditions determine, to a large extent, surface water availability in California and dictate the annual and seasonal water availability for any number of end uses. Under “wet” and “above-normal” hydrologic conditions, available surface water supply is generally considered adequate to meet existing and many future demands. As surface water supply availability is reduced, however, curtailment of water deliveries for many consumptive uses becomes necessary. The ability of such end users to meet their water needs with alternative sources, therefore, becomes an important planning consideration under such inevitable situations.

The respective reliability of alternative water supplies is differentiated by the nature (i.e., entitlement type) of the water source. For instance, an existing Central Valley Project (CVP) surface water supply through a U.S. Bureau of Reclamation (USBR) water service contract may be subject to annual reduction due to water supply shortages within the CVP. Municipal and industrial CVP water service contractors are subject to deficiencies of up to 50 percent of their contract amount in water short (i.e., dry or critical) years. The reliability of a water supply, therefore, can be determined by the potential risk that the supply might not be available in all years. For water supply planning, the risk of water shortage should be at least minimized, if not eliminated.

GROUNDWATER DEPLETION CRITERION

An alternative cannot adversely deplete the groundwater aquifer from a basin-wide groundwater perspective.

Groundwater pumping has, for many years, exceeded groundwater recharge in the southern portion of the North American River Groundwater Basin, which underlies northern Sacramento County and western Placer County. With groundwater recharge unable to maintain equilibrium with pumping, the groundwater aquifer has not been able to stabilize. Records of groundwater levels indicate that in some areas, the phreatic zone has fallen, in some cases, significantly. The declining groundwater basin in western Placer County has had substantial adverse economic impacts upon existing residents through the cost of lowering many individual wells, and upon agriculture by increasing the delivered cost of water to near the price tolerance level for the agricultural economy. The lower groundwater levels resulting from prolonged additional pumping from the underlying aquifer also leads water utilities to pass on to customers their increased costs of providing groundwater. Additional pumping also may lead to degraded groundwater quality due to an upward migration of low quality, non-potable water from deeper formations, which could result in the need for groundwater treatment prior to delivery. Increased groundwater pumping also could potentially contribute to the adverse movement of groundwater contaminants.

Consequently, Placer County has established the following policy in their General Plan (Placer County, August 1994):

- *Water Supply and Delivery Policy: Urban and suburban development should rely on public water systems using surface supply (Policy 4.C.2.a).*

In the Dry Creek West Placer Community Plan, which includes the Placer Vineyards area, a specific policy was developed to protect the existing aquifer—a surface water supply must be acquired as a precursor to development in the Community Plan area (Placer County 1990). This policy is expressed in the following statements:

- *Water Supply Goal: To provide a source of treated and untreated surface water for all future development in the plan area including agriculture.*
- *Water Supply Policy: Require that a new surface water source for domestic use be developed along with the first new residential development in the Plan area and ensure that all future commercial, industrial, residential, or public use provide for the extension of such a system.*

Notwithstanding, PCWA prefers to have groundwater available to improve system reliability in case of emergencies or surface water shortages during drought situations.

TECHNICAL AND PHYSICAL CRITERIA

There cannot be significant doubt of an alternative's technical feasibility or reliability.

An alternative must be based on existing, proven technology to provide a water supply that is capable of reliably meeting the existing and long-term water needs of the project. Further, the alternative must not be dependent on the availability of physical sites or facilities that cannot be reasonably assured to be available, or at such locations that may be subject to unacceptable risks due to geologic or hydrologic sensitivity or other hazard.

ENVIRONMENTAL CRITERION

An alternative should not have unacceptable environmental impacts.

One alternative or category of alternatives may have potential environmental impacts far greater than other alternatives. It also may be flawed at the onset of evaluation due to unacceptable environmental consequences. Those alternatives with significant environmental impacts that would normally be considered unacceptable will be screened from further consideration unless overriding policies dictate that the alternative be carried forward. This criterion will be satisfied by strict adherence to the principles of CEQA.

INSTITUTIONAL AND LEGAL CRITERIA

An alternative cannot possess significant uncertainty that permits, licenses, agreements, or other logistical requirements cannot be reasonably obtained and maintained.

An alternative may not be practicable if the institutional and legal hurdles that must be overcome to implement the alternative are so numerous that it is impracticable from a time and cost standpoint to pursue the alternative. A second aspect of this criterion is that the alternative

cannot be subject to regulatory violation or uncertainty; the latter could render the alternative unreliable or impracticable in the future. Several institutional and legal obstacles and uncertainties to implementing the potential interim and long-term water supply alternatives have been identified by PCWA (Wollan 1999); these obstacles are described under the specific alternatives.

The Dry Creek West Placer Community Plan water supply policy (described under the Groundwater Depletion Criterion), which requires a surface water supply as a precursor to development in the area where Placer Vineyards is located, also would need to be satisfied under Institutional and Legal Criteria.

ECONOMIC CRITERION

An alternative cannot be economically impracticable or infeasible. Additionally, an alternative's total costs (including capital and operation costs) should not significantly exceed the costs of an alternative action, which provides a water supply of functional equivalence.

Each alternative will have a cost associated with its full implementation. In addition to infrastructure capital expenditure, costs include those required for engineering design, environmental studies, economic analyses, public education and outreach, and administrative processing. Additional costs would include those involving ongoing operation and maintenance. In some instances, there will be a clear distinction between alternatives as to the magnitude of these total costs. In any assessment of potential project costs, an economic evaluation of alternatives based on the complexity of the project agreements (i.e., multi-functional or multi-party arrangements) also is necessary. Potential alternatives may be sized large for purposes of economies of scale and to accommodate the multiple functions and multi-party aspects.

Alternatives with identifiably significant greater costs than other alternatives, which can provide a functionally equivalent water supply, may not be practical from an economic perspective.

PUBLIC HEALTH CRITERION

An alternative must provide a water supply that meets state and federal water quality standards or other applicable water quality standards associated with its use.

Alternatives must be capable of providing water supplies that, following treatment, are of sufficient quality to meet the needs of the proposed project. Alternatives must be capable of providing a quality of water that meets existing state and federal water quality standards and anticipated changes to state and federal standards.

TIMING CRITERION

An alternative must provide a water supply attainable within a reasonable timeframe, and prior to actual development.

All of the identified alternatives require some element of time to develop and fully implement. Significant effort and expense is required to develop and implement water supply alternatives, both in logistical effort (including the obtaining of all permits and approvals) and in the effort to construct the necessary infrastructure. Short-lived alternatives will likely not be cost-effective unless there is a reasonable expectation that another action or program will succeed the short-lived alternative within a reasonable timeframe.

PRELIMINARY ALTERNATIVES IDENTIFICATION AND DEVELOPMENT

Buildout water demand for the Placer Vineyards project is approximately 13,000 acre-feet per year (AFA), based on the 14,132 dwelling units proposed in the Specific Plan. Buildout will be phased over a 20-year period, commencing at approximately 500 units per year. Initially, this buildout rate will correspond to a water need of approximately 700 AFA. Citizens Utilities Company of California has been identified as a potential water retailer for the project.

Placer County Water Agency (PCWA) has determined that it has sufficient water rights to meet the projected demands of projects likely to develop in western Placer County through the year 2030, including the Placer Vineyards Project. PCWA has a contract with Pacific Gas & Electric Company (PG&E) for water from the Yuba and Bear rivers to serve its Zones 1 and 3 areas, water rights through its Middle Fork Project (MFP), and also has a contract with the USBR for CVP water. However, PCWA currently has only minimal peak season treated surface water delivery infrastructure capable of serving the southwestern portion of Placer County where the Placer Vineyards project is proposed. There are physical and institutional limitations to the development of the new infrastructure necessary to use these water supplies that may significantly delay their availability. (These limitations are explained under the alternatives screening.)

Because significant capital costs and long lead times for permit processing and construction are required to implement the long-term surface water alternatives, sequencing (or phasing) of interim water supply alternatives may be necessary to facilitate short- and long-term water supply acquisitions until the first phases of development are in place. It is assumed for analytical purposes in the environmental documentation, however, that a long-term reliable water supply would be necessary in order to fully approve and implement the project. This is of particular concern because, although the interim water supply alternatives are subject to the same screening criteria as the long-term alternatives, some water supply alternatives may be available or acceptable on an interim basis, but not long-term.

LONG-TERM WATER SUPPLY ALTERNATIVES

Identification of a willing water supplier, long-term reliability (e.g., permanent transfer, temporary exchange), entitlement type (e.g., water right, water service contract), pattern of release, diversion location (i.e., North Fork American River, Folsom Reservoir, lower American River, or Sacramento River), and institutional constraints will influence the viability of specific surface water supply alternatives for this project.

Alternative 1 - Sacramento River Diversion - PCWA Supply

PCWA is signatory to the Sacramento Area Water Forum Agreement. Under that agreement, PCWA committed to attempt to divert approximately one-half of the new water it expects to need to meet the demands of its service area through 2030 (35,000 AF) from the Sacramento River. A Sacramento River diversion by PCWA, consistent with the Water Forum Agreement, could be made available to the Placer Vineyards Specific Plan area. However, in order for such a project to be implemented, numerous issues involving agreements and process-related arrangements would need to be addressed. In addition to the cost of the infrastructure necessary to convey Sacramento River water to PCWA's service area in Placer County (including the proposed project area), the following processes would need to be addressed:

- a) PCWA must first negotiate an exchange of its MFP water with an entity that has rights to divert from the Sacramento River, such as the United States, or an amendment to its CVP contract enabling diversion of that entitlement from the Sacramento River in addition to Folsom Reservoir;
- b) Diversion and conveyance facilities must be designed and an EIR must be prepared evaluating the potential impacts of such diversion and conveyance facilities;
- c) Any significant impacts that are identified in the CEQA process must be mitigated, to the extent feasible;
- d) Various state (e.g., 1601) and federal (e.g., 404) permits must be obtained;
- e) PCWA, or the entity with whom PCWA exchanges the water, must obtain approval for a new point of diversion off the Sacramento River; and
- f) Property rights for the project must be obtained, construction must be advertised and contracted, and financing must be obtained for the project.

PCWA currently holds two primary water entitlements that could be utilized to serve this project: (1) a CVP contract with the USBR for up to 117,000 AFA; and (2) water rights through the construction of its MFP of up to 120,000 AFA. Each of these entitlements has, as part of their contractual agreements, conditions associated with delivery availability, place of use restrictions, and point of diversion authorizations. For the proposed project to utilize either of these entitlement sources, considerations as to their specific conditions of delivery must be assessed within any alternative contemplating these supplies.

Subalternative 1A - Sacramento River Diversion - PCWA Water Service Contract CVP Supply

As identified, PCWA holds a water service (CVP) contract with the USBR for up to 117,000 AFA. There is, however, some disagreement between PCWA and USBR as to whether the USBR has an obligation to deliver more than 35,000 AFA of CVP water to PCWA in the absence of Auburn Dam. PCWA is currently negotiating an amendatory contract with USBR, which would entitle it to 35,000 AFA (out of its original contract for up to 117,000 AFA). The amendatory contract would also authorize an additional point of diversion from the Sacramento River.

The amended contract, however, cannot be executed until NEPA and Endangered Species Act (ESA) compliance have been fulfilled. Moreover, it is unlikely that the contract will progress significantly ahead of the CVP-wide long-term contract renewals currently under negotiation. An executed amendatory contract would provide PCWA with the option of diverting its CVP water service contract supply from the Sacramento River, subject to any conditions determined through the environmental and permitting processes.

From a facilities and infrastructure perspective, a Sacramento River diversion would require significant regulatory and administrative approvals. Facilities siting, engineering design, approvals, and construction of a new intake structure, water treatment facility, and pumping/conveyance facilities would represent significant undertakings and would likely not be fully implemented for several years.

In addition to PCWA's interest in the Sacramento River, several other local interests including the Natomas Central Mutual Water Company, City of Sacramento, Northridge Water District, and others have expressed an interest in partnering in a new diversion off the Sacramento River. In fact, Natomas Mutual Water Company is currently proceeding with its consolidation of the existing diversions off the Sacramento River to one or two new diversions. The project, known as the American Basin Fish Screen and Habitat Improvement Project, is intended to evaluate the existing non-screened diversions and consolidate the existing diversions at any one of three potential diversion sites (i.e., Sankey Diversion, Prichard Lake Diversion, or a Combined Sankey and Elkhorn Diversion).

SubAlternative 1B - Sacramento River Diversion - PCWA Water Rights Supply

Under this subalternative, the proposed project would obtain water from PCWA through a Sacramento River diversion, under PCWA's MFP water rights. This diversion alternative, which relies on PCWA's MFP entitlement, would require approval from USBR in order for PCWA to divert from the Sacramento River upstream from the American River confluence.

From a facilities and infrastructure perspective, this subalternative would encounter similar issues and concerns as Subalternative 1A. New facilities would be required, none of which are currently in place.

Alternative 2 - North Fork American River Diversion - PCWA Middle Fork Project Supply

Under this alternative, the proposed project would receive its water supply from PCWA through a diversion of MFP water at the Auburn pump station on the North Fork of the American River. Through an expanded PCWA delivery infrastructure, water could be conveyed to the project area. Precise conveyance to the project area, however, may take several routes depending on the delivery arrangements made with PCWA and perhaps others, such as the City of Roseville and/or the City of Lincoln. For example, part of the conveyance may be facilitated through a sharing of excess capacity within the City of Roseville delivery system. This alternative would assume that the proposed project be annexed into PCWA's Zone 1 Water System Area.

PCWA has an existing agreement with the USBR, which requires the provision of facilities (by the United States) to enable PCWA to pump up to 50 cfs from the MFP at the Auburn site. To

date, the USBR has provided such a pumping facility on a seasonal basis only. PCWA and USBR have diligently been pursuing the installation of year-round, flood-proof pumps of greater capacity. However, PCWA's currently planned pumping project (an increase to 100 cfs) will not be capable of accommodating all of the planned growth through 2030. In the long-term, water service to Placer County designated urban areas south of Baseline Road, and other areas of lower elevation in Zone No. 1, are planned to be served from a diversion from the Sacramento River.

To be consistent with its commitments under the Water Forum Agreement, PCWA first would have to determine that it was not feasible to implement a Sacramento River Diversion to serve this project, before increasing its American River diversions above 35,500 AF. Alternatively, PCWA could serve initial phases of this project from within the 35,500 AF Water Forum limitation on PCWA's American River diversions and remain consistent with its Water Forum commitment. However, this supply is insufficient for Placer Vineyard's demand at full buildout because 35,500 AF represents only about half of the projected need (from Placer Vineyards and other projects) through 2030.

Alternative 3 - Folsom Reservoir Diversion

This alternative involves the direct diversion of a surface water supply from Folsom Reservoir at Folsom Dam. The water supply entitlement exercised under this alternative could be either PCWA's MFP water rights or its CVP contract. The existing diversion infrastructure at Folsom Dam, however, does not have sufficient capacity to convey the total anticipated surface water supply needs for Placer Vineyards. A new urban water supply intake would have to be constructed. From this new aperture, raw water first would be pumped to the Folsom Pumping Plant, operated by USBR. From there, it would be pumped along the North Fork Pipeline either to the Sydney N. Petersen WTP, owned and operated by the San Juan Water District, or be conveyed to the City of Roseville's newly expanding water treatment facility. Recent discussions between Placer Vineyards, PCWA, Placer County, San Juan Water District, Northridge Water District, and Citizens Utilities Company of California (CUCC) have identified the potential for a possible multi-party agreement where, the San Juan Water District would provide the necessary treatment and conveyance capacity for the project through its infrastructure. Such a scenario would, however, require Northridge to first relinquish a portion of their peak summer usage so that available capacity at the Sydney N. Peterson WTP could be allocated to Placer Vineyards.

Following treatment at either location, water would need to be conveyed to the project site. If treatment were to occur at the City of Roseville's WTP, conveyance capacity may be available to accommodate the project within the City's existing infrastructure. Additional conveyance, however, would still be required to deliver the treated water beyond the City's corporate boundary (i.e., Fiddyment Road) westward to the project area. Alternatively, if treatment were to occur at the Sydney N. Petersen WTP, conveyance could be facilitated through a sharing of capacity in the San Juan Cooperative Transmission Pipeline and Northridge Conveyance Pipeline, where and when excess capacity is identified. A new conveyance pipeline would tie into the stub at the terminus of the Northridge Conveyance Pipeline (at Walerga Road). If long-term conveyance capacity is not available from the City of Roseville or the San Juan Water District, new transmission lines through existing developed areas would be required.

To be consistent with its commitments under the Water Forum Agreement, PCWA first would have to determine that it was not feasible to implement a Sacramento River Diversion to serve this project, before increasing its American River diversions above 35,500 AF. Alternatively, PCWA could serve this project from within the 35,500 AF Water Forum limitation on PCWA's American River diversions and remain consistent with its Water Forum commitment; however, the other demands on this water may make this supply insufficient for Placer Vineyard's demand at full buildout.

Alternative 4 - Lower American River Diversion

This alternative would involve the direct diversion of a PCWA surface water supply from the lower American River. Regardless of entitlement type (i.e., PCWA CVP water service contract water, or MFP water rights water), a diversion from the lower American River would most likely occur at the site of the City of Sacramento's existing water diversion intake and treatment plant near Howe Avenue. PCWA would have to obtain a new point of diversion for its water rights or a new point of delivery under its CVP contract to implement this alternative. The E.A. Fairbairn (Fairbairn) WTP along the lower American River is currently owned and operated by the City of Sacramento and is planned to undergo both a replacement of all its intake screens (for fisheries protection purposes) as well as an expansion of its treatment plant facilities.

Under this alternative, diversion and treatment would be facilitated by the City of Sacramento through some presumed capacity sharing agreement with PCWA. Once treated, however, significant new conveyance pipelines would be necessary in order to deliver it to the proposed service area of the project. While existing conveyance is present north from the Fairbairn WTP (across the lower American River), capacity availability within the conveyance infrastructure is uncertain.

Alternative 5 - Groundwater Pumping

This alternative involves the direct acquisition of a raw water supply by pumping from the available aquifer to fully meet the project's water supply needs. Under this alternative, it is assumed that a series of new groundwater wells would be constructed to provide the necessary raw water supply for the project. Wellhead treatment would likely be installed, providing the necessary treatment capabilities for those wells exhibiting water quality problems. Associated infrastructure (i.e., conveyance pipelines and booster pump stations, as necessary) also would be required to implement this alternative. At this time, the number of groundwater wells (and well fields) is uncertain, as is their placement within the project service area or outlying vicinity. Detailed hydrogeologic investigations, including groundwater modeling analyses, would need to be conducted to determine aquifer specific yield that would not involve detrimental impacts to long-term groundwater levels.

Alternative 6 - Off-stream Storage

This alternative would involve the development of an off-stream storage facility (e.g., reservoir) at a location within reasonable proximity to the project site. A surface water supply from Folsom Reservoir, the lower American River, or other sources would be stored in the facility during times of excess and relied upon during times of deficiency. Seasonally, such a storage facility could provide the opportunity to reduce direct surface water diversions during the

summer (i.e., high peak usage) months *without* any exacerbation of the underlying groundwater aquifer.

Development of an off-stream storage facility capable of meeting the annual water needs of the project would represent a significant undertaking. Facility siting, engineering design, environmental and regulatory review, and facility construction would be required.

Alternative 7 - No-Project

The No-Project Alternative is intended to describe the action(s) that the lead agency would take absent the proposed project. Under the No-Project Alternative, Placer County (the lead agency) would not approve the Placer Vineyards Specific Plan. Development could not occur without an approved specific plan; hence, water supply alternatives or options would not be needed.

PROPOSED INTERIM WATER SUPPLY ALTERNATIVES

Proposed Interim Water Supply – MFP Supply Conveyed through San Juan/Northridge Infrastructure (Full Surface Water)

Recently, several parties including Placer Vineyards, PCWA, Placer County, San Juan Water District, Northridge Water District, and Citizens Utilities Company of California (CUCC) have discussed the potential for a multi-party agreement where, treatment and conveyance capacity for San Juan Water District's WTP and the San Juan/Northridge cooperative transmission pipeline could be shared with Placer Vineyards. San Juan's water treatment plant currently has capacity in excess of the collective demands of their retail service area and wholesale customers within the District. San Juan and Northridge currently are under agreement to assign Northridge first priority to any surplus treatment capacity at the Sydney N. Peterson WTP. Northridge is currently using that surplus capacity to treat and deliver water it purchases from PCWA to meet its groundwater stabilization goals. A reduction in Northridge's use of capacity requirement could make a corresponding capacity allocation available to Placer Vineyards. According to San Juan, a reduction in Northridge's summer peak usage in treatment capacity for example, could free up additional capacity at the Sydney N. Peterson WTP; available for use by Placer Vineyards. This available capacity would be sufficient to meet the immediate needs of the proposed project."

While it is recognized that under this alternative, the San Juan/Northridge cooperative transmission pipeline would provide the necessary delivery conveyance westward from the Sydney N. Peterson WTP, CUCC represents the identified water retailer for the Placer Vineyards project area. Accordingly, CUCC would be the retail water provider for the proposed project. At this time, CUCC has expressed interest in participating in this potential multi-party agreement.

Under such an agreement, various potential water supply configurations would be possible. At this time, it is acknowledged that PCWA would provide the water supply within the provisions set forth in its purveyor-specific agreement with the Sacramento Area Water Forum.

Similar with other water supply alternatives previously described, this proposed interim water supply option would still require a new conveyance pipeline that ties into the stub at the terminus

of the existing Northridge Conveyance Pipeline (at Walerga Road). The full potential implementation of this interim water supply alternative will depend on the willingness of all participating interests to deliberately move forward to develop and execute the necessary multi-party agreement. Key issues of any such agreement would be related to the identification of a committed water supply source, role of CUCC, and funding structure for the new conveyance pipeline.

Interim Alternative A – Pipeline Improvements from Foothill WTP (Full Surface Water)

PCWA's MFP water would be diverted from the American River at the Auburn pump station. The Foothill Water Treatment Plant (WTP) is undergoing a 27 million gallon per day (mgd) expansion to 55 mgd. When complete, this WTP would be able to physically accommodate treatment of PCWA's 35,500 AF American River supply from the Auburn pump station. However, this source of supply would become unavailable as Zone 1 demands for Foothill WTP supplies increase, because PCWA has given the higher-elevation Zone 1 area priority for service from the Foothill WTP over lower-elevation areas (which includes Placer Vineyards). In the interim, however, water would be conveyed from the Foothill WTP via transmission facilities that would be improved to eliminate capacity restrictions, or, if necessary, via new transmission facilities. New facilities, if necessary, would likely be installed parallel to existing transmission facilities. New or improved facilities, while redundant in their long-term utility, would have sufficient interim capacity to deliver surface water to the Placer Vineyards project during peak periods; therefore, this interim alternative would not require supplemental groundwater use.

Conjunctive Use of Surface and Groundwater

Interim Alternative B relies upon the planned conjunctive use of groundwater and surface water from MFP diversions, or groundwater exclusively. Under this interim alternative, the delivery of the surface water supply would be limited by existing infrastructure capacity and, therefore, groundwater would be needed during this interim period to augment surface water deliveries during peak seasonal demand. Groundwater, in these limited quantities, would be relied upon for the first few years while the long-term surface water delivery system is being developed. Interim groundwater use, including peak seasonal use, would be discontinued after development of a long-term surface water supply, except as an emergency supply source.

This interim water supply alternative assumes an annual groundwater recharge component so that there would be no net annual drain on the groundwater basin. The groundwater wells constructed to supplement surface water deliveries would ultimately become part of the emergency supply, used to supplement surface water deliveries in the event that the temporarily-reduced demand under a severe drought still exceeds drought-curtailed surface water supplies. Wellhead treatment and associated infrastructure (e.g., storage tanks and booster pump stations) also would be installed as necessary. At this time, the number of groundwater wells (and well fields) is uncertain, as is their placement within the project service area or outlying vicinity. Detailed hydrogeologic investigations, including analysis through groundwater modeling, will be conducted to determine aquifer specific yield that will not involve detrimental impacts to long-term groundwater levels. Short-term impacts to other historic well-dependent users will also be investigated.

Interim Alternative B - Foothill Water Supply – Conjunctive Use

PCWA's MFP water would be diverted from the American River at the Auburn pump station and treated at the Foothill WTP, and would be unavailable in the long-term. Unlike Interim Alternative A, water would be conveyed from the Foothill WTP via existing and proposed transmission facilities, which would have limited or no excess capacity to deliver surface water to the Placer Vineyards project during peak periods. Therefore, this alternative would require groundwater to supplement surface water deliveries during peak summer periods.

Interim Alternative C - Full Groundwater

This interim water supply alternative differs from all the previous water supply options in that it would rely wholly upon groundwater until completion of a long-term water supply alternative (e.g., Sacramento River diversion). Groundwater use under this interim alternative would be discontinued thereafter, except as an emergency supply source. Groundwater use would not be recharged. Wellhead treatment and associated infrastructure also would be installed as necessary. At this time, the number of groundwater wells (and well fields) is uncertain, as is their placement within the project service area or outlying vicinity.

PRELIMINARY ALTERNATIVES SCREENING PROCESS

The following discussion describes the results of the screening process where each alternative (and subalternative, as necessary) is evaluated according to the screening criteria.

LONG-TERM WATER SUPPLY ALTERNATIVES

Subalternative 1A - Sacramento River Diversion - PCWA CVP Supply

At the present time, no infrastructure exists to convey water from the Sacramento River to the Placer Vineyards Specific Plan area. A Sacramento River diversion would require a new river intake structure, treatment facility, and appropriate pipeline conveyance (including booster pump stations) to cover the approximate 7 miles from the river to the project service area. Although interest and support for a new Sacramento River diversion has been expressed in the Water Forum and recent American Basin Fish Screens and Habitat Improvement Project, such facilities would not likely be fully constructed for some time. Significant effort regarding facilities siting, engineering design, environmental review, permitting, and approval would be required. Moreover, a diversion and treatment project of this magnitude and scale would require the support and commitment of a project proponent, either independently, or through some collaborative arrangement with willing third-party partners. A substantial funding commitment would need to be identified and established. At the present time, however, no such commitment has been finalized.

This subalternative would also be contingent upon a fully executed amended contract between PCWA and USBR, which is intended to provide the contractual authority for PCWA to change its authorized point of diversion for its CVP water service contract. As discussed previously, it is unlikely that, from a timing perspective, this amended contract will progress significantly ahead of the CVP-wide long-term contract renewals currently under negotiation.

From a reliability perspective, this subalternative would rely on the same “firmness” as with any similar CVP water service contract. It would be subject to the same level of deficiencies imposed by the USBR on all other CVP water service contractors based on contract and water year type.

Despite the potential constraints facing this alternative, the potential beneficial attributes from a reservoir and river protection perspective make this subalternative worthy of consideration. The further downstream PCWA water can be diverted, relative to the Auburn pumps, the more tangible the benefit to resources of Folsom Reservoir and the lower American River. A diversion from the Sacramento River essentially eliminates potential adverse effects to resources of Folsom Reservoir or the lower American River. With the potential to achieve such genuine environmental benefits to the lower American River, this subalternative would meet the intent of CEQA concerning the selection of feasible and reasonable alternatives. Accordingly, this alternative will be carried forward as a separate alternative in the EIR.

Subalternative 1B - Sacramento River Diversion - PCWA Water Rights Supply

This subalternative is similar to Subalternative 1A, except that the water supply source would be PCWA’s MFP water facilitated through an exchange on the Sacramento River. Under this alternative, the point of diversion would be upstream of the American River confluence and an exchange with Sacramento River water would need to occur. From an institutional perspective, this would require USBR approval. USBR interests would be associated with the proposed pattern of releases from the MFP, since MFP releases, as part of Folsom Reservoir inflow, would become part of Folsom Reservoir storage and could affect USBR reservoir and lower American River operations, and their obligations to maintain Delta water quality. It is anticipated that SWRCB interests would generally focus on the maintenance of Delta water quality. No change in authorized place of use would be required through the SWRCB.

From an infrastructural perspective, the same diversion intake, treatment, and pipeline conveyance systems would be required as Subalternative 1A. Long-term reliability would ostensibly be higher, relative to Subalternative 1A, since PCWA’s MFP water would not be subject to USBR imposed deficiencies during dry years.

Similar with Subalternative 1A, a diversion from the Sacramento River essentially eliminates potential adverse effects to resources of Folsom Reservoir or the lower American River. As such, this subalternative would meet the intent of CEQA concerning the selection of feasible and reasonable alternatives from a beneficial environmental perspective. Accordingly, this alternative will be carried forward as a separate alternative in the EIR.

Alternative 2 - North Fork American River Diversion - PCWA Middle Fork Project Supply

This alternative passes all of the screening criteria, with the possible exception of the Institutional Criterion. Depending on actual buildout water demands and the specific allocations by PCWA of its MFP water supplies to its customers, a long-term committed supply may, or may not, be available to the project from this source and location. Given the past and expected continued efforts to permanently implement the PCWA pumps and PCWA’s planned initiatives at improving its water system area delivery capabilities, however, this water supply alternative

does not appear unduly speculative at this time. Accordingly, this alternative will be carried forward as a separate alternative in the EIR.

Alternative 3 - Folsom Reservoir Diversion

A diversion of PCWA water from Folsom Reservoir at Folsom Dam would require new facility infrastructure at the diversion location. Diversions would be pumped to either the Sydney N. Petersen WTP or the City of Roseville WTP. Institutionally, shared treatment and delivery capacity agreements would be required either with the San Juan Water District or City of Roseville. Moreover, a long-term Warren Act contract also would be required from USBR in order to use the Folsom Dam facilities since any “wheeling” of non-CVP water through federal facilities requires such an agreement. None of these institutional requirements, however, would be untenable.

From an infrastructural perspective, additional delivery conveyance also would be required to deliver the treated water to the project service area. Regardless of whether delivery is via the San Juan Cooperative Transmission Pipeline/Northridge Conveyance Pipeline, or through the City of Roseville’s existing delivery infrastructure, additional pipelines (approximately 2 miles) would be required. Technical and physical constraints and the economic costs associated with the need for new facilities (i.e., intake structure and pipelines), would be considerable, but feasible.

This alternative passes all of the screening criteria. Accordingly, this alternative will be carried forward as a separate alternative in the EIR.

Alternative 4 - Lower American River Diversion

A diversion from the lower American River, presumably at the location of the City of Sacramento’s Fairbairn WTP near the Howe Avenue Bridge, would not require new in-river infrastructure or treatment facilities. This alternative would rely on the City’s existing facilities and water supply would be provided by PCWA through MFP releases. Thus, both the Technical and Physical Criterion and Reliability Criterion would appear to be satisfied.

This diversion alternative would, however, require PCWA to apply for a new point of diversion on the American River. PCWA and the City also would need to enter into an agreement regarding shared capacity of the E.A. Fairbairn WTP. However, the availability of long-term excess capacity is speculative and not reliable. PCWA also would need to enter into agreements with the water districts located between the City of Sacramento and Placer Vineyards to use available capacities in their respective conveyances from the river towards the project area. Such agreements are not necessarily complex; however, there is no existing framework for implementing this alternative. In addition, diversion of PCWA MFP water from the lower American River was not contemplated in the Water Forum Agreement. Thus, in addition to reliability concerns, several institutional or legal hurdles are present with this alternative.

As with the other alternatives, new conveyance pipelines to the project service area would be required to deliver treated water to the project service area. Construction-related activities and costs would not, however, make this alternative impractical.

From an environmental perspective, this point of diversion would be superior to upstream American River diversions, but inferior to a Sacramento River diversion. The further downstream PCWA water can be diverted, the more tangible the benefit to Folsom Reservoir and the lower American River.

Because of the apparent reliability, institutional and legal hurdles, and environmental considerations, this alternative will not be carried forward as a separate alternative in the EIR.

Alternative 5 - Groundwater Pumping

The groundwater aquifer underlying much of northern Sacramento County and southwestern Placer County has experienced significant declines over the years. The cone of depression in this area, centered beneath McClellan Air Force Base, is approximately 60 feet below sea level. The declining groundwater levels in this area have been under investigation for some time and have resulted in several recent initiatives to determine how best to alleviate the area's current groundwater overdraft. The groundwater levels along the Placer/Sacramento county line west of the City of Roseville continue to decline at a rate of about 1.5 feet per year. It is generally recognized through such efforts as the Water Forum and Sacramento North Area Groundwater Management Authority that some curtailment of both current and future demands on this aquifer are required in order to avoid further depletion. Such efforts would, in the long-term, avoid the related adverse impacts associated with a lowered water table such as the risks of land subsidence, increased groundwater pumping (and wellhead treatment) costs, and the ultimate risk of some existing wells going dry.

From an institutional and legal perspective, it is acknowledged that any approval of new developments must be conditioned on the long-term availability of a surface water supply. Groundwater use, as the sole long-term water supply for approved and planned development, is not supported by current Placer County policy.

This alternative would fail the Groundwater Depletion Criterion, Institutional and Legal Criteria, and likely the Environmental Criterion. Accordingly, this alternative will not be carried forward as a separate alternative in the EIR.

Alternative 6 - Off-stream Storage

Reliance upon available or newly developed storage off-stream would represent a significant undertaking. No off-stream storage projects have been proposed for the general areas surrounding Folsom Reservoir, the lower American River, or within the greater Sacramento area. Such facilities would require significant environmental evaluation and review, intense political lobbying, significant funding, and a *bona fide* ownership (or lead agency) interest. No such interested party has come forward. This alternative would be inconsistent with the Institutional and Legal Criteria, Timing Criterion, and likely, the Environmental Criterion. Such a project or facility is too speculative to be considered reasonable and feasible at this time and, therefore, will not be carried forward as a separate alternative in the EIR.

Alternative 7 - No-Project

Under the No-Project alternative, the project would not proceed and, therefore, there would be no additional water demand or, the need for any ancillary facilities associated with a water diversion, treatment component, or delivery conveyance. As required under CEQA, however, the No-Project alternative must be carried forward and included in any evaluation of alternatives. Accordingly, this alternative will be carried forward as a separate alternative in the EIR.

INTERIM WATER SUPPLY ALTERNATIVES

The Proposed Interim Water Supply, and two of the interim water supply alternatives rely on PCWA's MFP supply, which may not be fully available in the long-term. The remaining interim water supply alternative relies fully on groundwater, which conflicts with Placer County's groundwater policy. Therefore, the Proposed Interim Water Supply and interim water supply alternatives are not viable as long-term solutions. The interim alternatives may only be implemented with the certainty that long-term water supply alternatives can and will be implemented within a reasonable time frame.

Proposed Interim Water Supply - MFP Supply Conveyed through San Juan/Northridge Pipeline

With regard to Institutional and Legal Criteria, use of PCWA's MFP supply on an interim basis, and treatment at the San Juan Water District WTP, would not be unduly speculative, nor would negotiating a Warren Act contract with USBR. With regard to the Timing Criterion, although PCWA's MFP supply may not be fully available in the long-term, it would be available for the interim period when it is needed. The Proposed Interim Water Supply also meets the Economic and Public Health Criteria. Therefore, it will be carried forward as the proposed interim water supply in the EIR.

Interim Alternative A (Pipeline Improvements from Foothill WTP - Full Surface Water) and Interim Alternative B (Foothill Water Supply - Conjunctive Use)

Both Interim Alternative A (Pipeline Improvements from Foothill WTP – Full Surface Water) and Interim Alternative B (Foothill Water Supply – Conjunctive Use) rely on a surface water supply that would be made available from PCWA's MFP, thus satisfactorily meeting the Reliability Criterion. As with the Proposed Interim Water Supply discussed above, although PCWA's MFP supply may not be fully available in the long-term, it would be available for the interim period when it is needed. With regard to Institutional and Legal Criteria, use of PCWA's MFP supply on an interim basis, and treatment at the Foothill WTP, would not be unduly speculative. Interim Alternative A does not rely on any groundwater use and, therefore, would not compromise the Groundwater Depletion Criteria, nor existing County policy regarding the same. Under Interim Alternative B, groundwater use would be seasonal and temporary, with active efforts to recharge the aquifer so that no net depletion would occur from a basin-wide perspective, consistent with the Groundwater Depletion Criteria. Both of these alternatives also meet the Economic and Public Health Criteria. Therefore, these interim alternatives will be carried forward as interim water supply alternatives in the EIR.

Interim Alternative C - Full Groundwater

This interim water supply alternative would rely fully upon groundwater supplies, and would result in some depletion of the groundwater aquifer. This water supply alternative would meet the reliability, economic and public health criteria. With regard to Institutional and Legal Criteria, however, this alternative conflicts with the County's current policy regarding groundwater use. This inconsistency with County policy represents a significant institutional obstacle that will need to be addressed to implement this alternative. While recognizing the institutional uncertainty and significance of this potential interim water supply alternative, for the purposes of the EIR analyses, this alternative will be carried forward as an interim water supply alternative in the EIR. It represents the only interim alternative that would not rely on any existing surface water supply (e.g., MFP water), treatment or delivery infrastructure and, therefore, represents a significant savings of time and cost, as well as potential environmental benefits associated with non-utilization of surface water.

ADDITIONAL DEMAND REDUCTION CONSIDERATIONS

Short-term and long-term water conservation, or demand reduction measures, have already been incorporated into the water demand projections for the project. Accordingly, water conservation is a component of the Proposed Interim Water Supply and the interim and long-term water supply alternatives in the EIR.

The potential use of reclaimed wastewater by the proposed project would reduce the overall water demands of the project because it could be used to offset intended deliveries for such purposes as landscape irrigation and various industrial uses. Current regulations prohibit the use of reclaimed water as a direct source of potable water. Because wastewater reclamation would reduce surface water demand, it will be a component of the Proposed Interim Water Supply and the interim and long-term water supply alternatives in the EIR.

SUMMARY OF ALTERNATIVES SCREENING AND ALTERNATIVES TO BE CARRIED FORWARD FOR EIR ANALYSES

The Proposed Interim Water Supply and the following interim and long-term water supply alternatives will be carried forward for further, detailed analysis in the EIR.

- Interim Alternative A – Pipeline Improvements from Foothill WTP (Full Surface Water)
- Interim Alternative B – Foothill Water Supply (Conjunctive Use)
- Interim Alternative C – Full Groundwater
- Subalternative 1A – Sacramento River Diversion – PCWA CVP Supply
- Subalternative 1B – Sacramento River Diversion – PCWA Water Rights MFP Supply
- Alternative 2 – North Fork American River Diversion – PCWA MFP Supply
- Alternative 3 – Folsom Reservoir Diversion
- Alternative 7 – No-Project

The rationale for carrying these alternatives forward for analysis in the EIR is summarized below.

INTERIM WATER SUPPLY ALTERNATIVES

The Proposed Interim Water Supply, based on recent discussions and interest as expressed among PCWA, San Juan Water District, Northridge Water District, and CUCC, represents a reasonable and feasible option to securing a short-term water supply for the project. Similarly, both the full surface water (Interim Alternative A) and conjunctive use interim surface water supply (Interim Alternative B) alternatives being carried forward also appear to represent reasonable and feasible options for the project to acquire a short-term water supply. The planned groundwater use and recharge in the context of a conjunctive use program satisfies the Groundwater Depletion Criterion, although it does not satisfy Placer County's groundwater policy. These two interim alternatives rely on PCWA's water rights for their surface water supply. The groundwater use only interim alternative is carried forward because of its economic, and timing benefits.

LONG-TERM WATER SUPPLY ALTERNATIVES

The screening process identified above eliminated several alternatives from further consideration in the subsequent EIR environmental review. With the exception of the lower American River diversion, all of the surface water diversion alternatives are to be carried forward for detailed analysis in the EIR. The surface water diversion alternatives, by virtue of their reliance on PCWA water rights, and ability to satisfactorily meet the screening criteria consistent with the intent of CEQA, represent sound water supply options. At this time, these alternatives appear to represent reasonable and feasible options for the project to acquire a long-term water supply.

It is recognized that each surface water alternative will require delivery infrastructure (i.e., conveyance pipelines) to carry water specifically to the project service area. This common requirement should not be perceived as an obstacle to consideration of any alternative.

Groundwater pumping is not being carried forward as a separate long-term alternative because of Placer County's policy requiring surface water use. Off-stream storage also is eliminated from further consideration on the basis of its institutional and political uncertainty, potential adverse environmental effects, and highly speculative nature at this time.