California State Water Resources Control Board

Final Environmental Impact Report
Volume IV - Appendices E - H to the 2011 2nd RDEIR

Consideration of Modifications to the U.S. Bureau of Reclamation's Water Right Permits 11308 and 11310 (Applications 11331 and 11332) to Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir)

State Clearinghouse # 1999051051

Prepared for:
State Water Resources Control Board
Division of Water Rights
1001 "I" Street
Sacramento, California 95814

December 2011

Final
Environmental Impact Report

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LIST OF ACRONYMS

1994 MOU	(1994) Memorandum of Understanding for Cooperation in Research and Fish Maintenance
af	acre-feet
afy	acre-feet per year
ACHP	Advisory Council on Historic Preservation
ANA	Above Narrows Account
BNA	Below Narrows Account
cfs	cubic feet per second
CRHR	California Register of Historic Resources
CCIC	Central Coast Information Center
CCRB	Cachuma Conservation Release Board
CCWA	Central Coast Water Authority
CEQA	California Environmental Quality Act
COMB	Cachuma Operations and Maintenance Board
County FCD	Santa Barbara County Flood Control District
County Parks	Santa Barbara County Parks Department
CSPA	California Sportfishing Protection Alliance
CVWD	Carpinteria Valley Water District
DFG	California Department of Fish and Game
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act
Southern ESU	Southern California Steelhead Evolutionary Significant Unit
GWD	Goleta Water District
HCI	Hydrologic Consultants, Inc.
mg/l	Milligram(s) per liter
MODFLOW	Three Dimensional Finite Difference Flow Model
MOA	Memorandum of Agreement
MWD	Montecito Water District
NHPA	National Historic Preservation Act
NMFS	U.S. National Marine Fisheries Service
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
PM_{10}	particulate matter less than 10 micrometers in diameter
Reclamation	U.S. Bureau of Reclamation
Recreation Area	Cachuma Lake Recreation Area
Regional Board	Regional Water Quality Control Board, Central Coast Region
ROG	reactive organic gases
SBCWA	Santa Barbara County Water Agency
SHPO	California State Office of Historic Preservation
SO_2	sulfur dioxide
SUTRA	Two-Dimensional Finite Element Solute Transport Model
SWP	State Water Project
SWRCB	State Water Resources Control Board
SYRHM	Santa Ynez River Hydrologic Model

LIST OF ACRONYMS (continued)

SYRTAC	Santa Ynez River Technical Advisory Committee
SYRWCD	Santa Ynez River Water Conservation District
SYRWCD, ID #1	Santa Ynez River Water Conservation District – Improvement District #1
TDS	Total dissolved solids
UCSB	University of California, Santa Barbara
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAFB	Vandenberg Air Force Base
WR	Water Rights [SWRCB – Water Rights Division]
WWTP	Wastewater treatment plant

APPENDIX E

Hydrologic Modeling Technical Memoranda Nos. 1–4
(Stetson Engineers, 2001)

STETSON ENGINEERS INC.

TECHNICAL MEMORANDUM NUMBERS 1, 2, 3, and 4

Technical Memorandum No. 1:	Impacts of EIR Alternatives Using the Santa Ynez River Hydrology Model
Technical Memorandum No. 2:	Hydrologic Analyses of Daily Flows for Use in Assessing Impacts on Rainbow Trout/steelhead
Technical Memorandum No. 3:	Hydrologic Analyses of Surface Water Salinity
Technical Memorandum No. 4:	Cachuma Water Rights EIR Alternatives Results of the USGS and HCI Lompoc Ground Water Flow and Transport Models

TECHNICAL M E M O R A N D U M No. 1

STETSON ENGINEERS INC.

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TO: John Gray
URS Corp., Santa Barbara, CA

DATE: December 22, 2000
rev. December 22, 2001

FROM: Curtis Lawler

JOB NO.: 1815

RE: **Impacts of EIR Alternatives Using the Santa Ynez River Hydrology Model**

1. INTRODUCTION

This memorandum is prepared for the Cachuma Water Rights EIR in which seven alternatives were identified (see Table 1). For each of these seven EIR alternatives, analyses of surface water hydrologic impacts were performed, using the Santa Ynez River Hydrology Model (SYRHM) and Lompoc groundwater models (USGS and HCI). Included in this memorandum are the EIR hydrologic impact analyses for:

- Cachuma Reservoir Operations
- Cachuma Storage and Elevations
- Santa Ynez River Flows
- Groundwater Storage in the Above Narrows Riparian Aquifer
- Water Rights Releases (WR 89-18)
- Cachuma Project Deliveries

In addition to this technical memorandum, hydrologic analyses for biologic impacts and salinity impacts are provided in separate technical memoranda.

TABLE 1
SUMMARY OF ALTERNATIVES ADDRESSED IN THE EIR

Alternative	Key Elements
1. WR 89-18 operations	Does NOT include WR 94-5 Fish Reserve Account releases, 0.75' surcharging, emergency winter storm operations, or delivery of SWP water
2. Current operations (Interim BO operations)	Includes WR 89-18 releases with revised ramping schedule, Interim BO operations, emergency winter storm operations, SWP water release restrictions, Hilton Creek gravity feed and pumped releases, and surcharging at 0.75'.
3A. Operations incorporating the mandatory Biological Opinion (BO) actions with no surcharging above current 0.75' surcharging and all releases for public trust and fisheries protection are provided from water supply and current surcharging.	This alternative represents the new operations to be implemented as required by NMFS in the Final BO, except that all releases for rearing and passage will be provided from water supply and current surcharging. Includes emergency winter storm operations, SWP water release restrictions, Hilton Creek gravity feed and pumped releases, and 89-18 releases with revised ramping schedule. This alternative also includes non-flow fish conservation measures from the BO, affecting the mainstem and tributaries.
3B. Operations incorporating BO actions with 1.8' surcharging.	This alternative represents the new operations to be implemented as required by NMFS in the Final BO, except that all releases for rearing and passage will be provided from a combination of 1.8' surcharging and water supply. Includes emergency winter storm operations, SWP water release restrictions, Hilton Creek gravity and pumped releases, and 89-18 releases with revised ramping schedule. This alternative also includes non-flow fish conservation measures from the BO, affecting the mainstem and tributaries.

<table>
<tr><th>Alternative</th><th>Key Elements</th></tr>
<tr><td>3C. Operations incorporating BO actions with 3’ surcharging.</td><td>This alternative represents the new operations to be implemented as required by NMFS in the Final BO. All releases for rearing and passage will be provided from a phased implementation of surcharging (1.8’ followed by 3’), as described in the BO.

Includes emergency winter storm operations, SWP water release restrictions, Hilton Creek gravity feed and pumped releases, and 89-18 releases with revised ramping schedule.

This alternative also includes non-flow fish conservation measures from the BO, affecting the mainstem and tributaries.</td></tr>
<tr><td>4. Operations incorporating BO actions, with additional actions to address water quality in the Lompoc Basin</td><td>Includes fish releases under Alternative 3C, as well as one of the following options to address water quality issues in the Lompoc Basin, or other options identified based on impact assessment:

▪ <u>Option A</u>: Below Narrows Exchange Project in which BNA water is provided by direct delivery of SWP water to the City of Lompoc

▪ <u>Option B</u>: Below Narrows Exchange Project in which all BNA water is provided by discharging SWP water to the river near Lompoc for recharge</td></tr>
</table>

2. SYRHM OVERVIEW AND RECENT MODIFICATIONS FOR EIR

2.A OVERVIEW

The SYRHM was first developed in 1979 and has been used in the past to evaluate various management alternatives in the basin. The SYRHM was developed by the Santa Barbara County Water Agency (SBCWA). Over the last two decades, the SYRHM has been expanded and modified in consultation with the Santa Ynez River Hydrology Committee. The model is written in Microsoft Quick Basic code and is publicly available from SBCWA.

In all of the EIR alternatives, watershed runoff based on historical hydrology is routed through the Santa Ynez River basin and alternatives are varied based on the differences in Cachuma Reservoir operations and State Water Project (SWP) water deliveries. The impacts to surface water and groundwater conditions downstream of Cachuma Reservoir are then compared between the alternatives.

Figure 1 shows how flows of the Santa Ynez River are routed through the Santa Ynez River basin. The SYRHM includes operations of Juncal, Gibraltar, and Bradbury Dams, the Santa Ynez River alluvial groundwater basins, and Santa Ynez River recharge (percolation) in Lompoc basin. The model uses historic records of rainfall, runoff, evaporation, and tunnel infiltration for the period 1918 through 1993. Reservoir releases, diversions, streamflow percolation, groundwater pumping, and depletions are based on monthly time steps. The model includes the Gibraltar operations under the Upper Santa Ynez River Operations Agreement, and the Cachuma operations under the State Water Resources Control Board (SWRCB) Order WR 73-37 as amended by WR 89-18 (Santa Ynez River Hydrology Model Manual, 9/8/1997). In addition, the model has been expanded to include releases for fisheries and SWP water deliveries through the Bradbury Dam outlet works.

The Santa Ynez River between Bradbury Dam and Lompoc Narrows is divided into four reaches in the model: (1) Bradbury Dam-Solvang; (2) Solvang-Buellton Bend; (3) Buellton Bend-Salsipuedes Creek; and (4) Salsipuedes Creek-Narrows Gage. Recently, the SBCWA expanded the operation model (SYRHM) to incorporate a detailed version of the Bradbury-Solvang reach, in which the reach is divided into 12 segments between tributaries. This allows for a direct modeling of tributary flow contributions in the Bradbury Dam-Solvang reach of the SYRHM. This version of the model is referred to as SYRHM 498 which was used for the analyses of the Biological Assessment resulting in the Biological Opinion. The same version of the model (SYRHM 498) has been used for the analyses of the Cachuma water rights EIR.

2.B MODIFICATIONS TO SYRHM

Table 2 displays the operational elements in the EIR alternatives that have been included in the operational modeling in the SYRHM including releases for habitat and passage of steelhead, surcharges, State Water Project imports, and the Below Narrows Exchange Project. Emergency winter storm operations and ramping of outlet releases have not been included in the SYRHM due to its limitation, use of monthly time steps. Whereas, winter storm operations and ramping of outlet releases would occur within days.

2.B.1 Releases Below Cachuma Reservoir for Habitat and Passage of Steelhead

Releases from Cachuma Reservoir for steelhead rearing and passage have been modeled for two sets of operating criteria. Both are derived from the issuance of the Biological Opinion (BO) by the National Marine Fisheries Service (NMFS) (Sep. 2000) and the Lower Santa Ynez Fish Management Plan (FMP) (Oct. 2000). The first set of operating criteria involves releases for steelhead rearing associated with the interim phase as outlined in the BO and FMP and is used in EIR Alternative 2. The second set of operating criteria involves releases for steelhead rearing and passage associated with the final phase as outlined in the BO and FMP and is used in EIR Alternatives 3A, 3B, 3C, 4A, and 4B.

One element that is common to both sets of the fish release operating criteria is the conjunctive operation of water rights releases with fish releases. This conjunctive use operation would extend the period of time each year when instream flows improve fisheries habitat for oversummering and juvenile rearing within the mainstream river.

EIR Alternative 2 operates using the interim rearing target flow levels. Under both the BO and the FMP, the interim rearing flows in the Santa Ynez River at Highway 154 use the

TABLE 2
KEY ELEMENTS OF THE ALTERNATIVES

Key Elements	Alternatives					
	1	2	3A	3B	3C	4
Releases for downstream water rights pursuant to WR 89-18 releases	X	X	X	X	X	X
Fish releases under BO Interim phase		X				
Emergency winter storm operations		X	X	X	X	X
Revised 89-18 ramping schedule		X	X	X	X	X
SWP water seasonal restrictions on releases, and limits on mixing percentage		X	X	X	X	X
Surcharge to 0.75'		X	X			
Surcharge to 1.8'				X		
Surcharge to 3'					X	X
Fish releases under BO for rearing and passage; Adaptive Management Account for fish releases			X	X	X	X
Other habitat enhancement actions under BO and Fish Management Plan, including projects on tributaries		X	X	X	X	X
Below Narrows Exchange Project to delivery SWP water to Lompoc Valley						X

targets shown in Table 3. In years when Cachuma reservoir spills 20,000 acre-feet or more, a target of 5 cfs will be maintained at Highway 154 Bridge. In years when Cachuma Reservoir does not spill or spills less than 20,000 acre-feet, the Highway 154 target flow will be determined at the start of each month based on reservoir storage: 2.5 cfs when storage is greater than 120,000 acre-feet and 1.5 cfs when storage is less than 120,000 acre-feet. Periodic releases to refresh the Stilling Basin and Long Pool will be made when storage is less than 30,000 acre-feet. (Lower Santa Ynez River Fish Management Plan, October 2000). These BO interim target flows are similar to the historic fish releases under WR94-5 as shown in Figure 2. Figure 2 shows the historic daily releases from 1995 through 2000 for fishery enhancement and studies with the median release for fish being 2.5 cfs. In addition, the BO requires a 2 cfs target flow in Hilton Creek as part of the terms and conditions to implement reasonable and prudent measure No. 2. (Biological Opinion, September 2000).

Table 3
NMFS' Biological Opinion and Fish Management Plan
Mainstem Rearing Target Flows for Interim Phase

Lake Cachuma Storage	Reservoir Spill?	Target Flow	Target Site
> 120,000 AF	Spill > 20,000 AF	5 cfs	Highway 154 Bridge
> 120,000 AF	Spill <20,000 AF or No Spill	2.5 cfs	Highway 154 Bridge
< 120,000 AF	No Spill	1.5 cfs	Highway 154 Bridge
<30,000 AF	No Spill	Periodic Release; ≤30AF per month	Stilling Basin and Long Pool

(Source: Lower Santa Ynez River Fish Management Plan, October 2, 2000, pg. 3-12)

Both the BO and FMP in the interim phase also include a provision that Reclamation shall maintain full residual pool depth in Alisal and Refugio reaches downstream of the Highway 154 Bridge during spill years and the first year after spill years if steelhead are present. Because the quantity of water needed to maintain residual pool depth has not yet been determined and is necessary only when steelhead are present, this provision has not been included in the SYRHM for EIR Alternative 2.

EIR Alternatives 3A, 3B, 3C, 4A, and 4B operate using the final phase rearing target flow levels. Under both the BO and the FMP, fish releases from Cachuma Reservoir are structured as follows in Table 4 for the final implementation stage for enhancing steelhead habitat. In years when Cachuma reservoir spills 20,000 acre-feet or more, a target of 10 cfs will be maintained at Highway 154 Bridge. In years when Cachuma Reservoir does not spill or spills less than 20,000 acre-feet, the Highway 154 target flow will be determined at the start of each month based on reservoir storage: 5.0 cfs when storage is greater than 120,000 acre-feet and 2.5 cfs when storage is less than 120,000 acre-feet. In addition, in years when the Cachuma spill more than 20,000 acre-feet and steelhead are present, a target flow of 1.5 cfs will be maintained at Alisal Road Bridge. A 1.5 cfs target will also be maintained in the year immediately flowing such a spill year if steelhead are present. Periodic releases to refresh the Stilling Basin and Long Pool will be made when storage is less than 30,000 acre-feet. (Lower Santa Ynez River Fish Management Plan, October 2000).

Table 4
NMFS' Biological Opinion and Fish Management Plan
Mainstem Rearing Target Flows for Final Phase

Lake Cachuma Storage	Reservoir Spill?	Target Flow	Target Site
> 120,000 AF	Spill > 20,000 AF	10 cfs	Highway 154 Bridge
> 120,000 AF	Spill > 20,000 AF	1.5 cfs*	Alisal Road Bridge
> 120,000 AF	Spill <20,000 AF or No Spill	5 cfs	Highway 154 Bridge
< 120,000 AF	No Spill	2.5 cfs	Highway 154 Bridge
<30,000 AF	No Spill	Periodic release; ≤30AF per month	Stilling Basin and Long Pool
> 30,000 AF	Spill < 20,000 AF or No Spill	1.5 cfs*	Alisal Road Bridge**

(Source: Lower Santa Ynez River Fish Management Plan, October 2, 2000, pg. 3-9)
* When rainbow trout/steelhead are present in the Alisal Reach.
** This target will be met in the year immediately following a >20,000 AF spill year.

In addition, under the final implementation phase, a specific volume of water is dedicated for the "Fish Passage Account" of 3,200 Acre-feet and for the "Adaptive Management Account" of 500 Acre-feet for a total of 3,700 acre-feet. The water in these two accounts is allowed to carryover from one year to the next; however, the accounts are deemed to spill first and are then reset to their maximum amount of 3,700 acre-feet. Water in the passage account is experimentally planned to be used to supplement storms by augmenting the descending limb of the storm hydrograph below Bradbury Dam. Table 5 lists some of the Passage Supplementation Criteria which were incorporated into analyses for the Biological Opinion and Fish Management Plan.

Table 5
Passage Supplementation Criteria

- Passage releases will be made in years following a spill until accounts have run out
- January through May
- Continuous Flow to the Ocean
- Santa Ynez River at Solvang reaches 25 cfs during a storm
- 1st Storm in January may not be Supplemented
- Cachuma releases through outlet works based on matching Cachuma inflow decay curve and boosting storm peak to 150 cfs at Solvang

Modeled fish releases for Alternatives 3A, 3B, 3C, 4A, and 4B use the same model programming code for releases for steelhead rearing habitat and passage as used by the SYRTAC in the Biological Assessment (June 2000) and the Fish Management Plan (Oct. 2000) and as outlined in Tables 4 and 5 above. However, an additional target flow in Hilton Creek of 2 cfs has been added to the SYRHM as related to the issuance of the Biological Opinion by NMFS. In addition, the BO calls for the SYRTAC and NMFS to meet and come up with more strategies to improve the use of the Passage Account water by February 2001, with an emphasis on avoiding passage releases in "dry" years. For purposes of these analyses, the Passage Account and Adaptive Management Account are used in the SYRHM as they were presented in the Fish Management Plan (Oct. 2000). Given the nature of adaptive management, releases for passage could actually be a number of different scenarios that may have untested biologic impacts. Changes in timing of the passage releases are currently unknown and would not significantly change the hydrologic impacts, given that the Passage and Adaptive Management Accounts are created after a spill event and therefore are a fixed quantity of water, which would be released for the designated purpose.

2.B.2 Cachuma Reservoir Surcharging and Maximum Storage Capacities

Recently, a year 2000 Cachuma Lake bathymetric Study (MNSCE, Oct. 2000) shows that Cachuma Lake capacity at 750.0 feet is 188,035 acre-feet, a reduction of 2,374 acre-feet from the year 1989 survey capacity of 190,409 acre-feet. Table 6 shows the maximum surface elevation and storage capacity associated with each EIR alternative and corresponding surcharge level using the 2000 elevation-area-capacity curves for Cachuma.

Table 6a
Cachuma Reservoir Surcharge Used for EIR Modeling

Alternative	Surcharge (feet)	Maximum Elevation (feet)	Maximum Storage (acre-feet)	Storage Difference from No Surcharge (acre-feet)	Maximum Surface Area (acres)
1	0	750.0	188,035	0	3,048
2	0.75	750.75	190,336	2,301	3,076
3A	0.75	750.75	190,336	2,301	3,076
3B	1.8	751.8	193,585	5,550	3,113
3C	3.0	753.0	197,343	9,308	3,155
4A	3.0	753.0	197,343	9,308	3,155
4B	3.0	753.0	197,343	9,308	3,155

The version of the SYRHM that was used for the Biological Opinion/Fish Management Plan has been modified to incorporate the year 2000 elevation-area-capacity curves for Cachuma Reservoir. Since the modeling was completed for the EIR in December 2000, in March 2001 the results from the 2000 Cachuma survey capacity were adjusted for elevations above 749.0 feet. The adjustments were relatively small as shown below in Table 6b.

Table 6b
Comparison of Elevation-Storage Capacities
of Cachuma Reservoir Above 749.0 Feet

Elevation feet	Bathymetric Study October 2000 acre-feet	*Revised* March 2001 Acre-feet	Difference acre-feet	as %
749.0	185,007	185,007	0	0.000%
750	188,030	188,035	5	0.003%
750.75	190,325	190,336	11	0.006%
751.8	193,562	193,585	23	0.012%
753	197,302	197,343	41	0.021%

Because the differences between the October 2000 bathymetric study and the March 2001 revision are small and apply to elevations above 749.0 feet, the October 2000 bathymetric study was used for the EIR modeling.

2.B.3 State Water Project Imports

The State Water Project (SWP) Coastal Branch Extension Phase II extends from Devil's Den in Kern County to the Santa Ynez River basin and includes a water treatment plant in San Luis Obispo County known as the Polonio Pass Water Treatment Plant. Since 1997, the Central Coast Water Authority (CCWA) delivers SWP water to Cachuma Reservoir for the SWP contractors on the South Coast. The treated SWP water is dechloraminated at the Santa Ynez Pumping Facility and then pumped via the Santa Ynez Extension through the existing Bradbury outlet works into Lake Cachuma. The commingled water is then delivered through Tecolote Tunnel to the Member Units on the South Coast. The total annual entitlement of SWP deliveries under contractual agreements to the South Coast is a total of 13,750 acre-feet per year. Table 7 lists the scheduled deliveries of SWP to the South Coast and the actual deliveries into Cachuma Reservoir after exchanges on a calendar year basis.

Santa Ynez River Water Conservation District, Improvement District No. 1 (ID No. 1) exchanges its allocation of Cachuma Project water for an equal amount of SWP water that would have been delivered to the South Coast members of Cachuma Project. The amount of this exchange is about 10%

(10.313%) of the Cachuma Project supply of 25,714 acre-feet per year or 2,571 acre-feet per year. The amount of exchange with ID No.1 is affected by Cachuma Project shortages.

Table 7
State Water Delivery Schedule Through Cachuma Outlet Works
CCWA South Coast Member Agencies
(Acre-feet/year)

Calendar Year	Scheduled Deliveries	Actual Deliveries
1997	1,334	1,335
1998	4,217	0
1999	4,437	505
2000	4,587	2,333
2001	5,454	459*
2002	5,479	NA
2003	5,544	NA
2004	5,614	NA
2005	5,684	NA

* Total through September 2001

In Alternatives 2, 3A, 3B, 3C, 4A, and 4B, the full SWP entitlements are assumed to be delivered each year, subject to the following assumptions and results of hydrologic modeling:

- A maximum delivery rate of 22 cfs is assumed which provides a monthly delivery capacity of 1,220 to 1,310 acre-feet per month.

- The total annual entitlement of SWP deliveries under contractual agreements to the South Coast is a total of 13,750 acre-feet per year.

- Shortages in SWP deliveries to municipal and industrial contractors in the coastal aqueduct due to state-wide and Delta shortages are used from the output of the California Department of Water Resources' hydrologic model DWRSIM v.9.06T. (DWRSIM studies that have been performed for CALFED Bay-Delta Program are preliminary and have been currently updated by a new State Water Project/Central Valley Project simulation model called CALSIM and are currently being updated by CALSIM II. Due to small differences in Central Coast M&I delivery shortages resulting from the above modeling work, the modeling performed for theses EIR analyses continue to use the output from the DWRSIM version.)

- ID No. 1 exchanges its allocation of Cachuma Project water for an equal amount of SWP water that would have been delivered to the South Coast members of Cachuma Project. The amount of this exchange is 10.313% of the Cachuma Project supply of 25,714 acre-feet per year. For the purpose of these EIR analyses, the ID No. 1 exchange is based on 10% of Cachuma Project supply.

- SWP water imported into Cachuma Reservoir is assumed to be exported out through Tecolote Tunnel in the same month. Although the SWP could be stored in Cachuma Reservoir for an additional cost, same month imports and exports are assumed for this EIR modeling analysis.

- SWP deliveries are not made in months when Cachuma Reservoir is spilling. Although SWP deliveries can be made up in other months, spill conditions usually indicate a wet period in which additional SWP deliveries probably would not be needed. Therefore, it was assumed that SWP deliveries would not be made during spills and would not be made up in subsequent months.

- In this study, the proportion of the SWP water as a part of a Cachuma water rights release is limited to 50 percent of the total release to provide protection to steelhead.

- Reclamation shall avoid mixing CCWA water in the Santa Ynez River downstream of Bradbury Dam when steelhead smolts could be subject to imprint. This limits the SWP deliveries when releases for steelhead passage are being made from Cachuma.

Given the above restrictions and modeling assumptions, the imports of SWP water vary for each alternative and would be less than the full 13,750 acre-feet per year. The SWP deliveries for each EIR alternative are shown in the next section of hydrologic modeling results.

2.B.4 Below Narrows Exchange Project (BNE)

Currently, the BNE is incorporated into the SYRHM by using average Below Narrows deliveries of 1,771 acre-feet per year as an amount for an exchange of SWP water with the South Coast member units. Currently, there is no actual agreement between the parties of the Below Narrows Account and the SWP south coast contractors. These modeling analyses assume that an even amount of 1,771 acre-feet per year will be exchanged every year and not as Below Narrows Account credits accrue. In Alternative 4A, the exchanged BNA water would be provided directly to the City of Lompoc. In Alternative 4B, the exchanged BNA water would be provided by discharging SWP water to the Santa Ynez River near Lompoc for recharge.

2.C Model Limitations of the SYRHM

The intended use of the SYRHM is for comparative purposes between the EIR alternatives. The simulated flow data generated from the SYRHM is not meant to be predictive, but it is used as an analytical tool for statistical and comparative purposes. Since the model is used for comparative analyses, some of the inherent inaccuracies in the model are expected to cancel out when comparing the results of one scenario with another.

The SYRHM operations have some limitations because the model uses monthly time steps. Other limitations of the SYRHM are related to real time management decisions. For example, WR89-18 releases, project delivery reductions in times of shortages, and SWP deliveries could vary based on real time management decisions.

3. SYRHM OPERATIONAL MODELING RESULTS

3.A Cachuma Reservoir Operations

The surface water budget for Cachuma Reservoir for all of the alternatives is shown in Table 8A for the hydrologic period 1918-1993 and in Table 8B for the years 1947-1951, the critical drought period in the Santa Ynez River basin.

TABLE 8A						
Surface Water Budgets for Cachuma Reservoir						
Average Values from SYRHM, 1918-1993 (76 years) 1)						
(Acre-feet/year)						
	EIR ALTERNATIVES					
	Alt 1	**Alt 2**	**Alt 3A**	**Alt 3B**	**Alt 3C**	**Alt 4A&B**
Inflow						
Runoff	74,171	74,171	74,171	74,171	74,171	74,171
Precipitation	3,869	3,869	3,827	3,876	3,935	3,945
SWP water 2)	0	7,619	7,648	7,652	7,663	6,006
TOTAL INFLOW	78,040	85,659	85,646	85,699	85,769	84,122
Outflow						
Evaporation	10,876	10,876	10,752	10,892	11,067	11,108
Spills/Leakage	37,580	36,693	36,037	35,784	35,415	35,288
Project Deliveries (no tunnel) 3)	23,262	23,069	22,855	22,940	23,076	23,123
WR89-18 releases	6,322	6,023	5,658	5,682	5,737	5,711
Fish/Habitat releases	0	1,362	2,690	2,701	2,715	2,801
SWP Exchange 4)	0	-2,512	-2,490	-2,499	-2,512	-4,288
SWP Deliveries to South Coast	0	10,131	10,138	10,150	10,175	10,294
TOTAL OUTFLOW	78,040	85,642	85,640	85,651	85,673	84,037
Change in Storage	0	17	6	48	96	84
	43,902	44,078	44,385	44,167	43,867	43,800
MEAN DIFFERENCE IN WATER PASSING THROUGH CACHUMA (Spills and Releases)						
Cachuma Spills & Releases	43,902	44,078	44,385	44,167	43,867	42,029
Difference in Cachuma Spills & Releases (AFY)	-176		307	89	-211	-2,049
Difference in Cachuma Spills & Releases (%)	-0.4%		0.7%	0.2%	-0.5%	-4.6%
MEAN NET DIFFERENCE WITH ALTERNATIVE 2 (AFY)						
Fish/Habitat releases	-1,350	0	1,325	1,350	1,350	1,450
WR89-18 releases	300	0	-375	-350	-275	-300
Project Deliveries (no tunnel) 3)	200	0	-225	-125	0	50
Spills/Leakage	875	0	-650	-900	-1,275	-1,400
Net Evaporation	0	0	-75	0	125	150
Change in Storage	-25	0	0	25	75	75
SUM	1,350	0	-1,325	-1,350	-1,350	-1,425
Average Change In Water Right Releases	5%		-6%	-6%	-5%	-5%
Average Change In Spills/Leakage	2%		-2%	-2%	-3%	-4%
Average Change In Project	1%		-1%	-1%	0%	0%
NOTES						
1) See Table 1 for description of alternatives; fish releases include rearing and passage flows.						
2) Includes SWP deliveries in outlet works and into Cachuma Reservoir.						
3) Does not include Tecolote Tunnel infiltration which averages which average about 2,050 acre-feet/year						
4) Includes SWP exchange with SYRWCD ID No 1 and for Alternatives 4A and 4B, the BNE of 1,771 AF						

TABLE 8B						
Surface Water Budgets for Cachuma Reservoir						
Average Values from SYRHM, 1947-1951 (5 years) [1]						
(Acre-feet/year)						
	EIR ALTERNATIVES					
	Alt	**Alt**	**Alt**	**Alt**	**Alt**	**Alt**
	1	**2**	**3A**	**3B**	**3C**	**4A&B**
Inflow						
Runoff	4,578	4,578	4,578	4,578	4,578	4,578
Precipitation	1,894	1,876	1,854	1,879	1,922	2,020
SWP water [2]	0	7,712	7,797	7,772	7,709	5,888
TOTAL INFLOW	6,472	14,166	14,229	14,229	14,209	12,486
Outflow						
Evaporation	7,794	7,694	7,565	7,670	7,860	8,294
Spills/Leakage	119	109	105	105	114	143
Project Deliveries (no tunnel) [3]	21,617	20,568	19,716	19,987	20,614	21,096
WR89-18 releases	5,415	5,713	5,605	5,812	5,602	5,240
Fish/Habitat releases	0	1,324	2,457	2,505	2,605	2,984
SWP Exchange [4]	0	-2,219	-2,134	-2,161	-2,223	-4,043
SWP Deliveries to South Coast	0	9,931	9,930	9,932	9,932	9,931
TOTAL OUTFLOW	34,945	43,120	43,244	43,850	44,504	43,645
Change in Storage	-28,473	-28,954	-29,015	-29,621	-30,295	-31,159
MEAN DIFFERENCE IN WATER PASSING THROUGH CACHUMA (Spills and Releases)						
Cachuma Spills & Releases	5,534	7,146	8,167	8,422	8,321	8,367
Difference in Cachuma Spills & Releases (AFY)	-1,612		1,021	1,276	1,175	1,221
Difference in Cachuma Spills & Releases (%)	-22.6%		14.3%	17.9%	16.4%	17.1%
MEAN NET DIFFERENCE WITH ALTERNATIVE 2 (AFY)						
Fish/Habitat releases	-1,320	0	1,130	1,180	1,280	1,660
WR89-18 releases	-300	0	-110	100	-110	-470
Project Deliveries (no tunnel) [3]	1,050	0	-850	-580	50	530
Spills/Leakage	10	0	0	0	0	30
Net Evaporation	80	0	-110	-30	120	460
Change in Storage	480	0	-60	-670	-1,340	-2,210
SUM	1,320		-1,130	-1,180	-1,280	-1,660
Average Change In Water Right Releases	-5%		-2%	2%	-2%	-8%
Average Change In Spills/Leakage	9%		0%	0%	0%	28%
Average Change In Project	5%		-4%	-3%	0%	3%
NOTES						
1) See Table 1 for description of alternatives; fish releases include rearing and passage flows.						
2) Includes SWP deliveries in outlet works and into Cachuma Reservoir.						
3) Does not include Tecolote Tunnel infiltration which averages which average about 1,620 acre-feet/year						
4) Includes SWP exchange with SYRWCD ID No 1 and for Alternatives 4A and 4B, the BNE of 1,771 AF						

Table 8A shows that on average over the hydrologic period, the amount of water passed through at Bradbury Dam, either by spills and leakage, water right releases, and fish releases, is relatively the same or with less than 1% variation (except for Alternative 4 in which about 4% less water would pass through at the dam). Because the only difference between Alternatives 4A and 4B is how the SWP water is delivered below the Narrows, both have the same operation from Cachuma Reservoir to the Lompoc Narrows and are presented as one in this table. (Note: The precipitation and evaporation vary for each of the EIR alternatives due to differences in the surface area of the reservoir. Also, Tecolote Tunnel infiltration is not shown on these tables but is considered a component of the Project yield. Tecolote Tunnel infiltration averages about 2,050 acre-feet/year for the period 1918-1993 and 1,620 acre-feet/year during the period 1947-1951.)

Table 8A also shows that the water that will now be used for steelhead rearing and passage releases comes from not just the surcharge (i.e. reduction in spills) but also a reduction in water right releases and Cachuma Project deliveries. Table 8A shows that water right releases, on average, are reduced significantly under the fish release alternatives when compared as a percentage of water right releases without fish release requirements. Table 8B shows that Cachuma Project deliveries are reduced the most during critical drought periods. Project deliveries are reduced by fish releases because additional releases lower the reservoir more quickly resulting in shortages in Project deliveries when the reservoir recedes below 100,000 acre-feet of storage.

Figures 3A and 3B show the frequency of releases and spills from Cachuma Reservoir for all alternatives on different scales of flow. In summary, the major changes to the Santa Ynez River flow system, due to changes in Cachuma Reservoir operations, is that when there are more low flow releases, there are less spills or high flow releases. The reduction in spills is relatively small compared with the overall magnitude of spills.

3.B LAKE STORAGE AND ELEVATION

Figure 4 shows the simulated Cachuma Reservoir storage level for the 76 year simulation period extending from 1918 through 1993. The minimum storage level (minimum pool) for all alternatives is set to 12,000 acre-feet which occurs during the critical drought of 1947-1951 for all alternatives.

Table 9 summarizes average Lake Cachuma elevation, storage, and surface area for each alternative. In general, the median elevation, storage, and surface area for all alternatives are very similar.

Table 9
Cachuma Reservoir Elevation, Storage, and Surface Area
Average for 1918-1993 (SYRHM)

Alternative	Surcharge (feet)	Median Elevation (feet)	Median Storage (acre-feet)	Median Surface Area (acres)
1	0	734.08	144,318	2,471
2	0.75	733.73	143,573	2,463
3A	0.75	732.25	139,961	2,425
3B	1.8	733.31	142,531	2,452
3C	3.0	734.62	145,761	2,488
4A&B	3.0	735.19	147,205	2,505

Several issues that involve the reservoir water surface elevation, including Hilton Creek Siphon, Tecolote Tunnel Intake valves, and duration of the 3.0' surcharge, were analyzed using frequency curves of reservoir elevation as shown in Figures 5A through 5D.

Figures 6A through 6D show the intra-annual variations in reservoir storage for the six alternatives.

3.C SANTA YNEZ RIVER FLOWS

Figures 7A through 7F show the frequency of flows at six different locations downstream of Cachuma Reservoir for the various alternatives based on the results of the SYRHM. Appendix A contains the monthly flows for the six alternatives from 1918 through 1993 (912 months).

Figures 8A through 8D show the intra-annual variations in median Santa Ynez River flow for the six alternatives. Only Alternative 3A is compared with Alternatives 1 and 2 on these graphs due to the close similarity of Alternatives 3A, 3B, 3C, and 4 on impact to median Santa Ynez River flows. In general, Figures 8A through 8D show that flow decreases downstream during summer and dry years. However, during winter months and wet years, flow increases as it moves downstream due to tributary contributions below Cachuma Reservoir.

Figures 9A through 9D shows the intra-annual variations in mean Santa Ynez River flows. Because the mean statistic is dominated by high flow storm events and the changes in the flow regime is predominantly in low flows among the various alternatives, there is no significant change to the mean monthly flows.

3.D GROUNDWATER STORAGE IN THE ABOVE NARROWS RIPARIAN AQUIFER

During the low flow periods, there is more percolation into the Above Narrows Riparian Aquifer with releases for steelhead. As shown in Figure 10A, the above Narrows riparian aquifer recovers to the same levels with the recharge of winter runoff under Alternatives 1, 2, and 3A. Figures 10A-C show the changes in total dewatered storage in the entire above Narrows riparian aquifer. These figures show less total dewatered storage during low flow periods when there are more fish releases. Figure 10b shows that there is only a very small to no difference between Alternatives 3A, 3B, 3C, 4A, and 4B on groundwater storage in the Above Narrows Riparian Aquifer. Figures 11A-B, 12A-B, and 13A-B show the effects to total dewatered storage for the three different sub-units of the above Narrows riparian aquifer, the Santa Ynez, Buellton, and Santa Rita sub-basins. The greatest effect is on the Santa Ynez sub-basin.

Tables 10a-d show statistics on monthly total dewatered storage for the Above Narrows riparian aquifer and for the three different sub-units. For comparison, the last four columns show the difference in dewatered storage relative to Alternative 1, which has no fish releases. For example, Table 10a shows that Alternative 3C would increase groundwater storage by 871 acre-feet 50% of the time. Tables 10b through 10c show that this increase in ground water storage is larger in the Santa Ynez sub-

Table 10a
Statistics on Monthly Total Dewatered Storage
for the Above Narrows Riparian Aquifer, 1918-1993
(acre-feet)

EIR Alternative	Mean	Median	Minimum	Maximum	Difference with Alt 1 Mean	Median	Minimum	Maximum
1	11,524	10,952	2,329	36,463	----	----	----	----
2	10,769	10,517	2,324	32,936	755	435	5	3,527
3A	10,332	10,102	2,314	31,375	1,192	850	15	5,089
3B	10,310	10,099	2,315	31,094	1,214	853	14	5,370
3C	10,281	10,081	2,315	30,948	1,243	871	14	5,515
4A&B	10,240	10,031	2,311	30,235	1,284	921	18	6,228

Table 10b
Statistics on Monthly Total Dewatered Storage
for the Santa Ynez Riparian Subarea, 1918-1993
(acre-feet)

EIR Alternative	Mean	Median	Minimum	Maximum	Difference with Alt 1 Mean	Median	Minimum	Maximum
1	2,471	2,148	0	12,089	----	----	----	----
2	1,926	1,769	0	9,048	544	379	0	3,041
3A	1,734	1,612	0	8,624	737	536	0	3,464
3B	1,722	1,606	0	8,445	748	542	0	3,644
3C	1,704	1,584	0	8,231	766	564	0	3,858
4A&B	1,647	1,510	0	7,616	824	638	0	4,473

Table 10c
Statistics on Monthly Total Dewatered Storage
for the Buellton Riparian Subarea, 1918-1993
(acre-feet)

EIR Alternative	Mean	Median	Minimum	Maximum	Difference with Alt 1 Mean	Median	Minimum	Maximum
1	5,691	5,634	2,164	11,098	----	----	----	----
2	5,598	5,570	2,160	11,018	92	65	4	80
3A	5,485	5,447	2,166	10,876	206	187	-2	222
3B	5,482	5,449	2,167	10,878	208	185	-3	220
3C	5,471	5,442	2,153	10,869	220	193	12	229
4A&B	5,438	5,382	2,144	10,822	253	253	20	276

Table 10d
Statistics on Monthly Total Dewatered Storage
for the Santa Rita Riparian Subarea, 1918-1993
(acre-feet)

EIR Alternative	Mean	Median	Minimum	Maximum	Difference with Alt 1 Mean	Median	Minimum	Maximum
1	3,363	3,156	0	13,445	----	----	----	----
2	3,244	3,080	0	13,042	118	76	0	402
3A	3,113	2,993	0	12,053	249	163	0	1,392
3B	3,105	2,981	0	11,954	257	175	0	1,490
3C	3,105	2,978	0	12,037	257	178	0	1,407
4A&B	3,155	3,105	0	12,004	207	51	0	1,440

unit; which is the sub-unit closest to Bradbury Dam and also includes Highway 154 and Alisal Bridge which are the fish releases' target sites.

Tables 11a-c show the impact of the EIR alternatives on the average water level elevations in the Santa Ynez, Buellton, and Santa Rita sub-basins of the above Narrows riparian aquifer. Relationships developed by Reclamation between groundwater storage and groundwater elevation were used to develop the relative changes in depths to water for various alternatives with values being rounded to the nearest foot. The most significant change among the EIR alternatives occurs in the Santa Ynez subarea with water levels in the ground water increasing one to two feet on average. Also, for the alternatives with fish releases (Alternatives 2, 3A, 3B, 3C, 4A, and 4B), during prolonged droughts the groundwater levels in the Santa Ynez subarea would be 8 to11 feet higher when compared with Alternative 1.

3.E WATER RIGHTS RELEASES (WR 89-18)

Table 12 shows the impacts to water rights releases for the various alternatives as determined by the Santa Ynez River Hydrology Model. The Above Narrows Account is dependent upon groundwater storage in the Above Narrows Riparian Aquifer because the account can not be larger than the dewatered storage under WR89-18. Because there will be less dewatered storage in the Above Narrows aquifer due to fish releases, the Above Narrows account will be reduced consistent with WR89-19 and compared to Alternative 1 the reduction would be 300 to 660 acre-feet per year.

Table 12
Impacts to Water Right Releases for Water Years 1918-1993
(acre-feet/year)

	Alt 1	Alt 2	Alt 3A	Alt 3B	Alt 3C	Alt 4 A&B
WR89-18 Releases	6,322	6,023	5,658	5,682	5,737	5,711
Difference in WR89-18 releases	---	-299	-660	-640	-590	-611

Table 11a
Statistics on Monthly Average Water Level Elevation
for the Santa Ynez Riparian Subarea, 1918-1993
(feet)

EIR Alternative	Mean	Median	Minimum	Maximum	Difference with Alt 1 Mean	Median	Minimum	Maximum
1	458	459	435	464	----	----	----	----
2	459	460	443	464	1	1	8	0
3A	460	460	444	464	2	1	9	0
3B	460	460	444	464	2	1	9	0
3C	460	460	445	464	2	1	10	0
4A&B	460	460	446	464	2	2	11	0

Table 11b
Statistics on Monthly Average Water Level Elevation
for the Buellton Riparian Subarea, 1918-1993
(feet)

EIR Alternative	Mean	Median	Minimum	Maximum	Difference with Alt 1 Mean	Median	Minimum	Maximum
1	304	304	295	310	----	----	----	----
2	304	304	295	310	0	0	0	0
3A	304	304	295	310	0	0	0	0
3B	304	304	295	310	0	0	0	0
3C	304	304	295	310	0	0	0	0
4A&B	304	304	295	310	0	0	0	0

Table 11c
Statistics on Monthly Average Water Level Elevation
for the Santa Rita Riparian Subarea, 1918-1993
(feet)

EIR Alternative	Mean	Median	Minimum	Maximum	Difference with Alt 1 Mean	Median	Minimum	Maximum
1	176	176	163	180	----	----	----	----
2	176	176	163	180	0	0	1	0
3A	176	176	165	180	0	0	2	0
3B	176	176	165	180	0	0	2	0
3C	176	176	165	180	0	0	2	0
4A&B	176	176	165	180	0	0	2	0

NOTES
Relationships developed by Reclamation between groundwater storage and groundwater elevation were used to develop the relative changes in depths to water for various alternatives.

3.F CACHUMA PROJECT DELIVERIES

The Santa Ynez River Hydrology Model indicates that the proposed EIR alternatives will produce substantially greater shortages in water supply during droughts in comparison with Alternative 1. The historical precipitation at Gibraltar Dam from 1947 through 1951 was 35% to 60% below normal. The shortages to water supply during the last three years of this critical period for the various EIR alternatives are shown in Table 13a.

Table 13a
Impacts of Fish Releases on Project Water Supply in Critical Drought Period, 1949 through 1951
(acre-feet)

EIR Alternative	Shortage in Critical Drought Year (1951)	Shortage as Percentage of Annual Draft	Cumulative Shortage in Critical Drought Period (1949-1951)	Shortage as Percentage of Annual Draft for Three Years
1	7,070	27%	14,210	18%
2	9,810	38%	20,130	26%
3A	11,810	46%	24,850	32%
3B	11,260	44%	23,370	30%
3C	9,890	38%	19,920	26%
4A&B	9,350	36%	17,470	23%

Note: Annual draft from Cachuma Project is 25,714 acre-feet.

As shown in the above table, by themselves, the Cachuma operations proposed in Alternative 3C already will produce substantially greater shortages in the Cachuma Project yield during the critically dry period compares with Alternative 1. During the last three years of the critical period (1946-1951), a cumulative shortage of approximately 5,700 acre-feet occurs. In the worst year of the critical period, a reduction in yield of 2,800 acre-feet occurs. Alternatives 3A and 3B substantially increase these already large shortages by an additional 4,930 acre-feet and 3,450 acre-feet, respectively in the last three years of the critical period.

It is also important to note that the shortages just described are in addition to shortages in available water supplies that would occur under WR89-18 Cachuma operations during the historical drought condition. The Cachuma Project members, which includes the cities of Santa Barbara, Goleta, Montecito, Carpinteria, and ID No.1, all share the concerns of prolonged drought which is quite common in Southern California, most recently 1985 through 1991.

In real-time planning for water supply during a prolonged drought, water supply managers do not know if they are in the last year of the drought. They have to plan as if the next year would be an additional dry year. The table above is based on the historical hydrology, with a perfect forecast, with the exact length of drought is already known. Whereas, in actual practice the Project managers have to plan for water supply assuming the year following the worst historical drought period itself would be dry. With reserves set aside for an additional dry year following the worst year of the critical period, the shortages are greater as described in Table 13b.

Table 13b
Impacts of Fish Releases on Project Water Supply
in Critical Drought Period, 1949 through 1951
With Reserves Set Aside for an Additional Dry Year
(acre-feet)

EIR Alternative	Shortage in Critical Drought Year (1951)	Shortage as Percentage of Annual Draft	Cumulative Shortage in Critical Drought Period (1949-1951)	Shortage as Percentage of Annual Draft for Three Years
1	12,740	50%	22,800	30%
2	14,790	58%	27,030	35%
3A	16,500	64%	31,220	40%
3B	15,940	62%	29,460	38%
3C	15,380	60%	27,750	36%
4A&B	15,090	59%	24,530	32%

Note: Annual draft from Cachuma Project is 25,714 acre-feet.

In summary, Alternatives 3A and 3B in comparison with Alternative 3C will exacerbate the water supply impacts of a prolonged drought and the shortages already associated with the steelhead fish releases in the BO, substantially increasing shortages further.

3.G STATE WATER PROJECT DELIVERIES

State Water Project (SWP) deliveries for each of the EIR alternatives are based upon demand and modeling results, which take into consideration limitations due to shortages in SWP supply during state-wide droughts, pipeline capacity, and Cachuma Reservoir operations. The modeling results actually uses two hydrologic models, the Santa Ynez River Hydrology Model (used for Cachuma Reservoir) and the DWRSIM (used for shortages in SWP deliveries). Table 14 shows the average deliveries for the period 1942-1993. The period 1942-1993 is chosen because this period coincides with the Lompoc groundwater models, which will be used to determine impacts on salinity in Lompoc. Alternatives 2, 3A, 3B, 3C, 4A, and 4B import 10,135 to 10,369 acre-feet per year of SWP water under South Coast contracts or around 74 to 75% of their full entitlement.

Deliveries of SWP vary substantially from year to year. Tables15a-e summarizes SWP for each year from 1942-1993. The largest shortages of SWP occur during the drought of 1985 through 1991.

TABLE 14 SUMMMARY OF STATE WATER PROJECT DELIVERIES AVERAGE FOR PERIOD 1942-1993 (ACRE-FEET/YEAR)						
EIR Alternative	ID No. 1 Exchange [1)]	BNA Exchange [2)]	SWP in Cachuma [3)]	SWP in Outlet Works [4)]	Total Imports under South Coast Contracts	Total Imports as a Percentage of 13,750 AF
1	0	0	0	0	0	
2	2,497	0	5,849	1,789	10,135	74%
3A	2,472	0	5,878	1,802	10,152	74%
3B	2,482	0	5,844	1,841	10,167	74%
3C	2,497	0	5,836	1,866	10,199	74%
4 A&B	2,501	1,770	4,853	1,245	10,369	75%

1) Based on shortages in Cachuma Project estimated by the SYRHM 0498
2) Based on exchange of 1,771 AF each year; actual Below Narrows Exchange might vary in timing and amount.
3) Based on shortages in SWP from DWRSIM and no deliveries when Cachuma is spilling from SYRHM
4) SWP reductions in delivery due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases.

TABLE 15A
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 2
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2]	ID No. 1 Exchange Shortage [3]	Reduced Delivery due to Spill [4]	ID No. 1 Exchange	SWP in Cachuma [5]	SWP in Outlet Works [6]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	2,370	2,571	8,937	641	12,149
1943	13,750	2,571	89%	100%	3,653	2,571	6,002	0	8,573
1944	13,750	2,571	92%	100%	3,487	2,571	7,623	255	10,449
1945	13,750	2,571	90%	100%	2,448	2,571	7,811	1,285	11,667
1946	13,750	2,571	88%	100%	2,012	2,571	5,313	2,801	10,685
1947	13,750	2,571	75%	100%	0	2,571	3,485	4,260	10,316
1948	13,750	2,571	67%	100%	1,351	2,571	4,856	1,744	9,171
1949	13,750	2,571	65%	92%	914	2,372	5,847	753	8,972
1950	13,750	2,571	67%	77%	1,118	1,989	6,419	757	9,165
1951	13,750	2,571	88%	62%	2,788	1,590	9,919	520	12,029
1952	13,750	2,571	96%	90%	2,551	2,320	6,314	1,990	10,624
1953	13,750	2,571	90%	100%	0	2,571	7,432	2,706	12,709
1954	13,750	2,571	83%	100%	598	2,571	5,218	3,776	11,565
1955	13,750	2,571	69%	100%	1,898	2,571	4,829	2,251	9,651
1956	13,750	2,571	90%	98%	2,528	2,509	8,401	1,460	12,370
1957	13,750	2,571	88%	87%	2,934	2,244	7,355	3,018	12,617
1958	13,750	2,571	90%	94%	4,732	2,414	7,039	285	9,737
1959	13,750	2,571	88%	100%	0	2,571	6,959	2,601	12,131
1960	13,750	2,571	63%	100%	222	2,571	3,826	2,097	8,494
1961	13,750	2,571	61%	100%	750	2,568	5,140	695	8,403
1962	13,750	2,571	78%	100%	1,712	2,569	6,746	1,379	10,694
1963	13,750	2,571	94%	100%	1,316	2,571	8,810	1,252	12,633
1964	13,750	2,571	88%	100%	1,388	2,571	8,772	1,040	12,383
1965	13,750	2,571	82%	98%	2,180	2,524	6,134	2,114	10,772
1966	13,750	2,571	96%	99%	0	2,557	9,164	1,946	13,667
1967	13,750	2,571	96%	100%	4,224	2,571	3,712	2,916	9,199
1968	13,750	2,571	89%	100%	1,717	2,571	5,816	4,087	12,474
1969	13,750	2,571	93%	100%	5,477	2,571	4,630	1,070	8,271
1970	13,750	2,571	89%	100%	1,080	2,571	6,308	3,061	11,940
1971	13,750	2,571	94%	100%	1,526	2,571	5,042	5,367	12,980
1972	13,750	2,571	88%	100%	1,214	2,571	4,464	4,595	11,630
1973	13,750	2,571	82%	100%	1,794	2,571	6,373	1,320	10,264
1974	13,750	2,571	94%	100%	1,890	2,571	7,104	2,293	11,968
1975	13,750	2,571	96%	100%	2,882	2,571	8,420	291	11,282
1976	13,750	2,571	88%	100%	22	2,571	6,391	3,457	12,419
1977	13,750	2,571	33%	100%	56	2,571	1,495	524	4,590
1978	13,750	2,571	68%	100%	2,080	2,571	4,704	0	7,275
1979	13,750	2,571	85%	100%	2,755	2,571	6,695	431	9,697
1980	13,750	2,571	82%	100%	3,438	2,571	5,531	411	8,513
1981	13,750	2,571	83%	100%	1,238	2,571	7,151	1,926	11,648
1982	13,750	2,571	94%	100%	808	2,571	6,899	3,416	12,886
1983	13,750	2,571	100%	100%	5,254	2,571	4,901	1,025	8,497
1984	13,750	2,571	100%	100%	3,523	2,571	6,553	2,695	11,819
1985	13,750	2,571	96%	100%	1,862	2,571	7,176	2,957	12,704
1986	13,750	2,571	81%	100%	2,198	2,571	6,219	1,071	9,861
1987	13,750	2,571	69%	100%	300	2,571	5,850	1,130	9,551
1988	13,750	2,571	43%	100%	0	2,571	2,121	1,228	5,920
1989	13,750	2,571	58%	95%	1,293	2,448	3,163	2,309	7,920
1990	13,750	2,571	46%	81%	1,212	2,077	2,776	1,092	5,944
1991	13,750	2,571	29%	81%	26	2,082	1,336	1,049	4,467
1992	13,750	2,571	31%	96%	108	2,478	1,143	578	4,200
1993	13,750	2,571	76%	100%	3,729	2,571	3,841	1,089	7,501
AVG	13,750	2,571	80%	97%	1,820	2,497	5,849	1,789	10,135

NOTES

1) Based on total South Coast contractual agreements with CCWA

2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities.
The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

TABLE 15B
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 3A
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2]	ID No. 1 Exchange Shortage [3]	Reduced Delivery due to Spill [4]	ID No. 1 Exchange	SWP in Cachuma [5]	SWP in Outlet Works [6]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	1,602	2,571	9,059	519	12,149
1943	13,750	2,571	89%	100%	3,653	2,571	6,002	0	8,573
1944	13,750	2,571	92%	100%	2,157	2,571	7,878	0	10,449
1945	13,750	2,571	90%	100%	1,410	2,571	7,308	1,121	11,000
1946	13,750	2,571	88%	100%	678	2,571	5,399	3,382	11,352
1947	13,750	2,571	75%	100%	0	2,571	3,485	4,260	10,316
1948	13,750	2,571	67%	100%	0	2,571	4,908	1,692	9,171
1949	13,750	2,571	65%	90%	0	2,305	5,613	1,054	8,972
1950	13,750	2,571	67%	71%	0	1,831	6,015	1,319	9,164
1951	13,750	2,571	88%	54%	0	1,390	10,120	520	12,029
1952	13,750	2,571	96%	88%	2,561	2,274	6,824	1,513	10,610
1953	13,750	2,571	90%	100%	0	2,571	6,423	3,416	12,410
1954	13,750	2,571	83%	100%	0	2,571	4,815	4,075	11,461
1955	13,750	2,571	69%	100%	0	2,571	3,780	3,809	10,160
1956	13,750	2,571	90%	96%	0	2,466	7,736	1,604	11,806
1957	13,750	2,571	88%	83%	0	2,143	6,536	3,351	12,030
1958	13,750	2,571	90%	92%	1,639	2,374	8,111	285	10,770
1959	13,750	2,571	88%	100%	0	2,571	6,180	3,279	12,030
1960	13,750	2,571	63%	100%	0	2,571	4,467	1,557	8,595
1961	13,750	2,571	61%	97%	0	2,499	5,201	701	8,401
1962	13,750	2,571	78%	99%	0	2,539	6,437	1,719	10,695
1963	13,750	2,571	94%	100%	0	2,571	9,225	1,190	12,986
1964	13,750	2,571	88%	100%	0	2,571	8,415	1,044	12,030
1965	13,750	2,571	82%	95%	0	2,446	5,641	3,182	11,268
1966	13,750	2,571	96%	99%	0	2,534	8,695	1,952	13,181
1967	13,750	2,571	96%	100%	4,224	2,571	2,492	3,888	8,951
1968	13,750	2,571	89%	100%	0	2,571	6,867	2,788	12,226
1969	13,750	2,571	93%	100%	3,869	2,571	5,278	1,077	8,926
1970	13,750	2,571	89%	100%	0	2,571	6,669	2,986	12,226
1971	13,750	2,571	94%	100%	0	2,571	5,439	4,976	12,986
1972	13,750	2,571	88%	100%	0	2,571	4,523	4,936	12,030
1973	13,750	2,571	82%	100%	1,246	2,571	6,651	797	10,019
1974	13,750	2,571	94%	100%	746	2,571	7,276	2,393	12,240
1975	13,750	2,571	96%	100%	1,520	2,571	8,410	674	11,655
1976	13,750	2,571	88%	100%	0	2,571	7,505	1,954	12,030
1977	13,750	2,571	33%	100%	0	2,571	1,640	368	4,579
1978	13,750	2,571	68%	100%	2,080	2,571	4,704	0	7,275
1979	13,750	2,571	85%	100%	1,953	2,571	6,740	386	9,697
1980	13,750	2,571	82%	100%	2,666	2,571	6,028	0	8,599
1981	13,750	2,571	83%	100%	0	2,571	6,719	2,171	11,461
1982	13,750	2,571	94%	100%	0	2,571	5,824	4,590	12,985
1983	13,750	2,571	100%	100%	5,254	2,571	5,926	0	8,497
1984	13,750	2,571	100%	100%	2,403	2,571	7,753	1,024	11,348
1985	13,750	2,571	96%	100%	1	2,571	7,687	2,917	13,175
1986	13,750	2,571	81%	100%	1,220	2,571	6,230	1,060	9,861
1987	13,750	2,571	69%	100%	0	2,571	6,071	909	9,551
1988	13,750	2,571	43%	100%	0	2,571	1,881	1,468	5,920
1989	13,750	2,571	58%	92%	1	2,369	3,619	2,032	8,020
1990	13,750	2,571	46%	74%	0	1,899	3,449	959	6,306
1991	13,750	2,571	29%	75%	0	1,927	963	1,119	4,009
1992	13,750	2,571	31%	95%	0	2,447	1,170	587	4,204
1993	13,750	2,571	76%	100%	2,999	2,571	3,847	1,083	7,501
AVG	13,750	2,571	80%	96%	844	2,472	5,878	1,802	10,152

NOTES
1) Based on total South Coast contractual agreements with CCWA
2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities.
The percentages in this table do not include the option of purchasing the 10% drought buffer.
3) Based on shortages in Cachuma Project estimated by the SYRHM 0498
4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills
5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.
6) Limited to being 50% of outlet releases

TABLE 15C
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 3B
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1)]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2)]	ID No. 1 Exchange Shortage [3)]	Reduced Delivery due to Spill [4)]	ID No. 1 Exchange	SWP in Cachuma [5)]	SWP in Outlet Works [6)]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	1,602	2,571	9,058	520	12,149
1943	13,750	2,571	89%	100%	3,653	2,571	6,002	0	8,573
1944	13,750	2,571	92%	100%	2,157	2,571	7,878	0	10,449
1945	13,750	2,571	90%	100%	1,410	2,571	7,308	1,121	11,000
1946	13,750	2,571	88%	100%	678	2,571	4,446	4,335	11,352
1947	13,750	2,571	75%	100%	0	2,571	3,485	4,260	10,316
1948	13,750	2,571	67%	100%	0	2,571	4,991	1,609	9,171
1949	13,750	2,571	65%	91%	0	2,333	5,886	757	8,976
1950	13,750	2,571	67%	73%	0	1,883	5,997	1,289	9,168
1951	13,750	2,571	88%	56%	0	1,445	10,065	520	12,030
1952	13,750	2,571	96%	89%	1,779	2,286	7,147	1,965	11,398
1953	13,750	2,571	90%	100%	0	2,571	6,497	3,342	12,410
1954	13,750	2,571	83%	100%	0	2,571	3,932	4,958	11,461
1955	13,750	2,571	69%	100%	0	2,571	3,780	3,199	9,550
1956	13,750	2,571	90%	97%	0	2,498	8,357	1,561	12,416
1957	13,750	2,571	88%	86%	0	2,200	6,481	3,351	12,031
1958	13,750	2,571	90%	93%	1,637	2,393	8,101	285	10,779
1959	13,750	2,571	88%	100%	0	2,571	6,180	3,279	12,030
1960	13,750	2,571	63%	100%	0	2,571	3,936	2,088	8,595
1961	13,750	2,571	61%	98%	0	2,531	5,173	698	8,402
1962	13,750	2,571	78%	99%	0	2,553	6,418	1,718	10,689
1963	13,750	2,571	94%	100%	0	2,571	9,225	1,190	12,986
1964	13,750	2,571	88%	100%	0	2,571	8,415	1,044	12,030
1965	13,750	2,571	82%	96%	0	2,469	5,599	3,198	11,266
1966	13,750	2,571	96%	99%	0	2,541	8,685	1,950	13,176
1967	13,750	2,571	96%	100%	4,224	2,571	2,492	3,888	8,951
1968	13,750	2,571	89%	100%	0	2,571	7,045	2,610	12,226
1969	13,750	2,571	93%	100%	3,869	2,571	5,278	1,077	8,926
1970	13,750	2,571	89%	100%	0	2,571	6,669	2,986	12,226
1971	13,750	2,571	94%	100%	0	2,571	4,685	5,730	12,986
1972	13,750	2,571	88%	100%	1	2,571	4,257	5,202	12,030
1973	13,750	2,571	82%	100%	1,246	2,571	6,651	797	10,019
1974	13,750	2,571	94%	100%	746	2,571	7,270	2,398	12,239
1975	13,750	2,571	96%	100%	1,520	2,571	8,400	684	11,655
1976	13,750	2,571	88%	100%	0	2,571	7,858	1,601	12,030
1977	13,750	2,571	33%	100%	0	2,571	1,640	368	4,579
1978	13,750	2,571	68%	100%	2,080	2,571	4,704	0	7,275
1979	13,750	2,571	85%	100%	1,953	2,571	6,726	400	9,697
1980	13,750	2,571	82%	100%	2,666	2,571	6,028	0	8,599
1981	13,750	2,571	83%	100%	0	2,571	7,019	1,871	11,461
1982	13,750	2,571	94%	100%	0	2,571	5,824	4,590	12,985
1983	13,750	2,571	100%	100%	5,254	2,571	5,926	0	8,497
1984	13,750	2,571	100%	100%	2,403	2,571	7,752	1,025	11,348
1985	13,750	2,571	96%	100%	1	2,571	7,687	2,917	13,175
1986	13,750	2,571	81%	100%	1,220	2,571	6,228	1,062	9,861
1987	13,750	2,571	69%	100%	0	2,571	6,067	913	9,551
1988	13,750	2,571	43%	100%	0	2,571	1,881	1,468	5,920
1989	13,750	2,571	58%	93%	0	2,404	3,513	2,107	8,024
1990	13,750	2,571	46%	76%	0	1,961	3,388	953	6,302
1991	13,750	2,571	29%	77%	0	1,975	917	1,122	4,014
1992	13,750	2,571	31%	96%	0	2,457	1,105	640	4,202
1993	13,750	2,571	76%	100%	2,999	2,571	3,849	1,081	7,501
AVG	13,750	2,571	80%	97%	829	2,482	5,844	1,841	10,167

NOTES

1) Based on total South Coast contractual agreements with CCWA

2) Based on DWR's SWP model DWRSIM v. 9.06T

Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan) and no new storage facilities.

The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases) are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

TABLE 15D
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 3C
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1)]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2)]	ID No. 1 Exchange Shortage [3)]	Reduced Delivery due to Spill [4)]	ID No. 1 Exchange	SWP in Cachuma [5)]	SWP in Outlet Works [6)]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	1,602	2,571	9,057	521	12,149
1943	13,750	2,571	89%	100%	2,768	2,571	6,887	0	9,458
1944	13,750	2,571	92%	100%	2,157	2,571	7,878	0	10,449
1945	13,750	2,571	90%	100%	1,410	2,571	7,308	1,121	11,000
1946	13,750	2,571	88%	100%	678	2,571	4,446	4,335	11,352
1947	13,750	2,571	75%	100%	0	2,571	3,485	4,260	10,316
1948	13,750	2,571	67%	100%	0	2,571	5,049	1,551	9,171
1949	13,750	2,571	65%	93%	0	2,393	5,630	951	8,974
1950	13,750	2,571	67%	78%	0	2,000	5,850	1,319	9,169
1951	13,750	2,571	88%	62%	0	1,582	9,931	520	12,032
1952	13,750	2,571	96%	90%	1,773	2,317	7,092	1,990	11,399
1953	13,750	2,571	90%	100%	0	2,571	6,497	3,342	12,410
1954	13,750	2,571	83%	100%	0	2,571	4,302	4,588	11,461
1955	13,750	2,571	69%	100%	1	2,571	3,868	3,112	9,551
1956	13,750	2,571	90%	98%	0	2,529	8,324	1,558	12,411
1957	13,750	2,571	88%	88%	0	2,270	6,739	3,026	12,035
1958	13,750	2,571	90%	94%	1,632	2,420	8,075	285	10,780
1959	13,750	2,571	88%	100%	0	2,571	6,180	3,279	12,030
1960	13,750	2,571	63%	100%	0	2,571	3,936	2,088	8,595
1961	13,750	2,571	61%	100%	0	2,563	5,145	695	8,403
1962	13,750	2,571	78%	100%	0	2,567	6,399	1,726	10,692
1963	13,750	2,571	94%	100%	0	2,571	9,221	1,194	12,986
1964	13,750	2,571	88%	100%	0	2,571	8,415	1,044	12,030
1965	13,750	2,571	82%	97%	0	2,497	5,557	3,216	11,270
1966	13,750	2,571	96%	99%	0	2,549	8,680	1,948	13,177
1967	13,750	2,571	96%	100%	3,464	2,571	3,252	3,888	9,711
1968	13,750	2,571	89%	100%	0	2,571	6,871	2,784	12,226
1969	13,750	2,571	93%	100%	3,870	2,571	5,279	1,076	8,926
1970	13,750	2,571	89%	100%	0	2,571	6,669	2,986	12,226
1971	13,750	2,571	94%	100%	0	2,571	4,685	5,730	12,986
1972	13,750	2,571	88%	100%	0	2,571	4,257	5,202	12,030
1973	13,750	2,571	82%	100%	1,246	2,571	6,651	797	10,019
1974	13,750	2,571	94%	100%	746	2,571	7,166	2,502	12,239
1975	13,750	2,571	96%	100%	1,520	2,571	8,308	776	11,655
1976	13,750	2,571	88%	100%	0	2,571	7,857	1,602	12,030
1977	13,750	2,571	33%	100%	0	2,571	1,640	368	4,579
1978	13,750	2,571	68%	100%	2,080	2,571	4,704	0	7,275
1979	13,750	2,571	85%	100%	1,953	2,571	6,687	439	9,697
1980	13,750	2,571	82%	100%	2,666	2,571	6,028	0	8,599
1981	13,750	2,571	83%	100%	1	2,571	6,720	2,170	11,461
1982	13,750	2,571	94%	100%	0	2,571	5,804	4,611	12,986
1983	13,750	2,571	100%	100%	5,254	2,571	5,926	0	8,497
1984	13,750	2,571	100%	100%	2,403	2,571	7,752	1,025	11,348
1985	13,750	2,571	96%	100%	1	2,571	7,687	2,917	13,175
1986	13,750	2,571	81%	100%	1,220	2,571	6,226	1,064	9,861
1987	13,750	2,571	69%	100%	0	2,571	5,863	1,117	9,551
1988	13,750	2,571	43%	100%	0	2,571	1,334	2,015	5,920
1989	13,750	2,571	58%	95%	0	2,450	3,017	2,555	8,022
1990	13,750	2,571	46%	80%	0	2,062	3,299	944	6,304
1991	13,750	2,571	29%	80%	0	2,057	894	1,059	4,010
1992	13,750	2,571	31%	96%	0	2,472	1,097	636	4,205
1993	13,750	2,571	76%	100%	2,999	2,571	3,846	1,084	7,501
AVG	13,750	2,571	80%	97%	797	2,497	5,836	1,866	10,199

NOTES

1) Based on total South Coast contractual agreements with CCWA

2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities.
The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

TABLE 15E
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 4 A&B
(ACRE-FEET/YEAR)

	DEMAND			SUPPLY				DELIVERY				
WATER YEAR	TOTAL SWP Demand [1]	ID No. 1 Exchange	BNA Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2]	ID No. 1 Exchange Shortage [3]	BNA Exchange Shortage	Reduced Delivery due to Spill [4]	ID No. 1 Exchange	BNA Exchange	SWP in Cachuma [5]	SWP in Outlet Works [6]	Total Imports under South Coast Contracts
1942	13,750	2,571	1,771	100%	100%	none	674	2,571	1,771	8,197	533	13,072
1943	13,750	2,571	1,771	89%	100%	none	2,260	2,571	1,771	5,619	0	9,961
1944	13,750	2,571	1,771	92%	100%	none	1,776	2,571	1,771	6,483	0	10,825
1945	13,750	2,571	1,771	90%	100%	none	1,156	2,571	1,771	5,554	1,360	11,256
1946	13,750	2,571	1,771	88%	100%	none	551	2,571	1,771	4,996	2,143	11,481
1947	13,750	2,571	1,771	75%	100%	none	0	2,571	1,771	4,328	1,641	10,311
1948	13,750	2,571	1,771	67%	100%	none	1	2,571	1,771	3,191	1,632	9,165
1949	13,750	2,571	1,771	65%	96%	none	0	2,473	1,771	4,136	597	8,977
1950	13,750	2,571	1,771	67%	82%	none	0	2,106	1,771	4,706	584	9,167
1951	13,750	2,571	1,771	88%	64%	none	0	1,636	1,771	8,107	520	12,034
1952	13,750	2,571	1,771	96%	90%	none	1,484	2,322	1,771	5,936	1,666	11,695
1953	13,750	2,571	1,771	90%	100%	none	0	2,571	1,771	5,881	2,189	12,412
1954	13,750	2,571	1,771	83%	100%	none	0	2,571	1,771	4,643	2,471	11,456
1955	13,750	2,571	1,771	69%	100%	none	0	2,571	1,771	2,819	2,385	9,546
1956	13,750	2,571	1,771	90%	99%	none	0	2,549	1,771	6,517	1,577	12,413
1957	13,750	2,571	1,771	88%	89%	none	0	2,285	1,771	4,937	3,040	12,033
1958	13,750	2,571	1,771	90%	94%	none	1,343	2,420	1,771	6,595	285	11,070
1959	13,750	2,571	1,771	88%	100%	none	0	2,571	1,771	6,280	1,410	12,032
1960	13,750	2,571	1,771	63%	100%	none	0	2,571	1,771	3,085	1,170	8,597
1961	13,750	2,571	1,771	61%	99%	none	0	2,550	1,771	3,549	534	8,404
1962	13,750	2,571	1,771	78%	100%	none	0	2,562	1,771	5,039	1,322	10,694
1963	13,750	2,571	1,771	94%	100%	none	0	2,571	1,771	7,437	1,202	12,981
1964	13,750	2,571	1,771	88%	100%	none	0	2,571	1,771	6,808	882	12,032
1965	13,750	2,571	1,771	82%	95%	none	1	2,432	1,771	4,474	2,592	11,269
1966	13,750	2,571	1,771	96%	98%	none	0	2,530	1,771	7,250	1,628	13,179
1967	13,750	2,571	1,771	96%	100%	none	2,886	2,571	1,771	4,690	1,259	10,291
1968	13,750	2,571	1,771	89%	100%	none	0	2,571	1,771	5,983	1,896	12,221
1969	13,750	2,571	1,771	93%	100%	none	3,199	2,571	1,771	4,180	1,076	9,598
1970	13,750	2,571	1,771	89%	100%	none	0	2,571	1,771	6,682	1,197	12,221
1971	13,750	2,571	1,771	94%	100%	none	0	2,571	1,771	5,923	2,716	12,981
1972	13,750	2,571	1,771	88%	100%	none	0	2,571	1,771	5,179	2,511	12,032
1973	13,750	2,571	1,771	82%	100%	none	992	2,571	1,771	5,298	635	10,275
1974	13,750	2,571	1,771	94%	100%	none	0	2,571	1,771	6,393	2,246	12,981
1975	13,750	2,571	1,771	96%	100%	none	1,266	2,571	1,771	6,343	1,225	11,910
1976	13,750	2,571	1,771	88%	100%	none	0	2,571	1,771	5,939	1,751	12,032
1977	13,750	2,571	1,771	33%	100%	none	0	2,571	1,771	195	44	4,581
1978	13,750	2,571	1,771	68%	100%	none	1,537	2,571	1,771	3,478	0	7,820
1979	13,750	2,571	1,771	85%	100%	none	1,572	2,571	1,771	5,225	513	10,080
1980	13,750	2,571	1,771	82%	100%	none	2,123	2,571	1,771	4,235	567	9,144
1981	13,750	2,571	1,771	83%	100%	none	0	2,571	1,771	5,404	1,710	11,456
1982	13,750	2,571	1,771	94%	100%	none	0	2,571	1,771	6,267	2,371	12,980
1983	13,750	2,571	1,771	100%	100%	none	4,420	2,571	1,771	4,276	708	9,326
1984	13,750	2,571	1,771	100%	100%	none	2,022	2,571	1,771	6,520	862	11,724
1985	13,750	2,571	1,771	96%	100%	none	0	2,571	1,771	6,242	2,593	13,177
1986	13,750	2,571	1,771	81%	100%	none	966	2,571	1,771	4,827	941	10,110
1987	13,750	2,571	1,771	69%	100%	none	0	2,571	1,771	4,390	814	9,546
1988	13,750	2,571	1,771	43%	100%	none	0	2,571	1,771	1,145	435	5,922
1989	13,750	2,571	1,771	58%	96%	none	0	2,460	1,771	2,297	1,492	8,019
1990	13,750	2,571	1,771	46%	81%	none	0	2,073	1,771	1,693	762	6,298
1991	13,750	2,571	1,771	29%	80%	none	0	2,044	1,771	88	108	4,011
1992	13,750	2,571	1,771	31%	96%	34	0	2,465	1,737	0	0	4,202
1993	13,750	2,571	1,771	76%	100%	none	2,333	2,571	1,771	2,902	930	8,174
AVG	13,750	2,571	1,771	80%	97%	1	626	2,501	1,770	4,853	1,245	10,369

NOTES

1) Based on total South Coast contractual agreements with CCWA

2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities.
The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

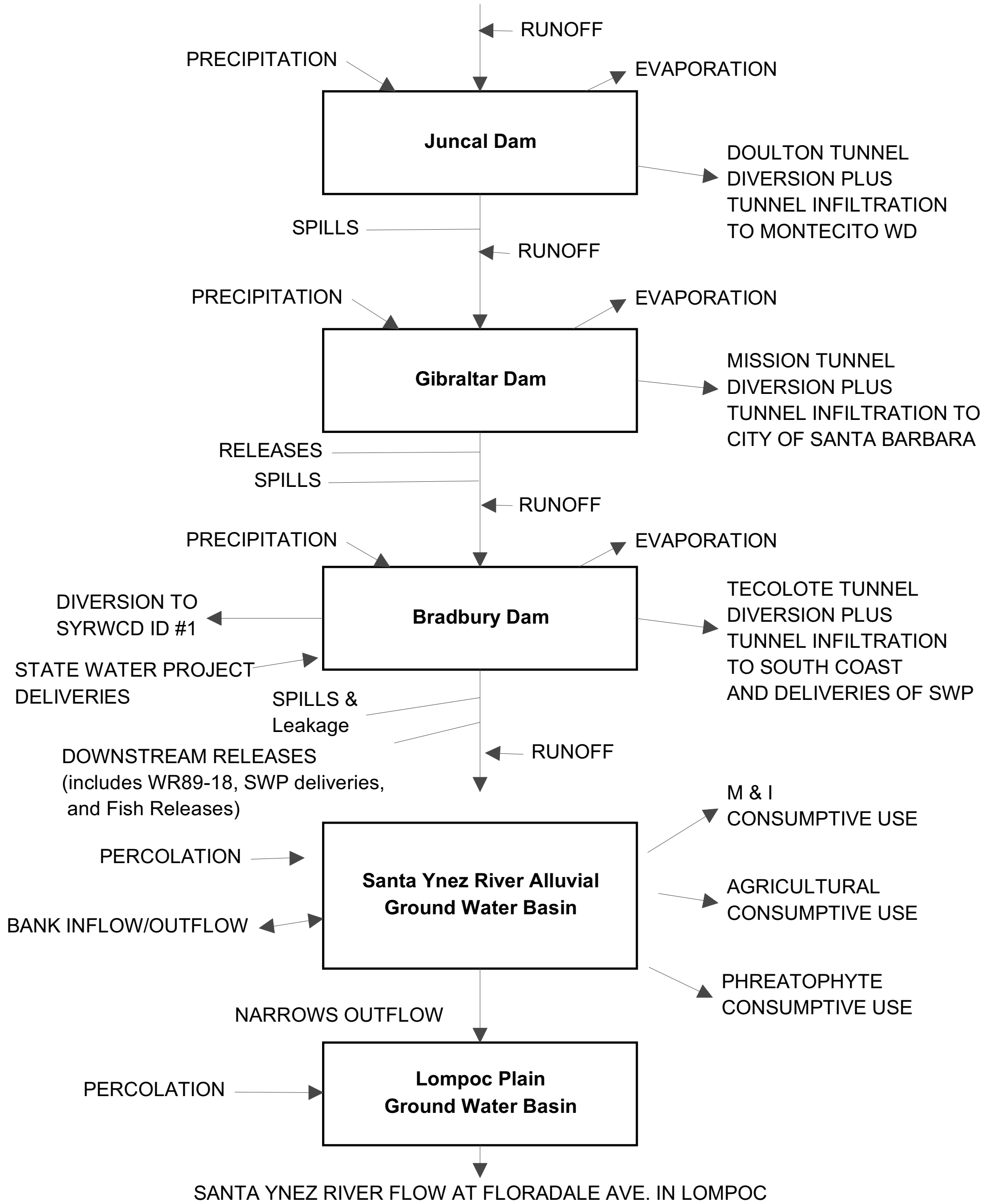
4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

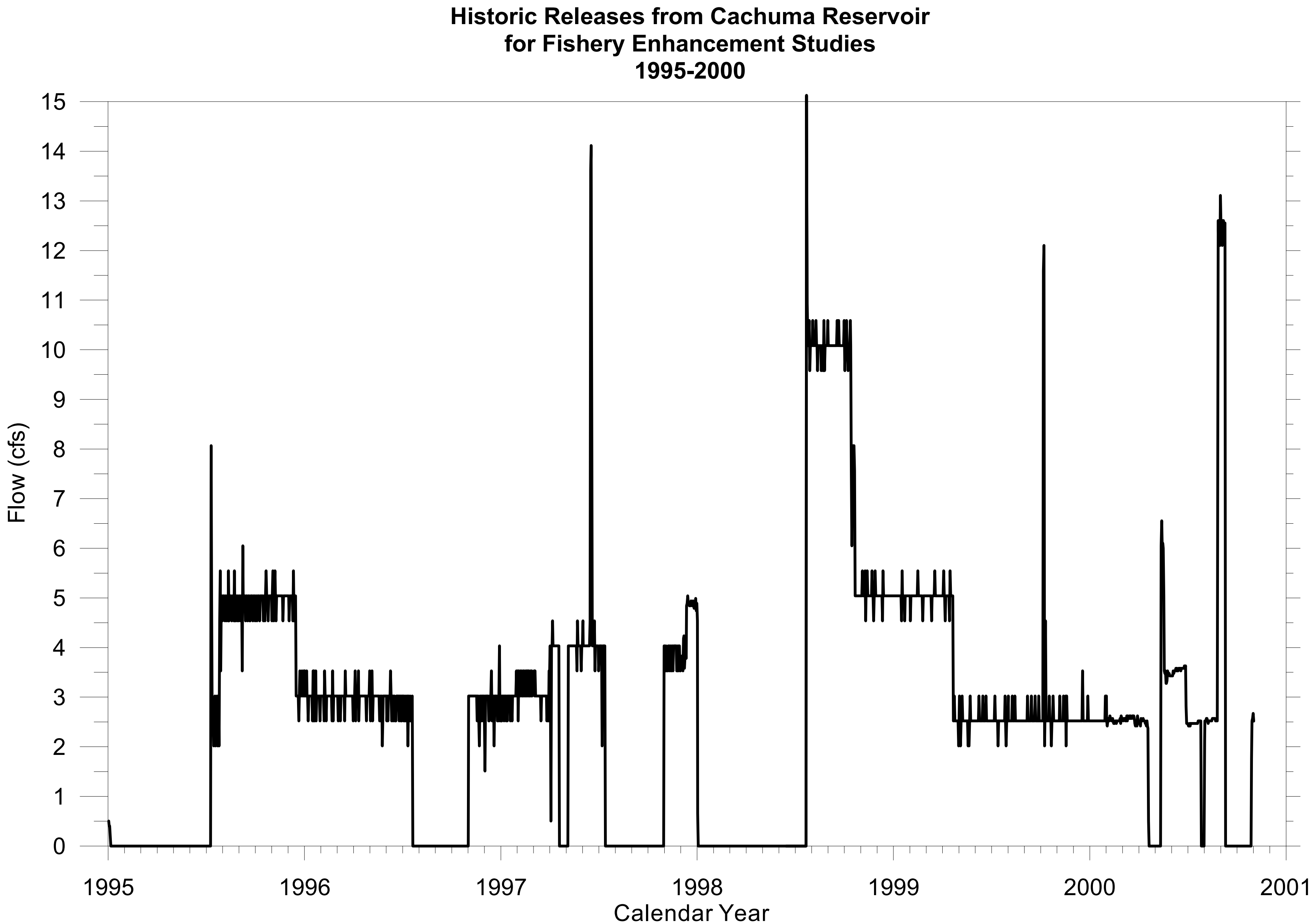
5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

FIGURE 1

SCHEMATIC PRESENTATION OF THE HYDROLOGIC MODEL FOR THE SANTA YNEZ WATERSHED (SYRHM)





Historic Releases from Cachuma Reservoir
for Fishery Enhancement Studies
1995-2000
Flow (cfs)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1995
1996
1997
1998
1999
2000
2001
Calendar Year

FIGURE 2

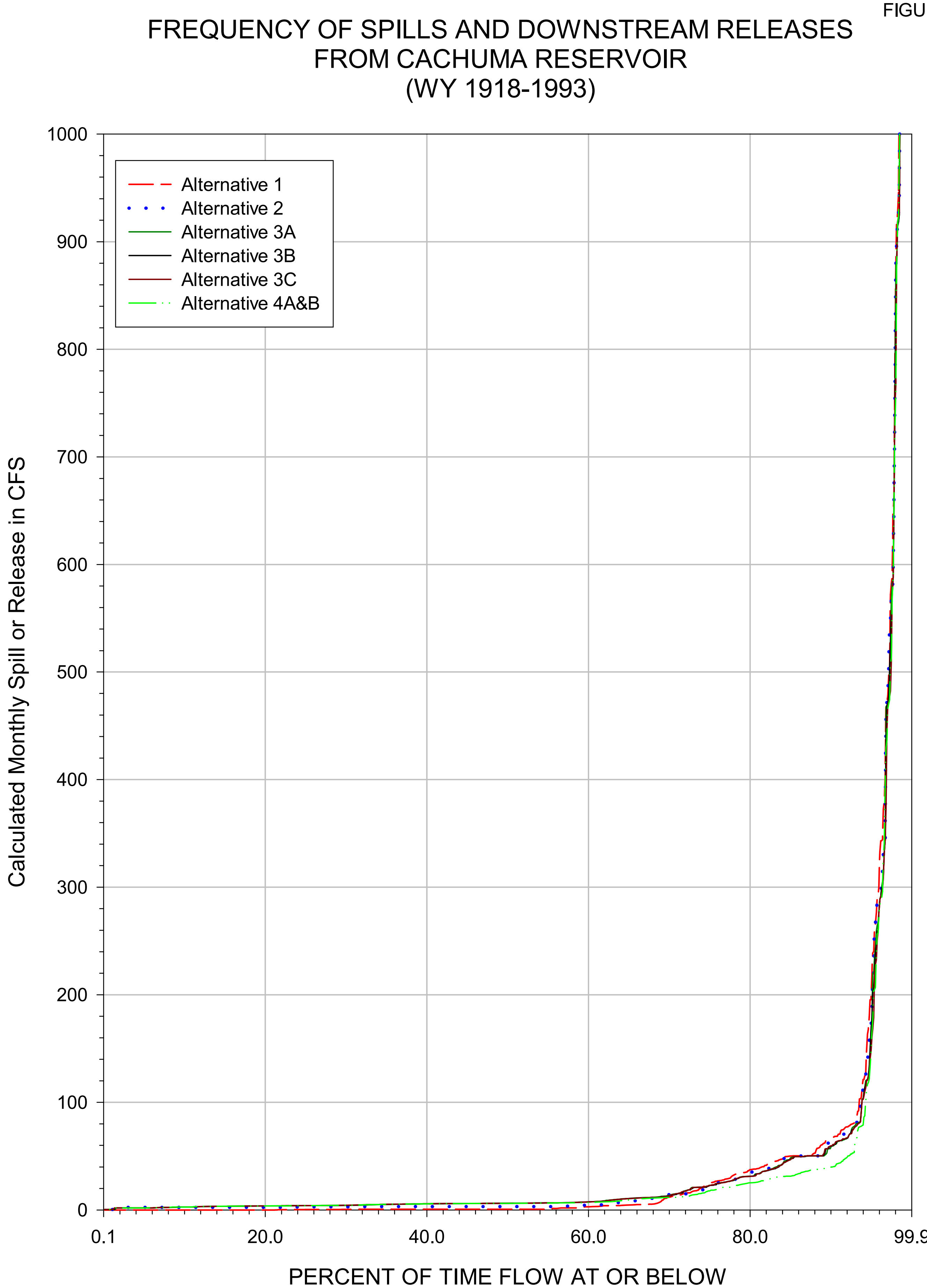
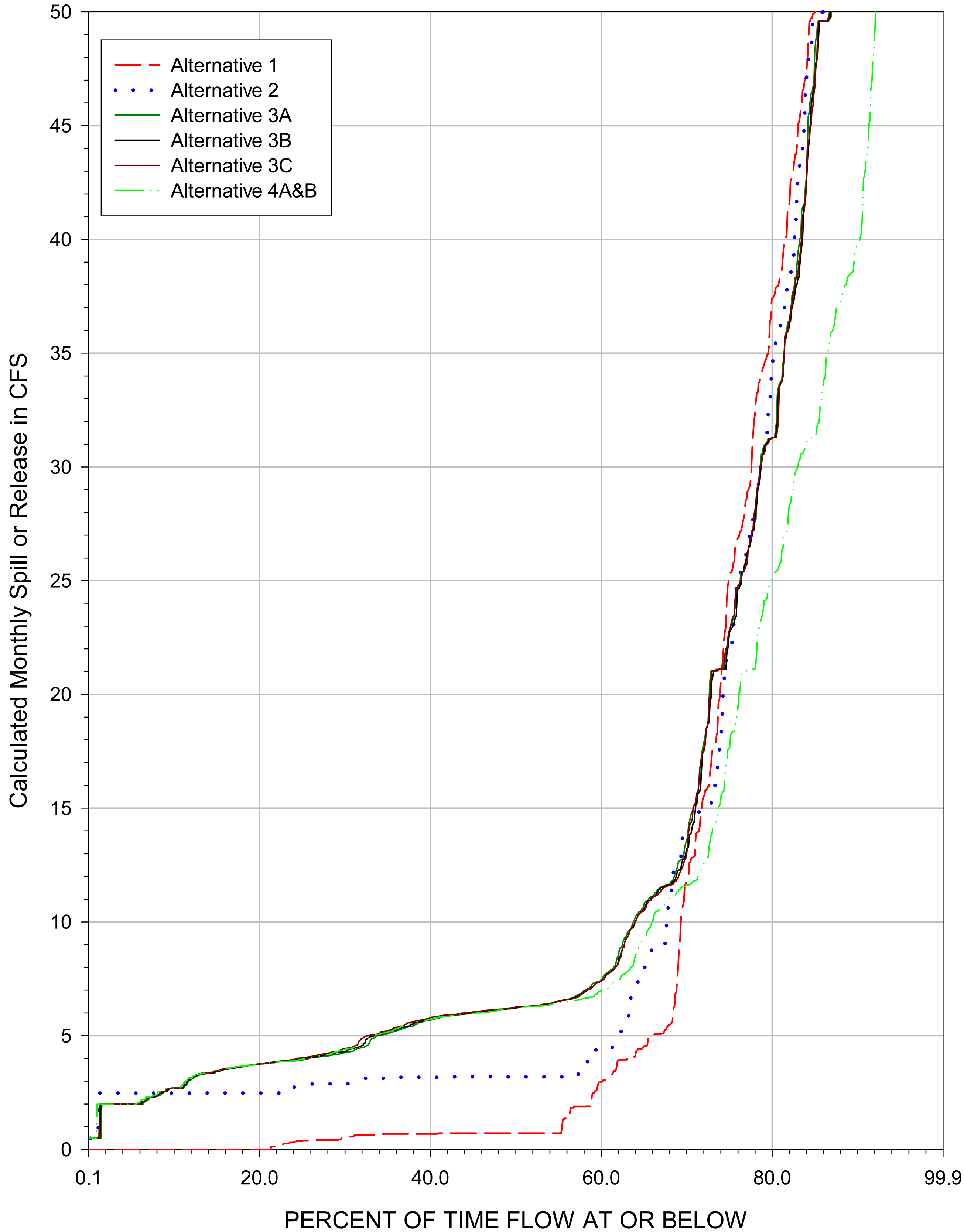

FREQUENCY OF SPILLS AND DOWNSTREAM RELEASES
FROM CACHUMA RESERVOIR
(WY 1918-1993)
Alternative 1
Alternative 2
Alternative 3A
Alternative 3B
Alternative 3C
Alternative 4A&B
Calculated Monthly Spill or Release in CFS
0
100
200
300
400
500
600
700
800
900
1000
0.1
20.0
40.0
60.0
80.0
99.9
PERCENT OF TIME FLOW AT OR BELOW

FIGURE 3B

FREQUENCY OF SPILLS AND DOWNSTREAM RELEASES
FROM CACHUMA RESERVOIR
(WY 1918-1993)



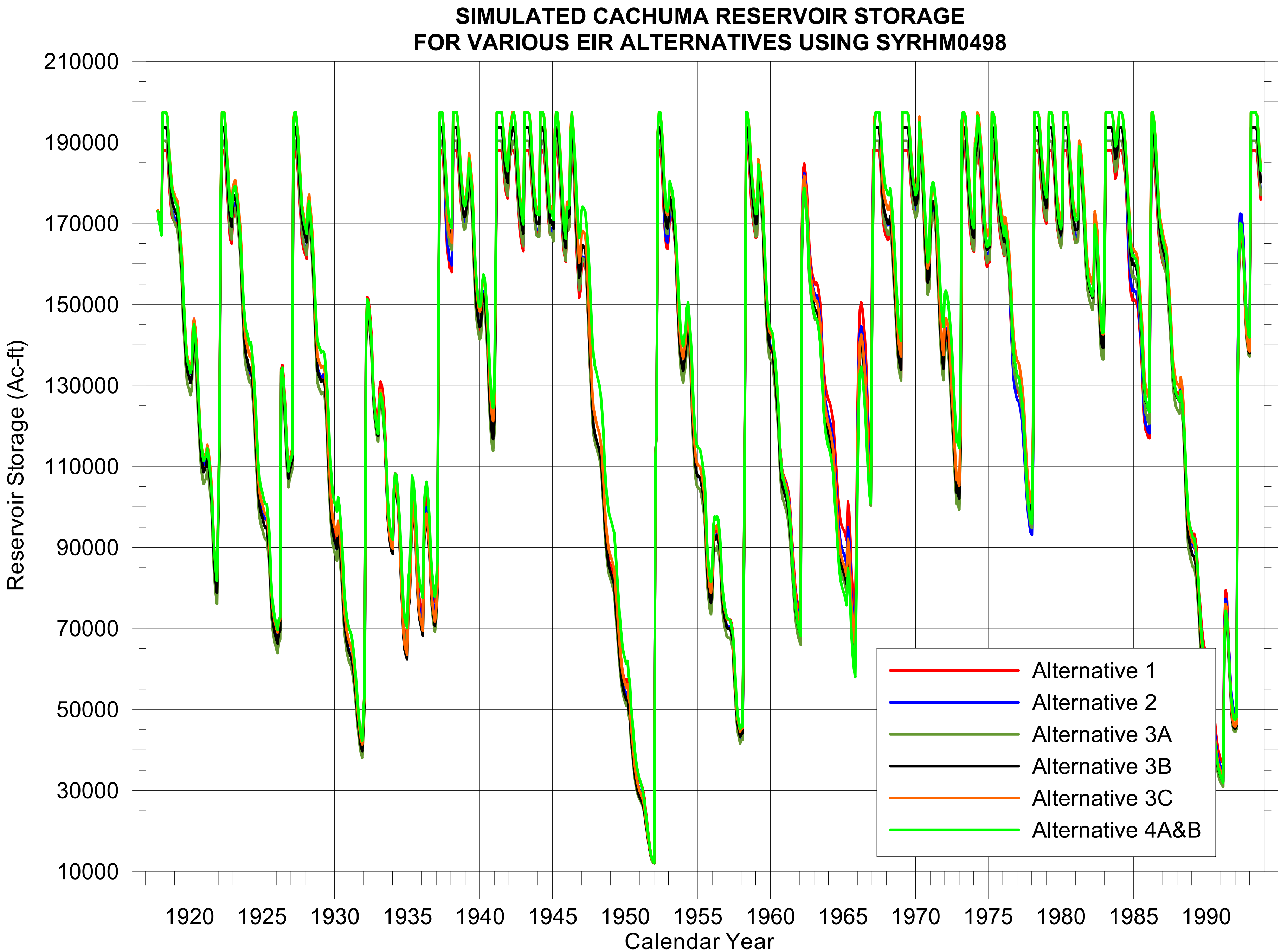
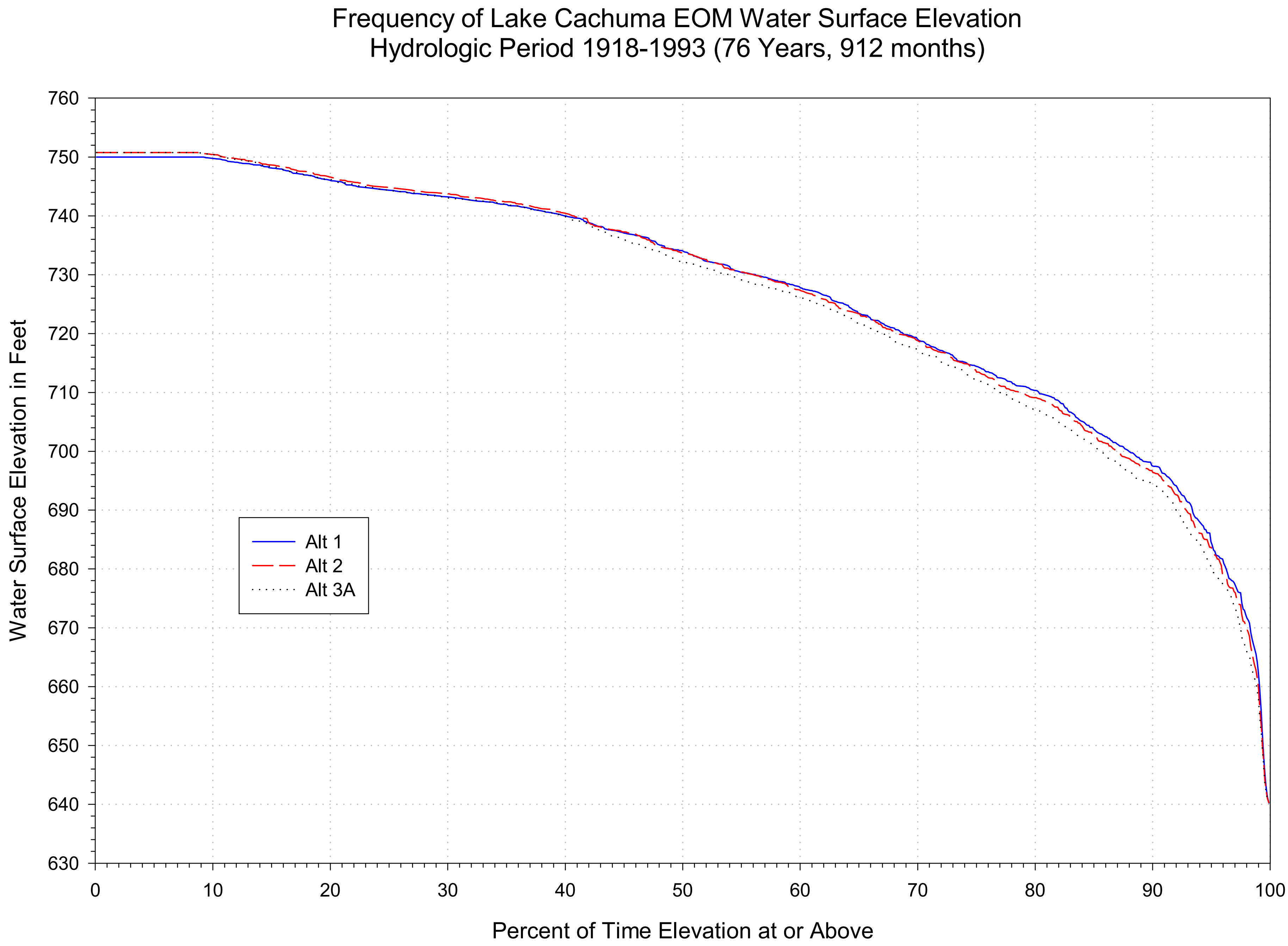

SIMULATED CACHUMA RESERVOIR STORAGE
FOR VARIOUS EIR ALTERNATIVES USING SYRHM0498
Reservoir Storage (Ac-ft)
210000
190000
170000
150000
130000
110000
90000
70000
50000
30000
10000
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alternative 1
Alternative 2
Alternative 3A
Alternative 3B
Alternative 3C
Alternative 4A&B

FIGURE 4



Frequency of Lake Cachuma EOM Water Surface Elevation
Hydrologic Period 1918-1993 (76 Years, 912 months)
Water Surface Elevation in Feet
Percent of Time Elevation at or Above
760
750
740
730
720
710
700
690
680
670
660
650
640
630
0
10
20
30
40
50
60
70
80
90
100
Alt 1
Alt 2
Alt 3A

FIGURE 5A

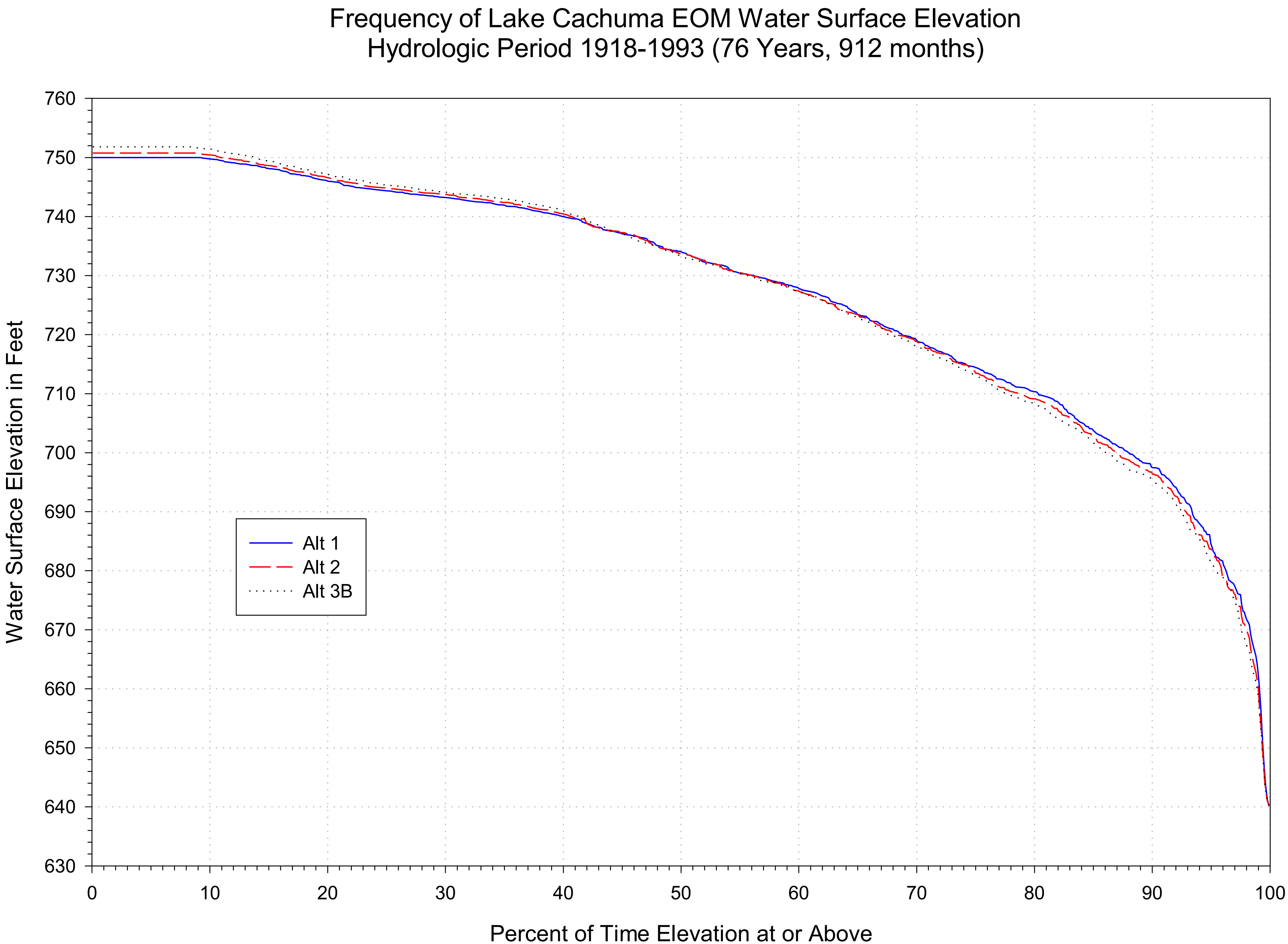

Frequency of Lake Cachuma EOM Water Surface Elevation
Hydrologic Period 1918-1993 (76 Years, 912 months)
Water Surface Elevation in Feet
760
750
740
730
720
710
700
690
680
670
660
650
640
630
0
10
20
30
40
50
60
70
80
90
100
Percent of Time Elevation at or Above
Alt 1
Alt 2
Alt 3B

FIGURE 5B

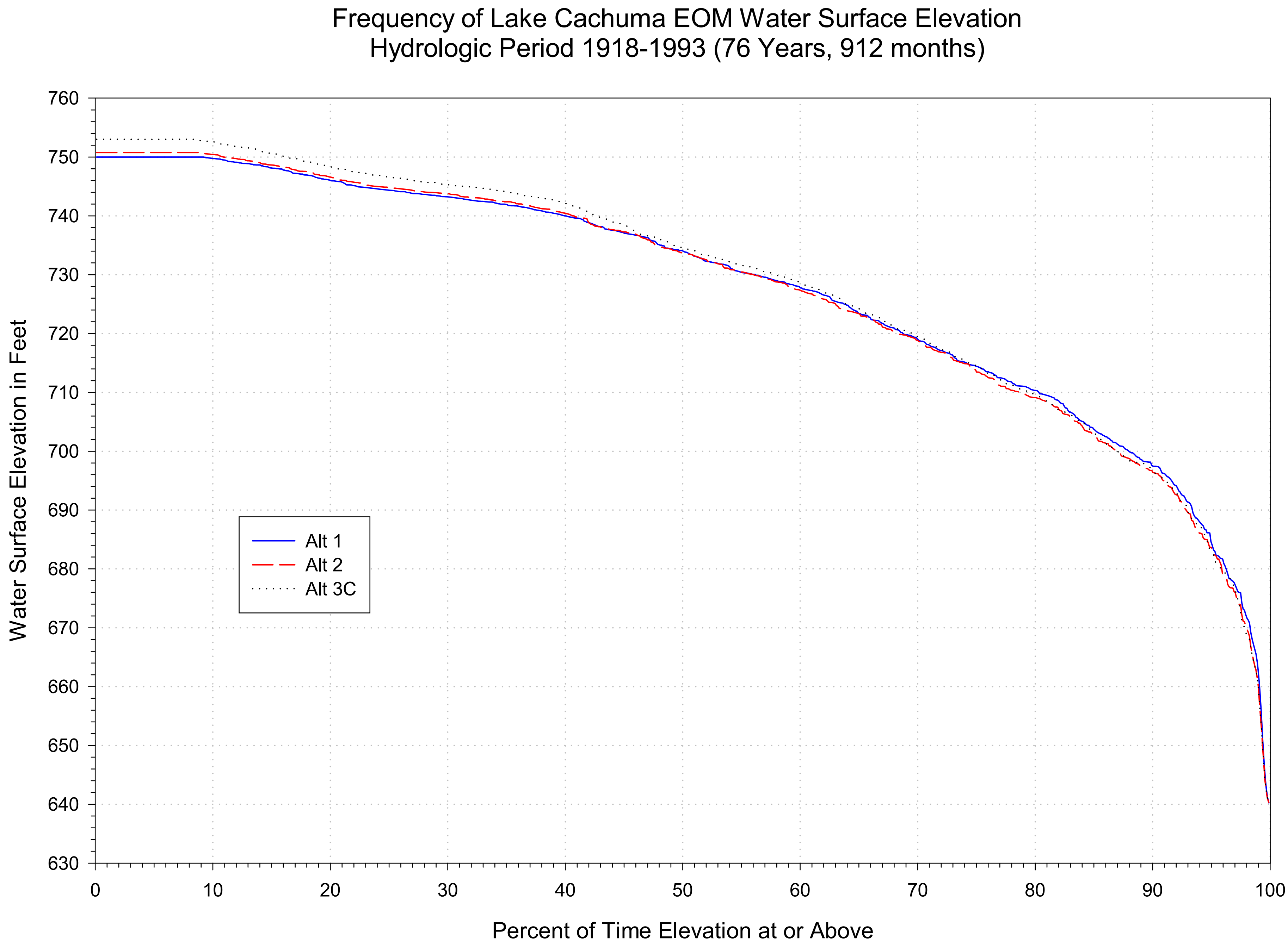

Frequency of Lake Cachuma EOM Water Surface Elevation
Hydrologic Period 1918-1993 (76 Years, 912 months)
Water Surface Elevation in Feet
Percent of Time Elevation at or Above
Alt 1
Alt 2
Alt 3C
760
750
740
730
720
710
700
690
680
670
660
650
640
630
0
10
20
30
40
50
60
70
80
90
100

FIGURE 5C

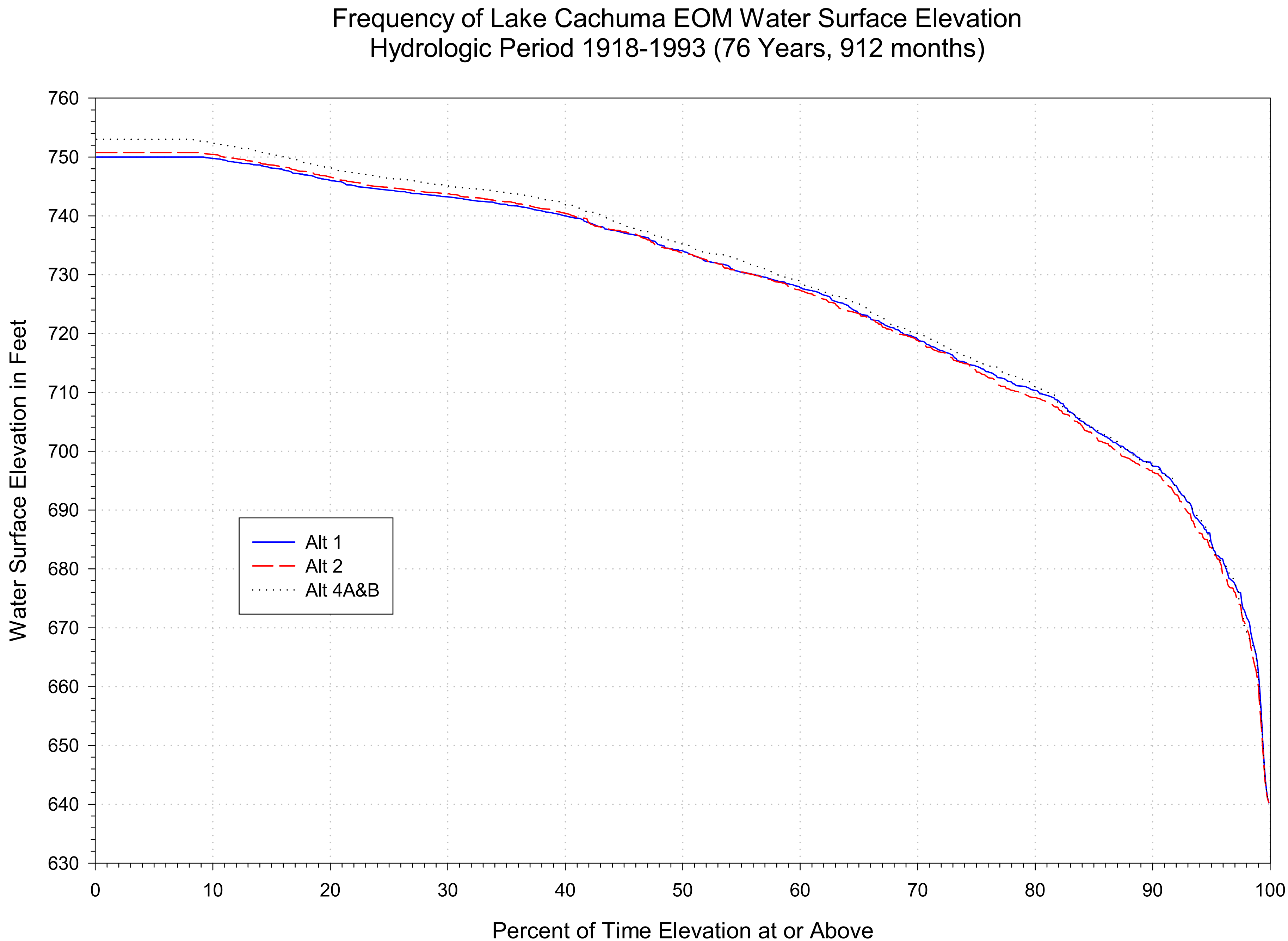

Frequency of Lake Cachuma EOM Water Surface Elevation
Hydrologic Period 1918-1993 (76 Years, 912 months)
Water Surface Elevation in Feet
760
750
740
730
720
710
700
690
680
670
660
650
640
630
0
10
20
30
40
50
60
70
80
90
100
Percent of Time Elevation at or Above
Alt 1
Alt 2
Alt 4A&B

FIGURE 5D

FIGURE 6A
SIMULATED MEDIAN LAKE STORAGE (1918-1993)

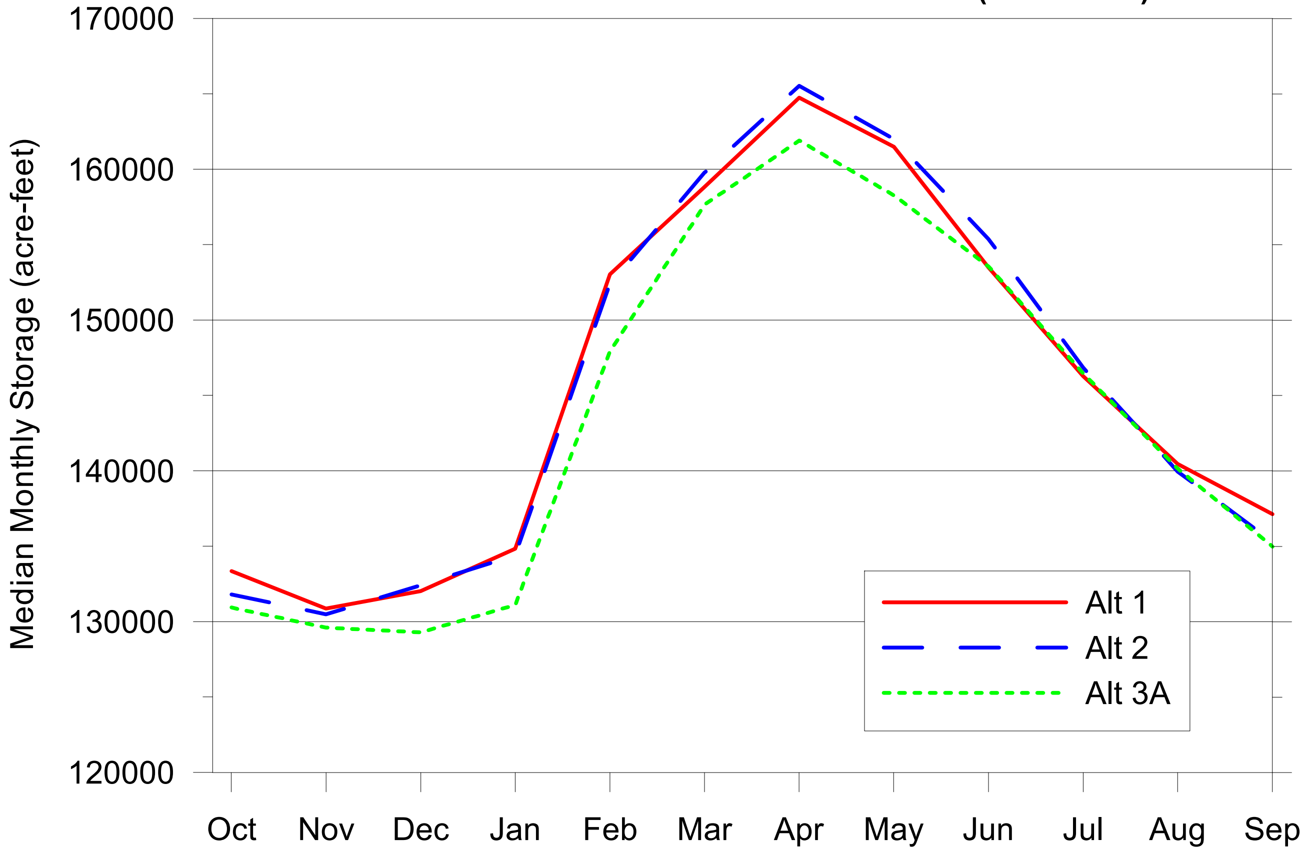


FIGURE 6B
SIMULATED MEDIAN LAKE STORAGE (1918-1993)

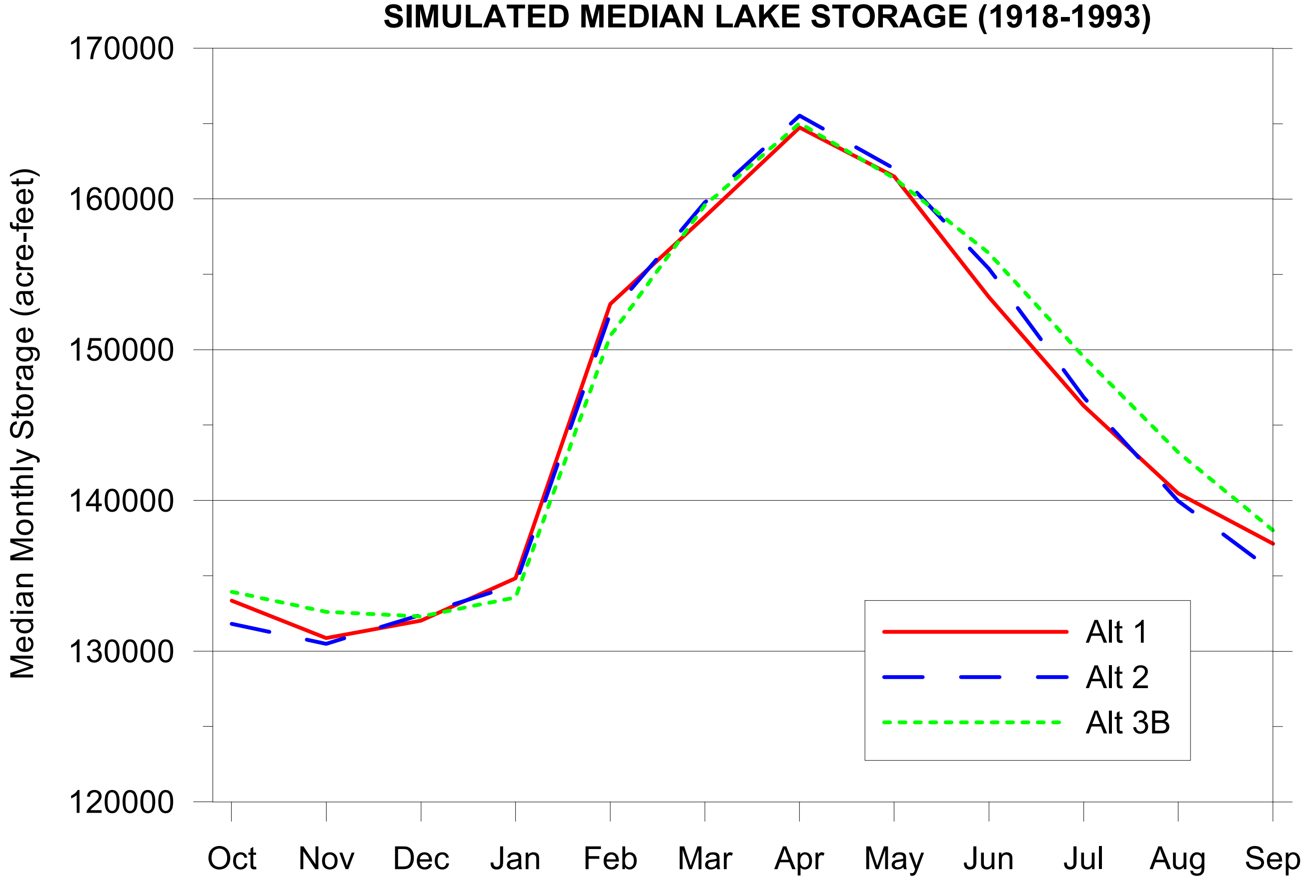


FIGURE 6C
SIMULATED MEDIAN LAKE STORAGE (1918-1993)

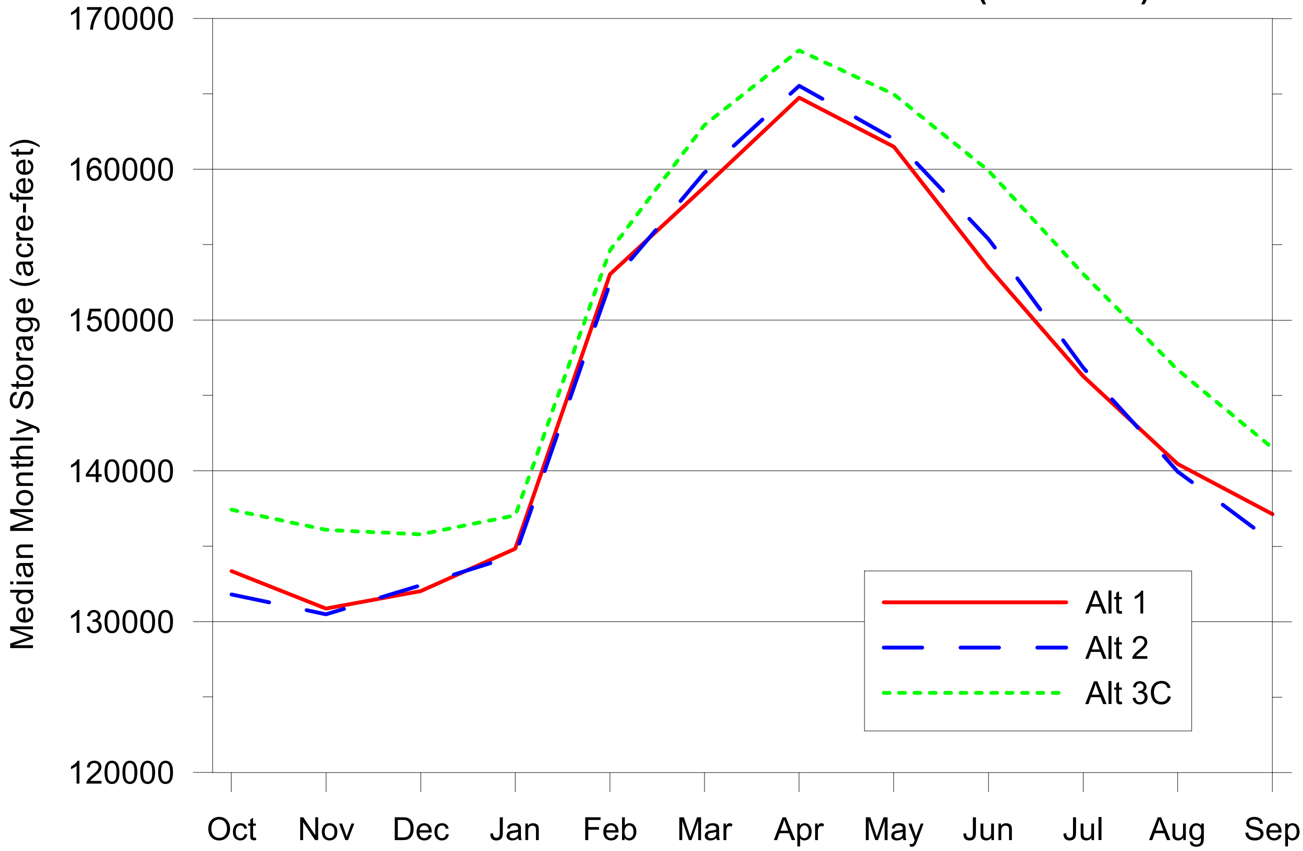


FIGURE 6D
SIMULATED MEDIAN LAKE STORAGE (1918-1993)

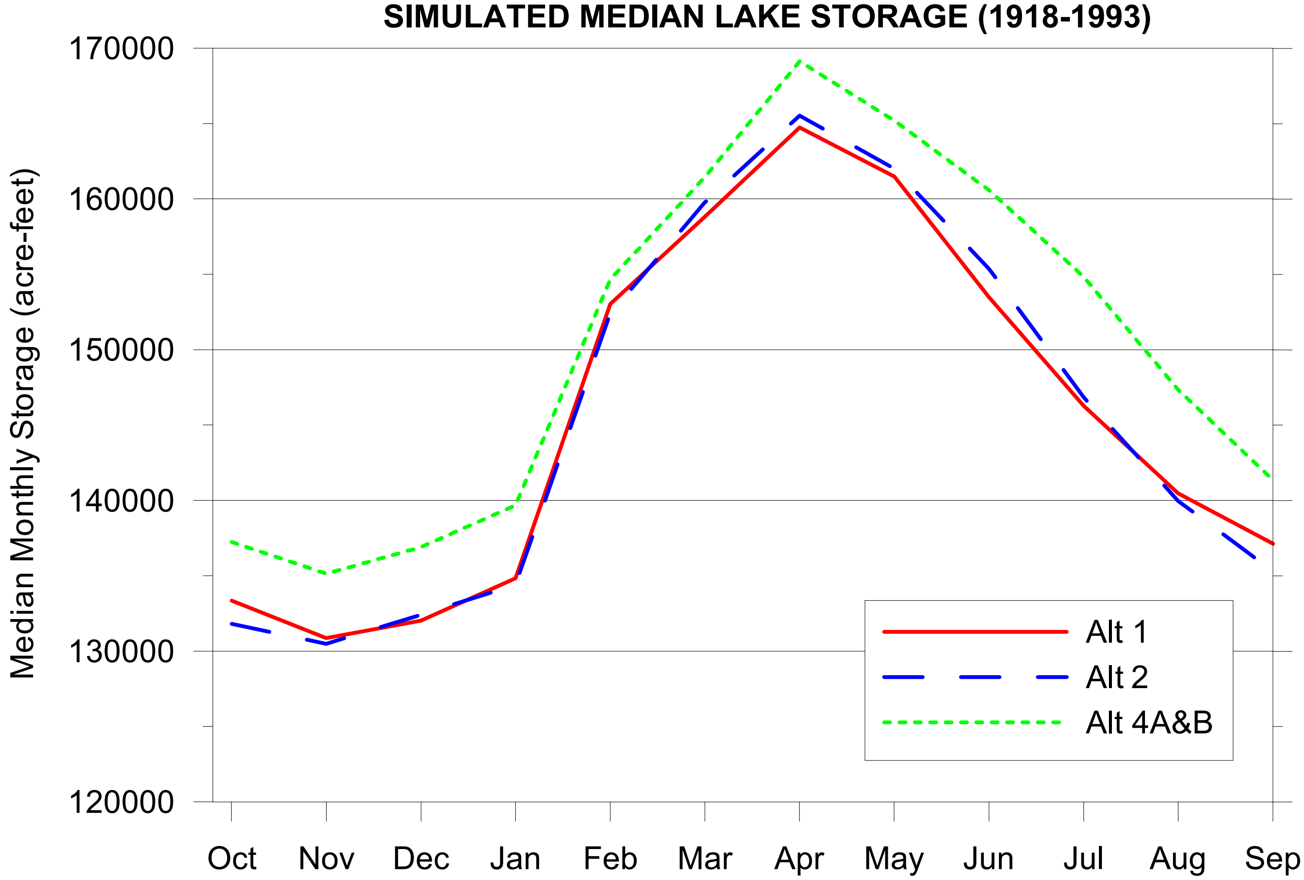


FIGURE 7A

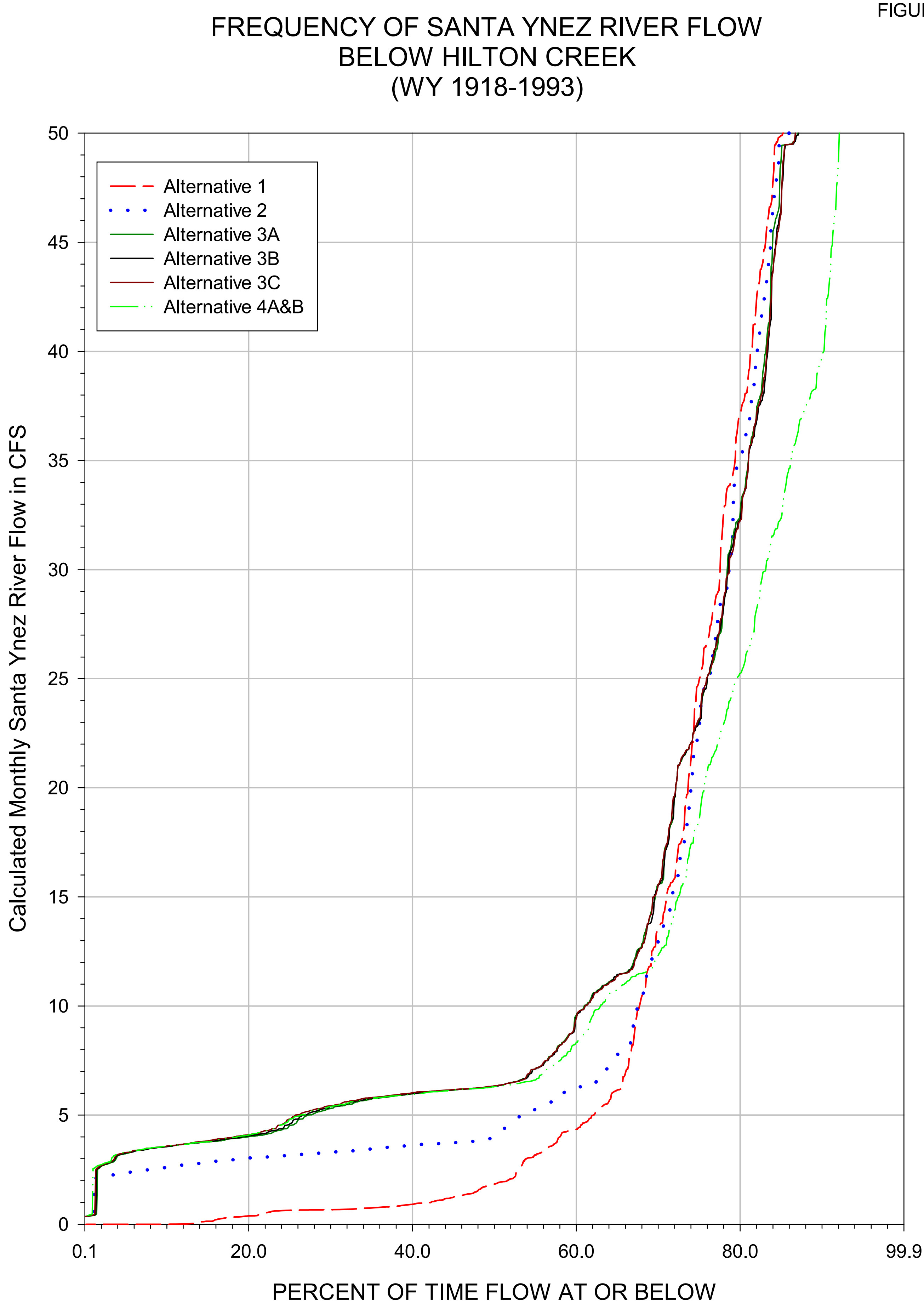

FREQUENCY OF SANTA YNEZ RIVER FLOW
BELOW HILTON CREEK
(WY 1918-1993)
Alternative 1
Alternative 2
Alternative 3A
Alternative 3B
Alternative 3C
Alternative 4A&B
Calculated Monthly Santa Ynez River Flow in CFS
0
5
10
15
20
25
30
35
40
45
50
0.1
20.0
40.0
60.0
80.0
99.9
PERCENT OF TIME FLOW AT OR BELOW

FIGURE 7B

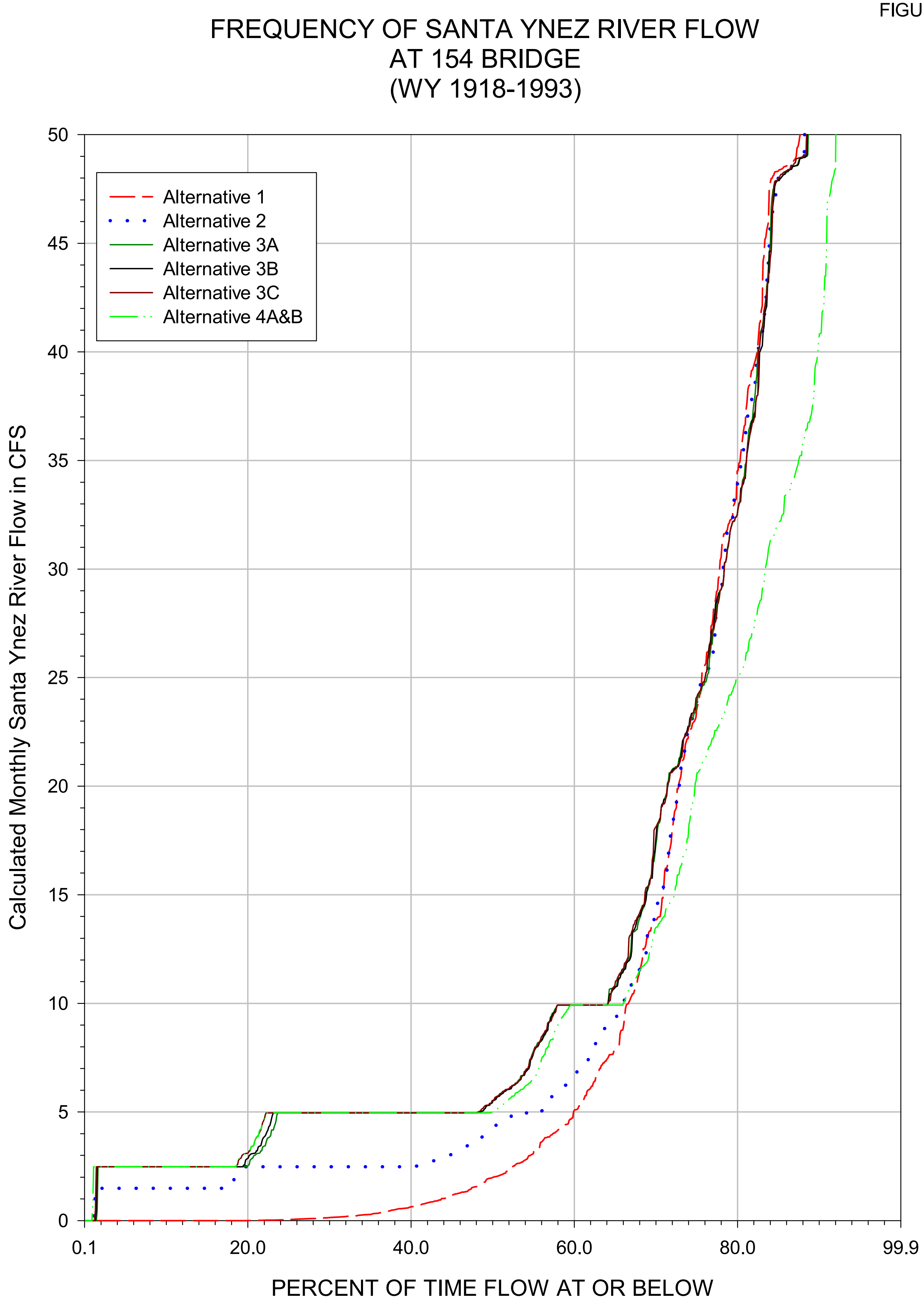
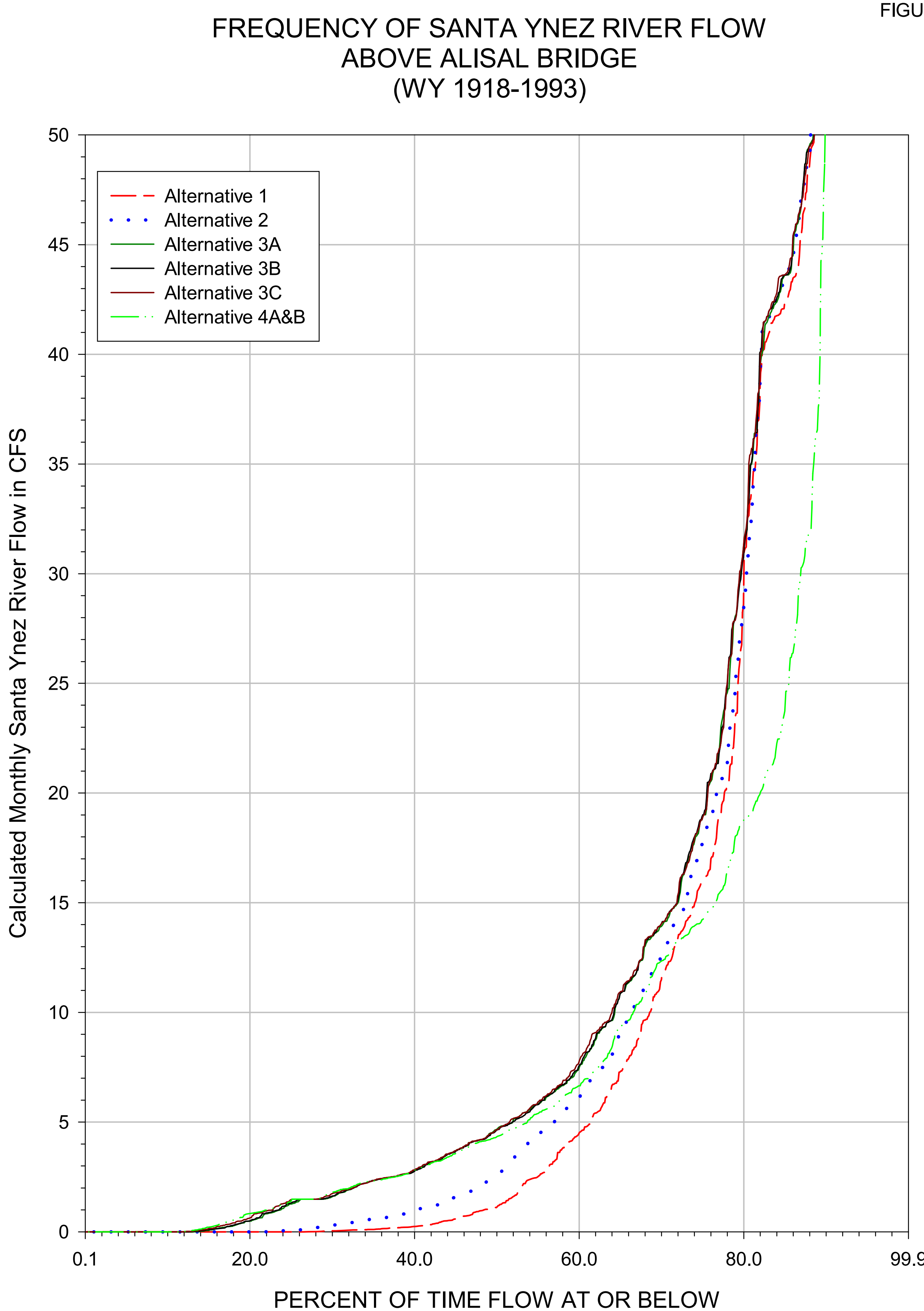

FREQUENCY OF SANTA YNEZ RIVER FLOW
AT 154 BRIDGE
(WY 1918-1993)
Alternative 1
Alternative 2
Alternative 3A
Alternative 3B
Alternative 3C
Alternative 4A&B
Calculated Monthly Santa Ynez River Flow in CFS
PERCENT OF TIME FLOW AT OR BELOW
0
5
10
15
20
25
30
35
40
45
50
0.1
20.0
40.0
60.0
80.0
99.9

FIGURE 7C



FREQUENCY OF SANTA YNEZ RIVER FLOW
ABOVE ALISAL BRIDGE
(WY 1918-1993)
Alternative 1
Alternative 2
Alternative 3A
Alternative 3B
Alternative 3C
Alternative 4A&B
Calculated Monthly Santa Ynez River Flow in CFS
50
45
40
35
30
25
20
15
10
5
0
0.1
20.0
40.0
60.0
80.0
99.9
PERCENT OF TIME FLOW AT OR BELOW

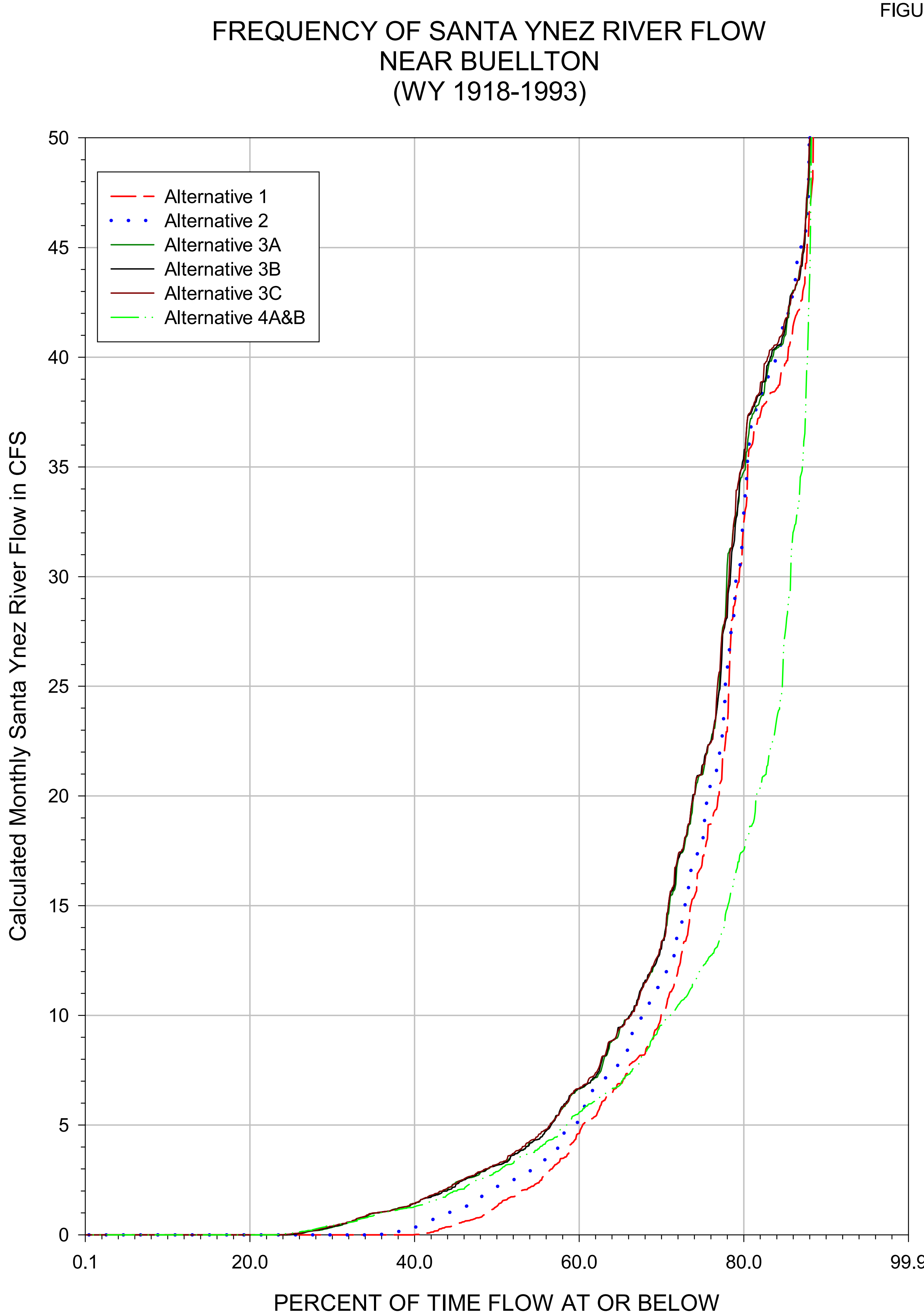

FREQUENCY OF SANTA YNEZ RIVER FLOW
NEAR BUELLTON
(WY 1918-1993)
Alternative 1
Alternative 2
Alternative 3A
Alternative 3B
Alternative 3C
Alternative 4A&B
Calculated Monthly Santa Ynez River Flow in CFS
0
5
10
15
20
25
30
35
40
45
50
0.1
20.0
40.0
60.0
80.0
99.9
PERCENT OF TIME FLOW AT OR BELOW

FIGURE 7E

FREQUENCY OF SANTA YNEZ RIVER FLOW ABOVE SALSIPUEDES CREEK CONFLUENCE (WY 1918-1993)

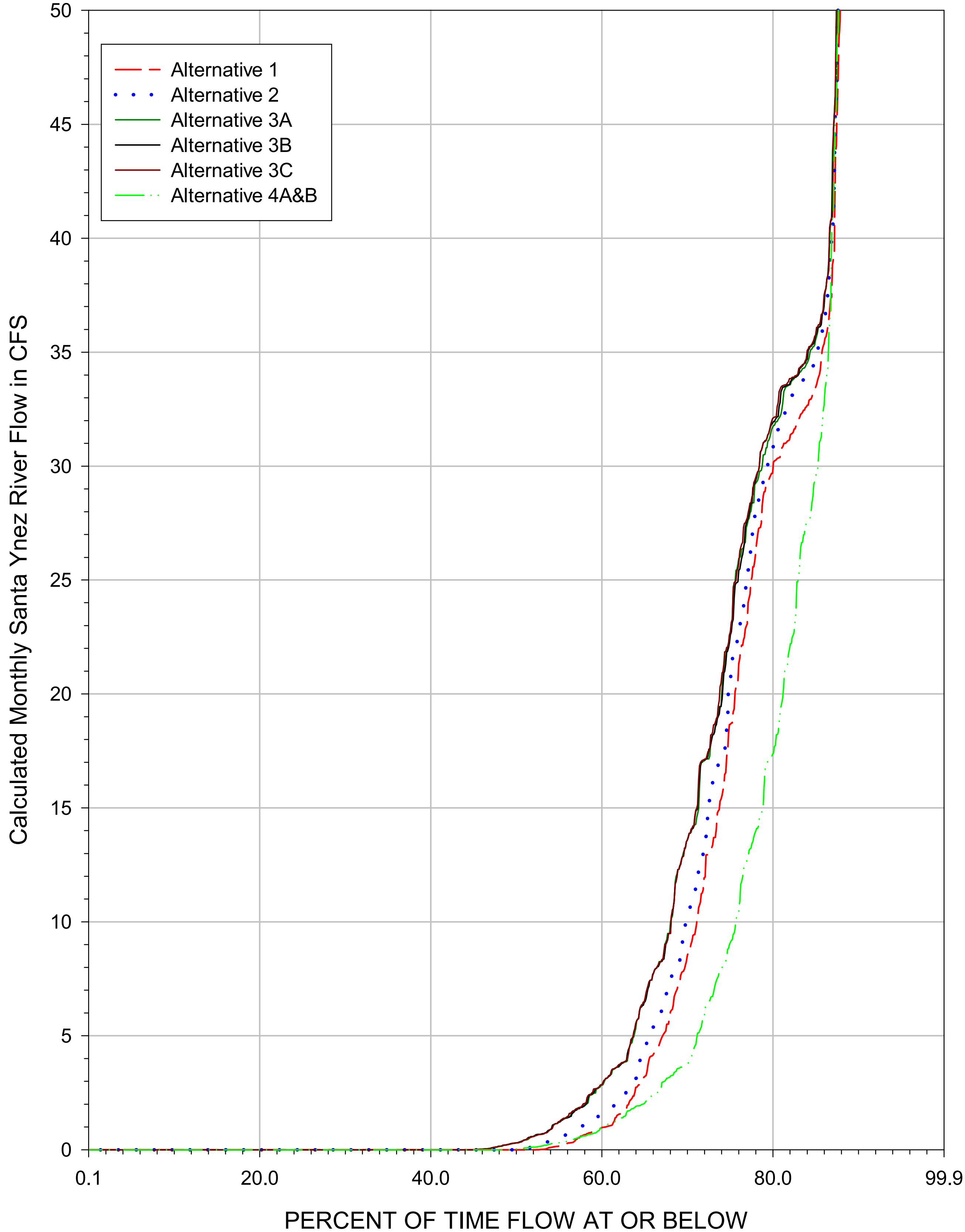


FIGURE 7F

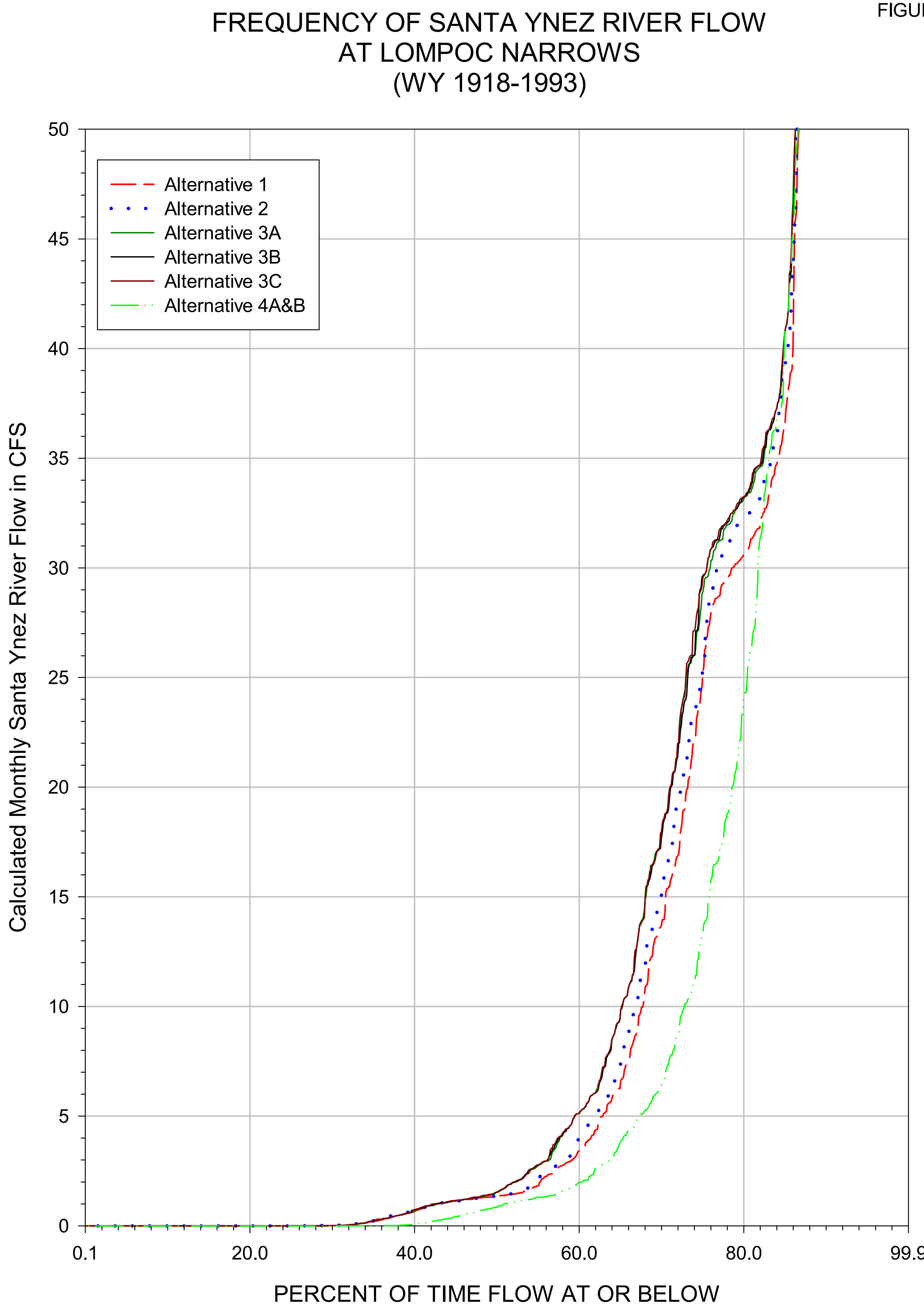

FREQUENCY OF SANTA YNEZ RIVER FLOW
AT LOMPOC NARROWS
(WY 1918-1993)
Alternative 1
Alternative 2
Alternative 3A
Alternative 3B
Alternative 3C
Alternative 4A&B
Calculated Monthly Santa Ynez River Flow in CFS
0
5
10
15
20
25
30
35
40
45
50
0.1
20.0
40.0
60.0
80.0
99.9
PERCENT OF TIME FLOW AT OR BELOW

FIGURE 8A
SIMULATED MEDIAN STREAMFLOW (1918-1993)
AT HIGHWAY 154 BRIDGE

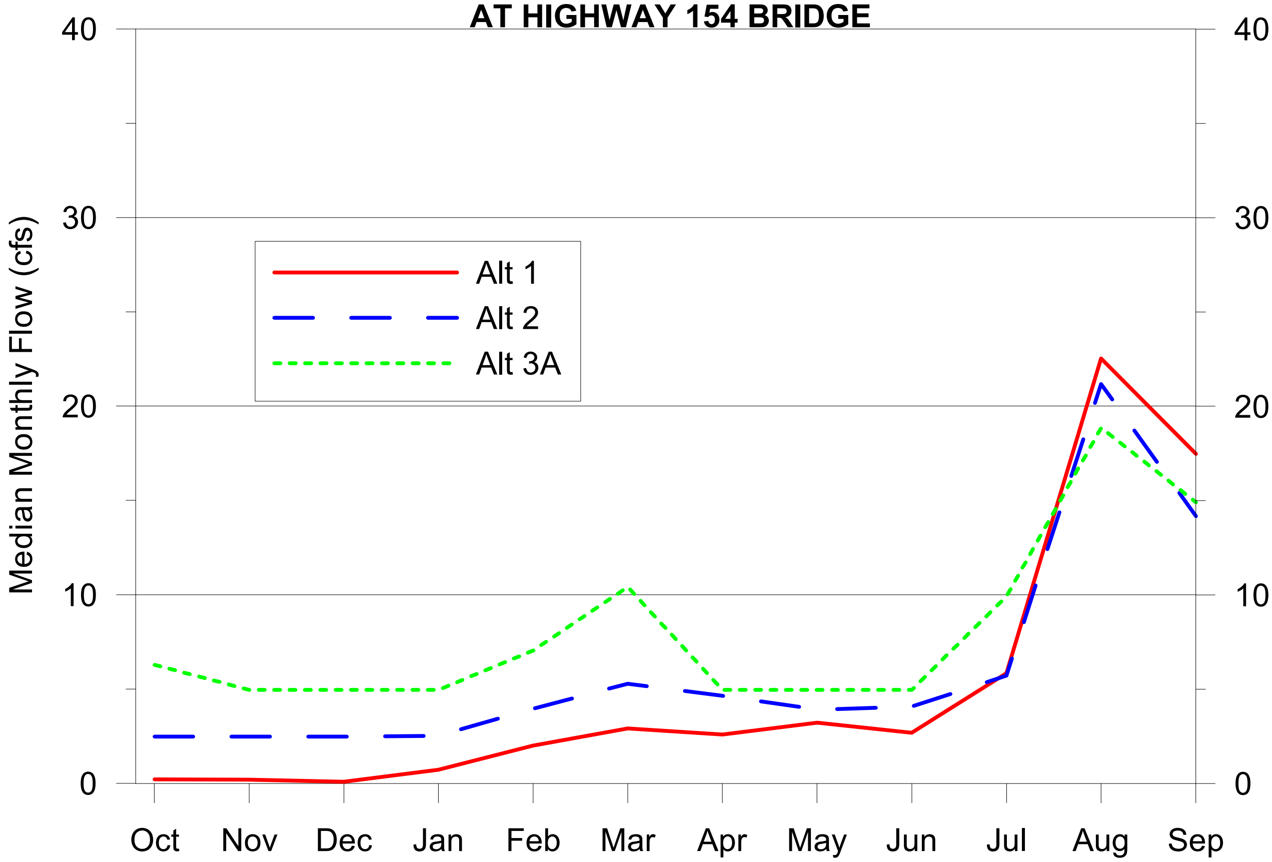


FIGURE 8B
SIMULATED MEDIAN STREAMFLOW (1918-1993)
ABOVE ALISAL BRIDGE

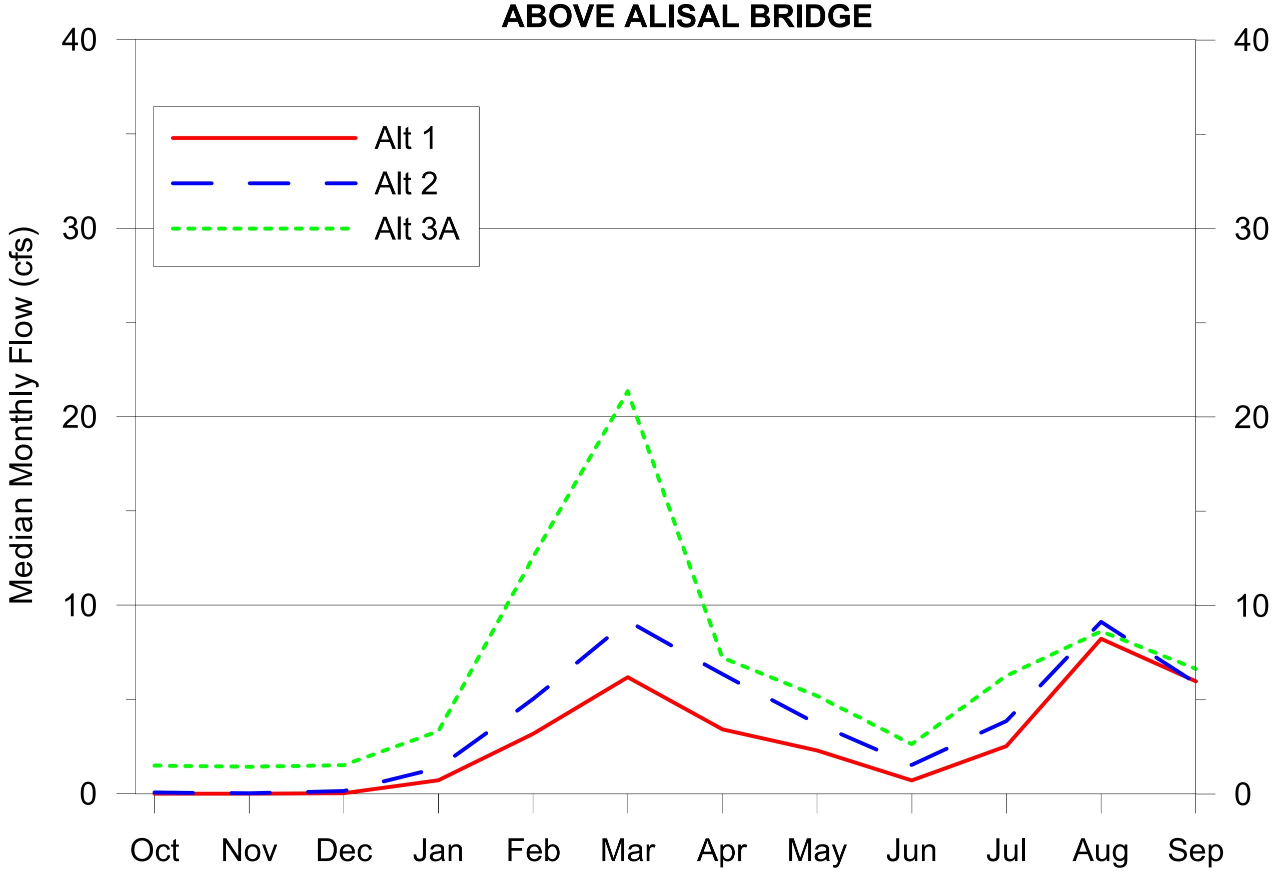


FIGURE 8C
SIMULATED MEDIAN STREAMFLOW (1918-1993)
ABOVE SALSIPUEDES CREEK CONFLUENCE

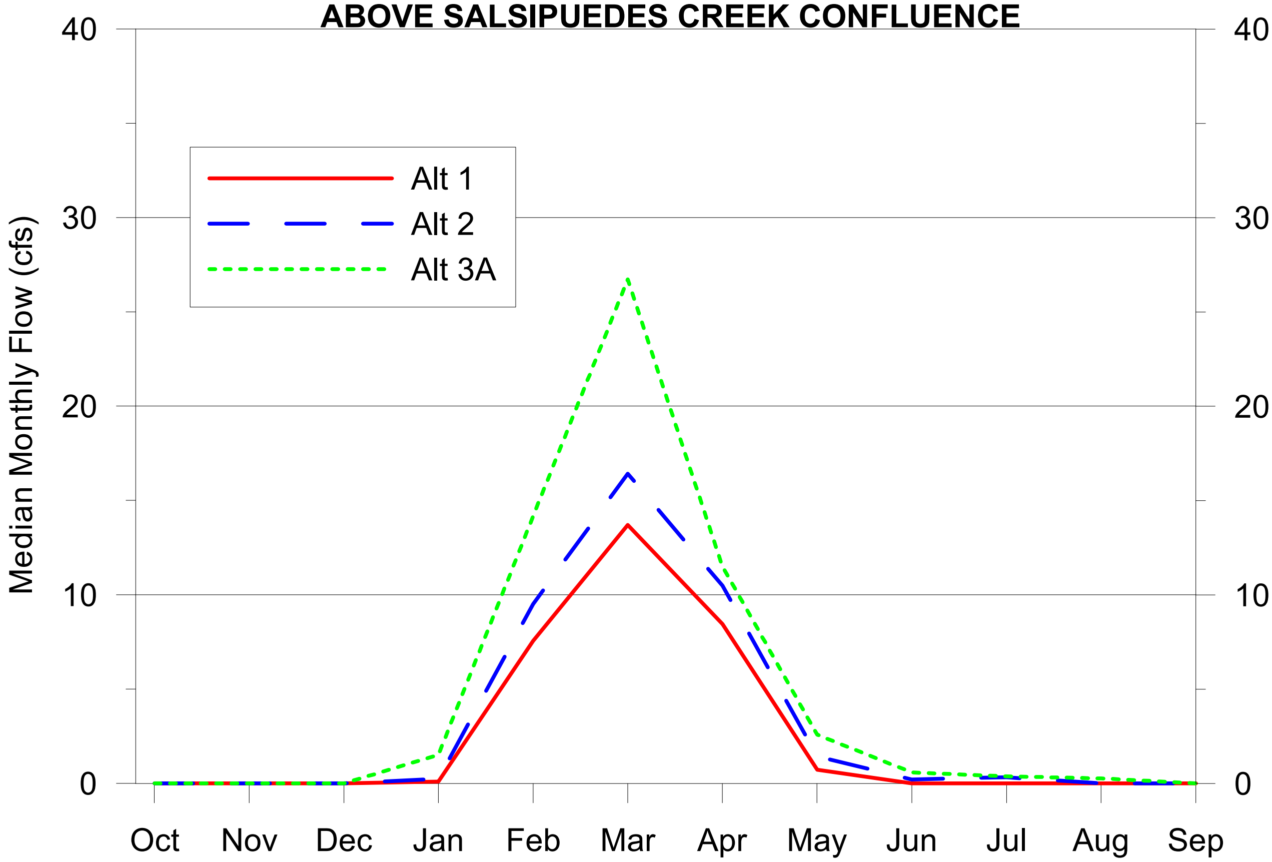


FIGURE 8D
SIMULATED MEDIAN STREAMFLOW (1918-1993)
AT NARROWS

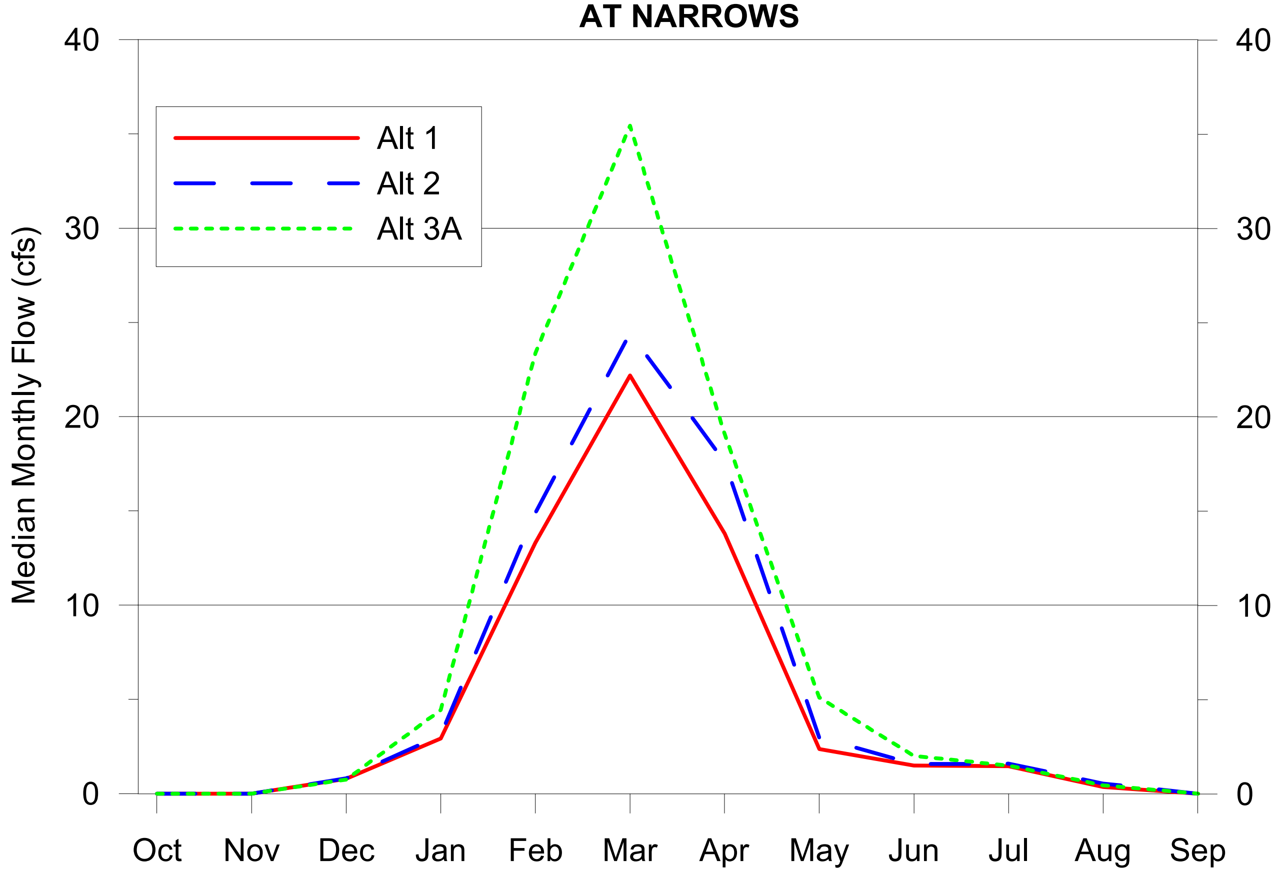


FIGURE 9A
SIMULATED MEAN STREAMFLOW (1918-1993)
AT HIGHWAY 154 BRIDGE

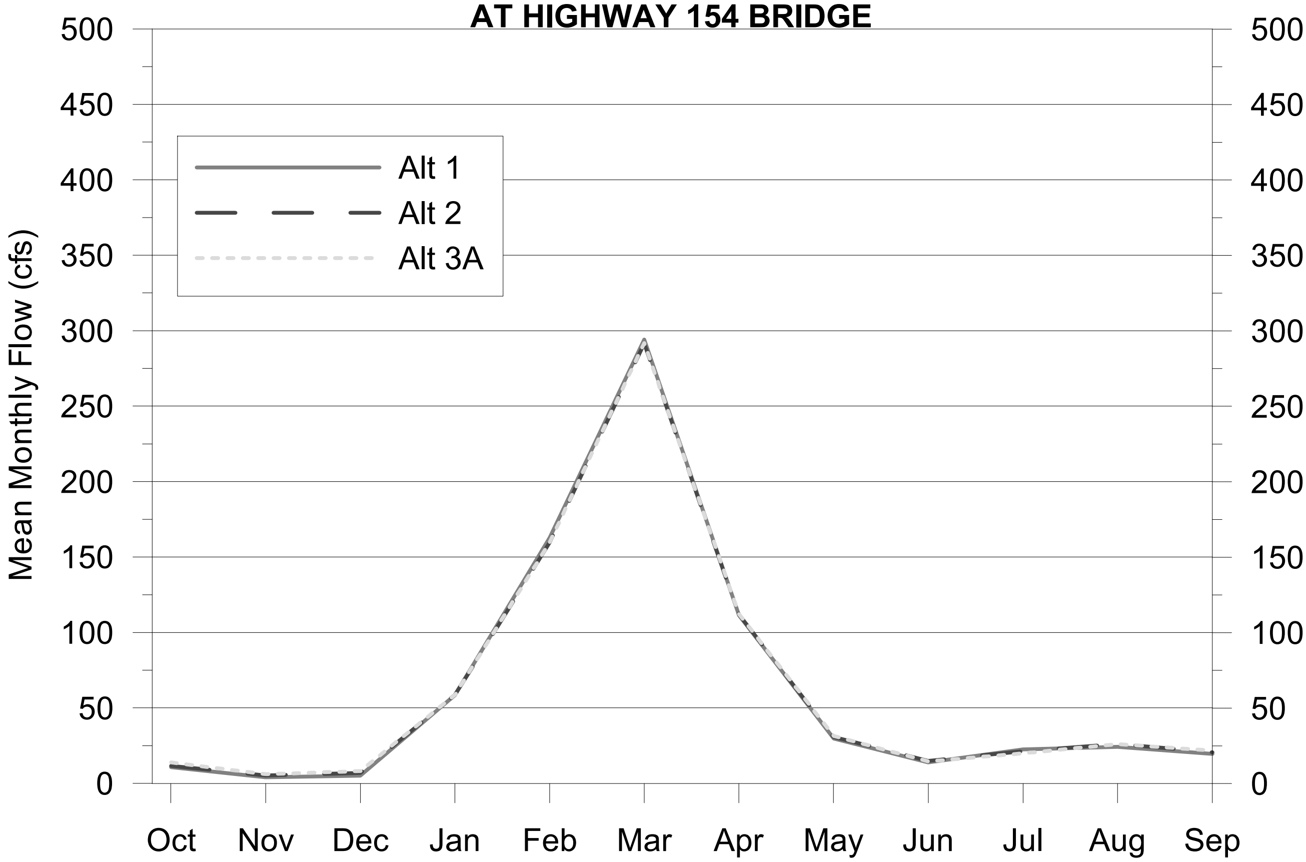


FIGURE 9B
SIMULATED MEAN STREAMFLOW (1918-1993)
ABOVE ALISAL BRIDGE

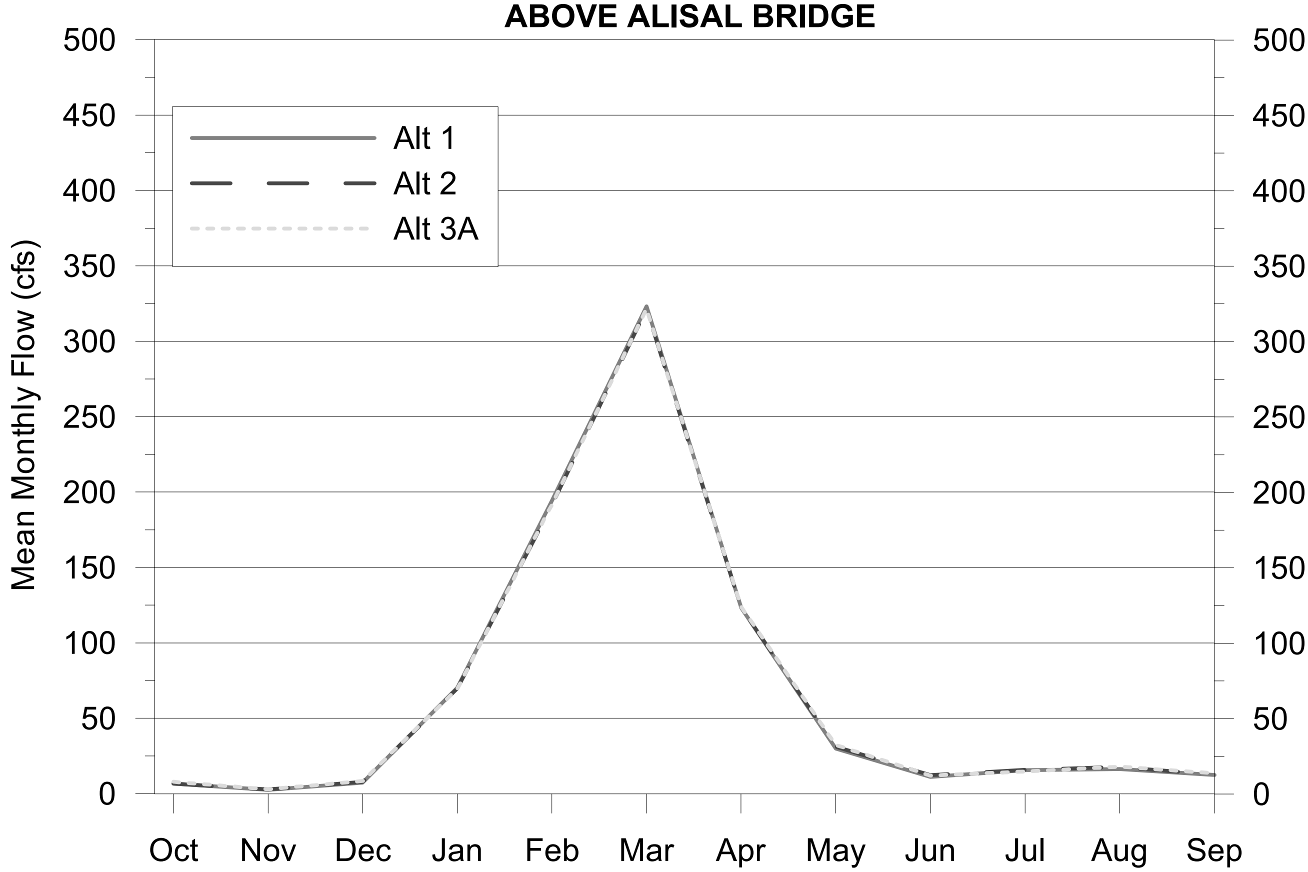


FIGURE 9C
SIMULATED MEAN STREAMFLOW (1918-1993)
ABOVE SALSIPUEDES CREEK CONFLUENCE

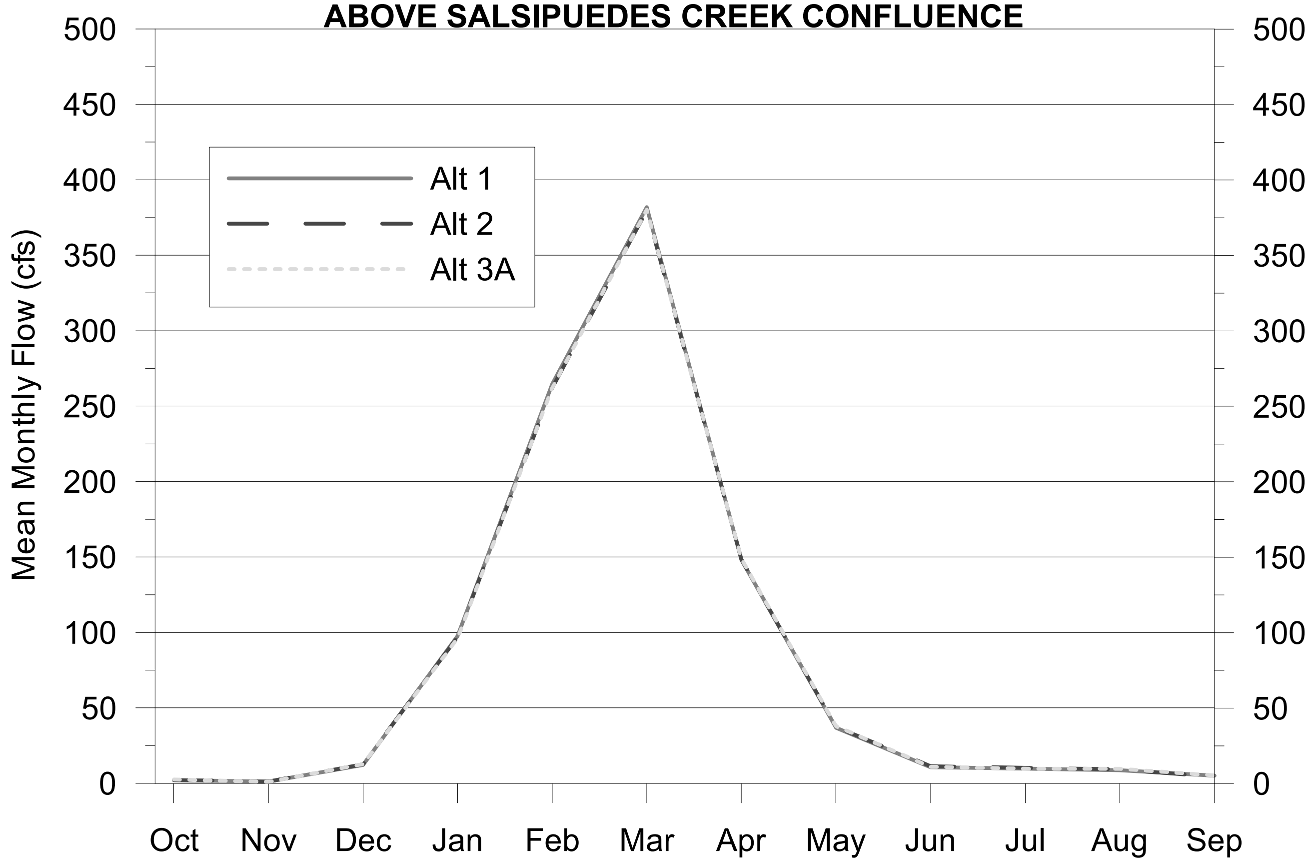


FIGURE 9D
SIMULATED MEAN STREAMFLOW (1918-1993)
AT NARROWS

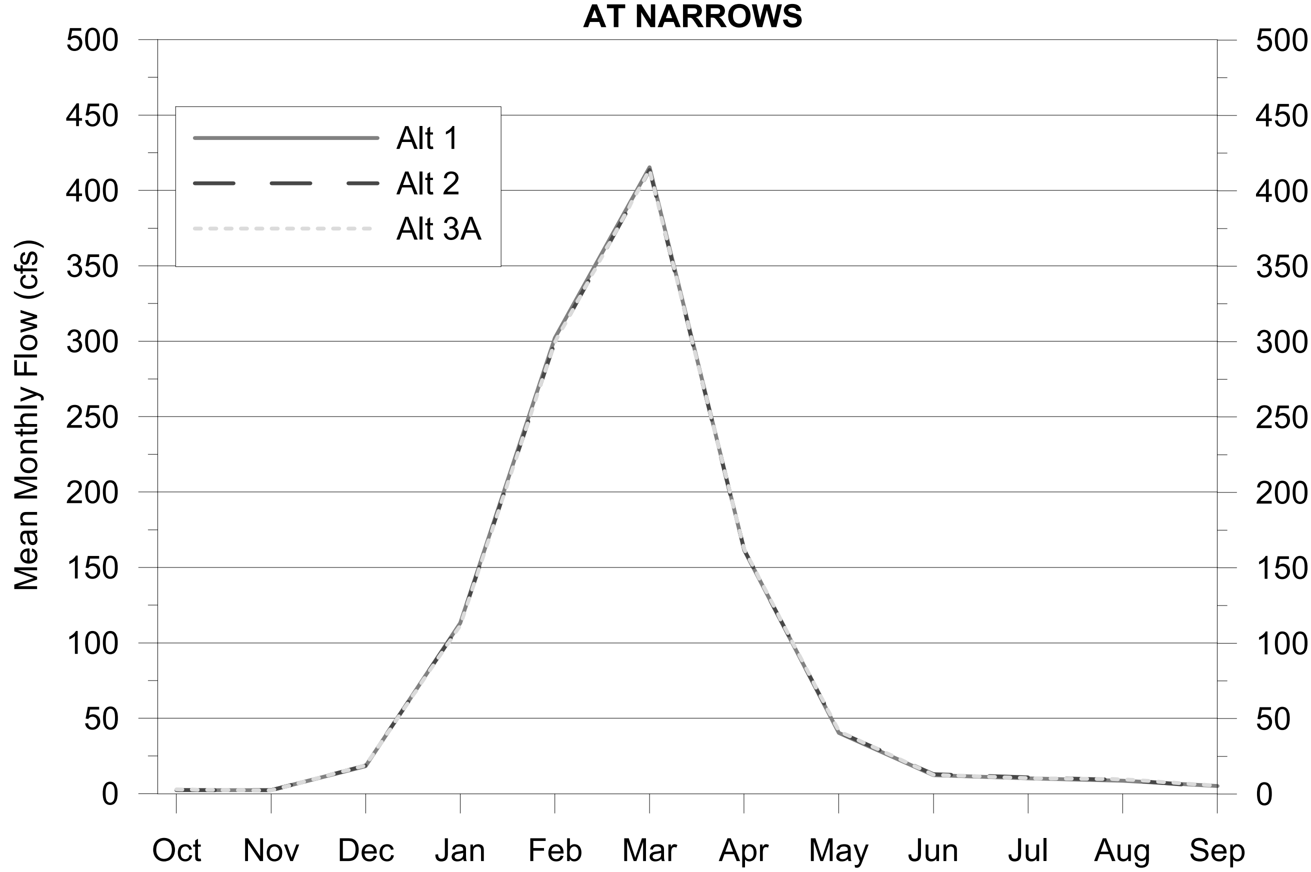


FIGURE 10A

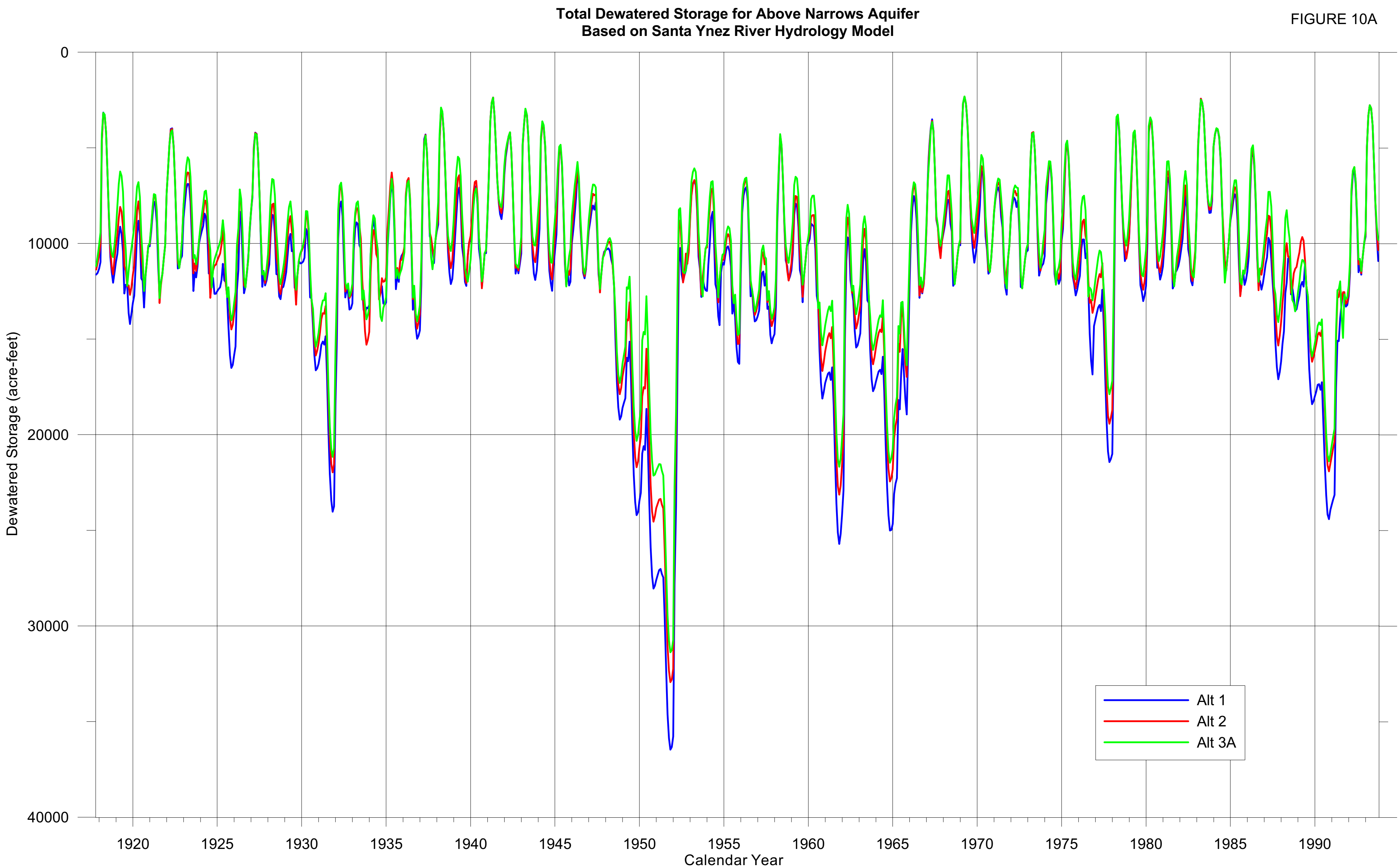
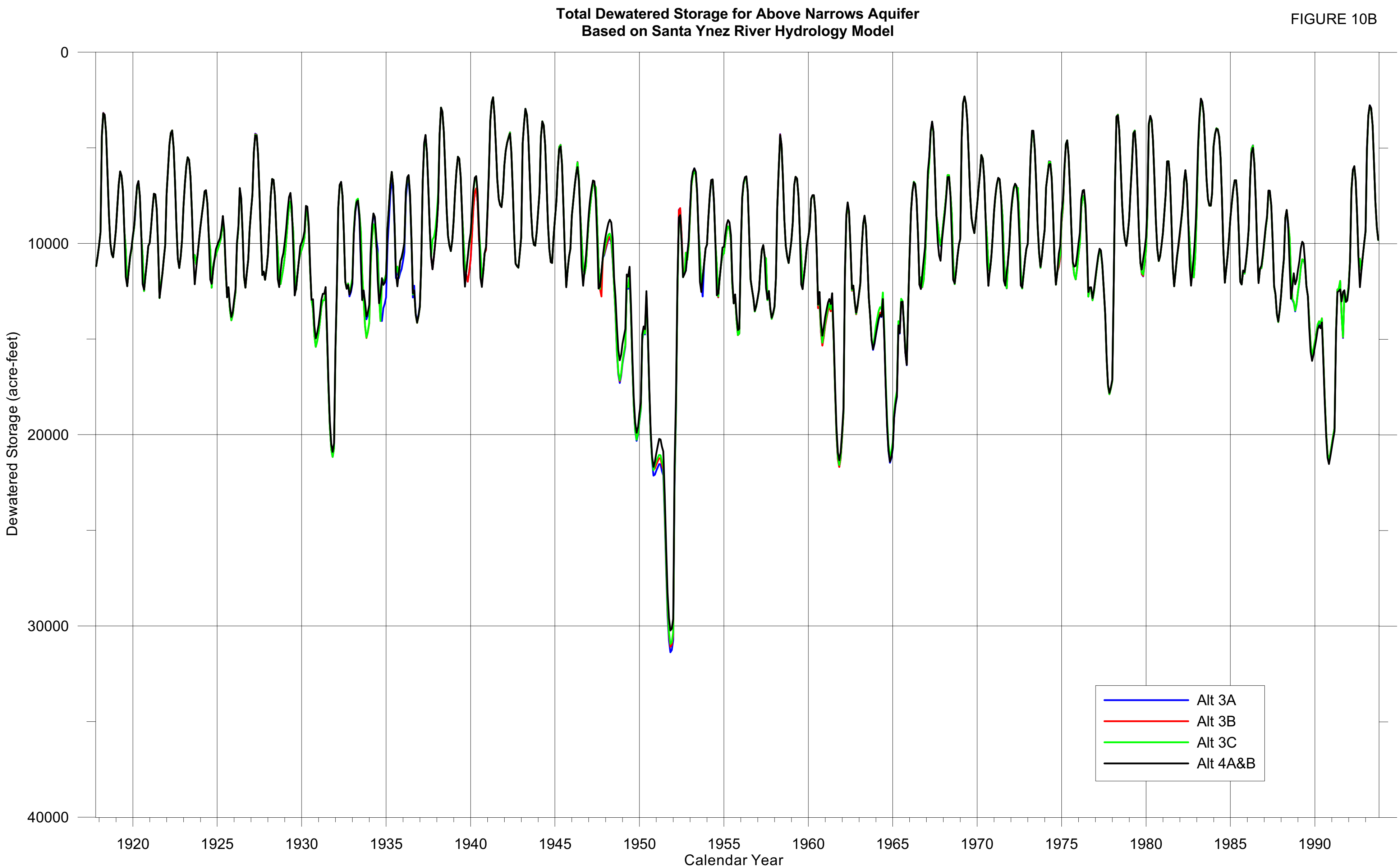
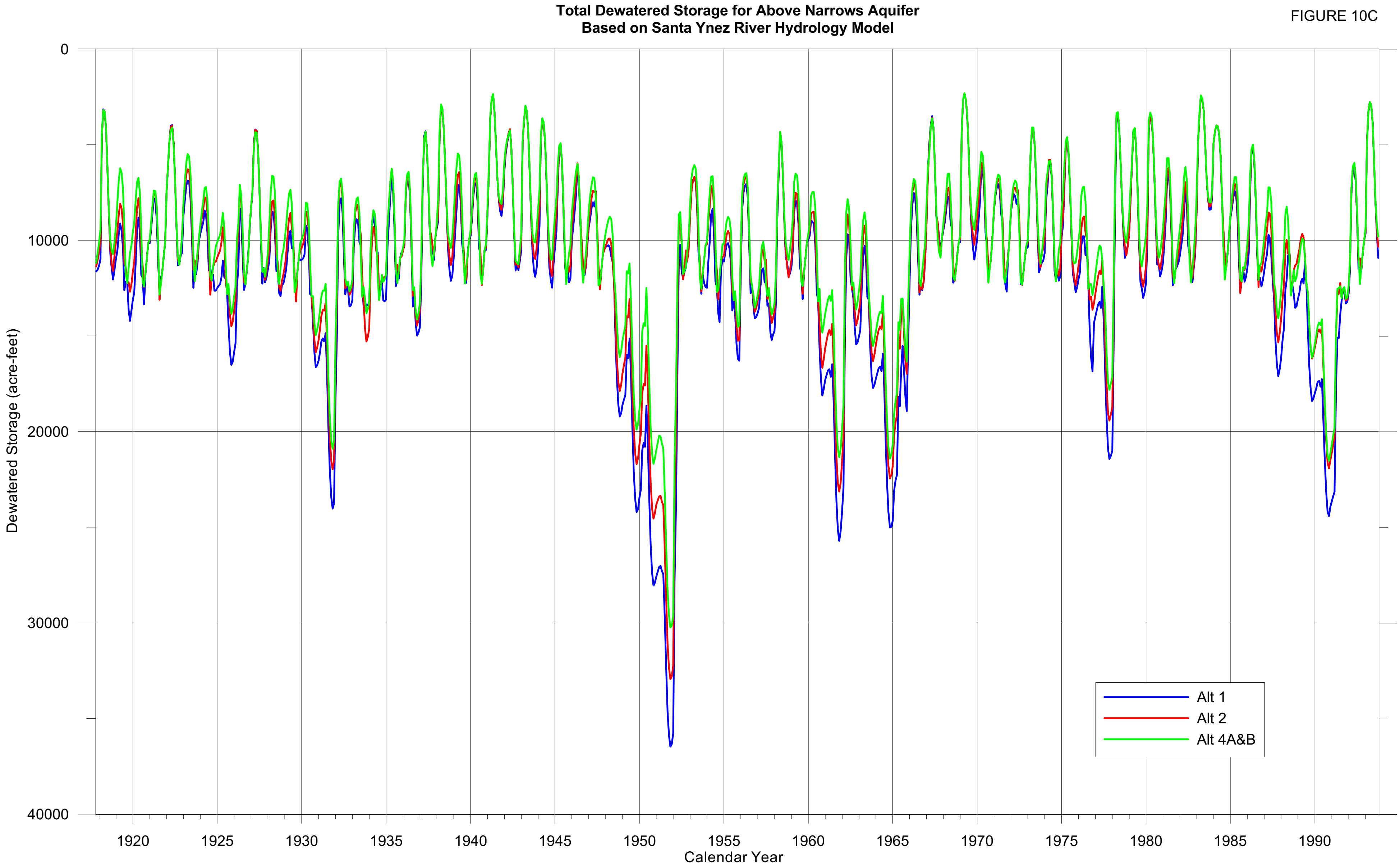

Total Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model
0
10000
20000
30000
40000
Dewatered Storage (acre-feet)
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alt 1
Alt 2
Alt 3A

FIGURE 10B



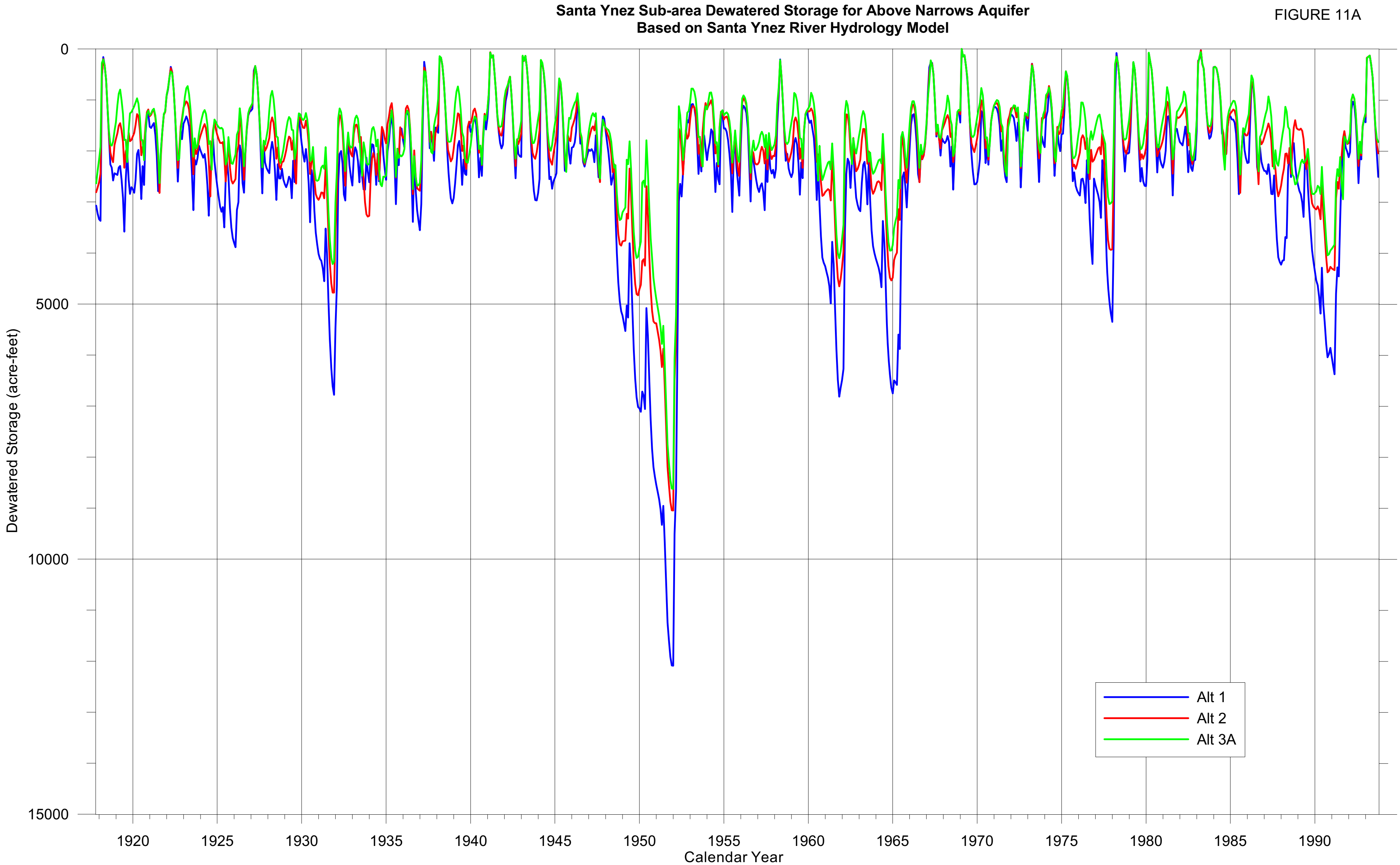
Total Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model
Dewatered Storage (acre-feet)
0
10000
20000
30000
40000
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alt 3A
Alt 3B
Alt 3C
Alt 4A&B

FIGURE 10C



Total Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model
Dewatered Storage (acre-feet)
0
10000
20000
30000
40000
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alt 1
Alt 2
Alt 4A&B

FIGURE 11A



Santa Ynez Sub-area Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model
Dewatered Storage (acre-feet)
0
5000
10000
15000
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alt 1
Alt 2
Alt 3A

Santa Ynez Sub-area Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model

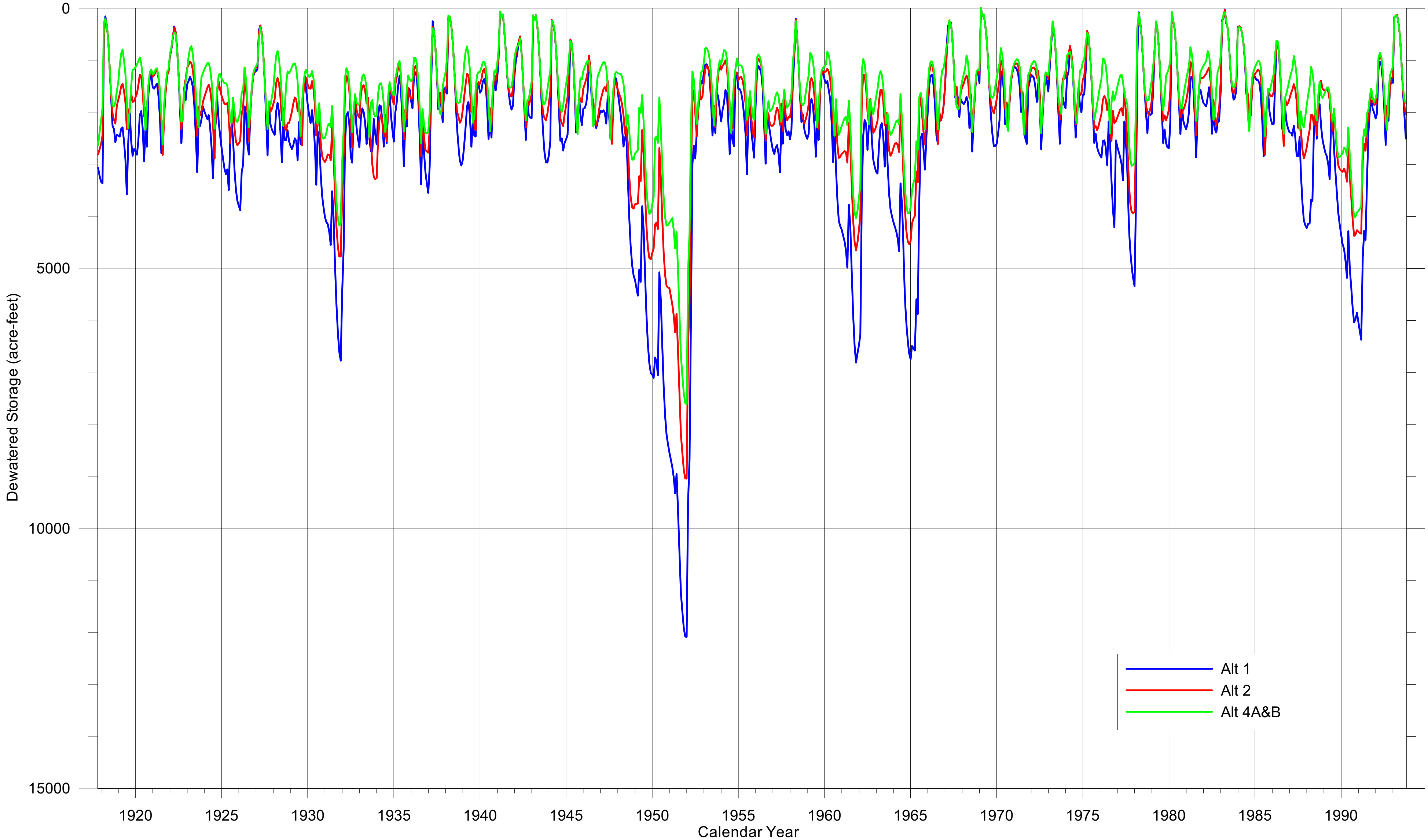


FIGURE 12A

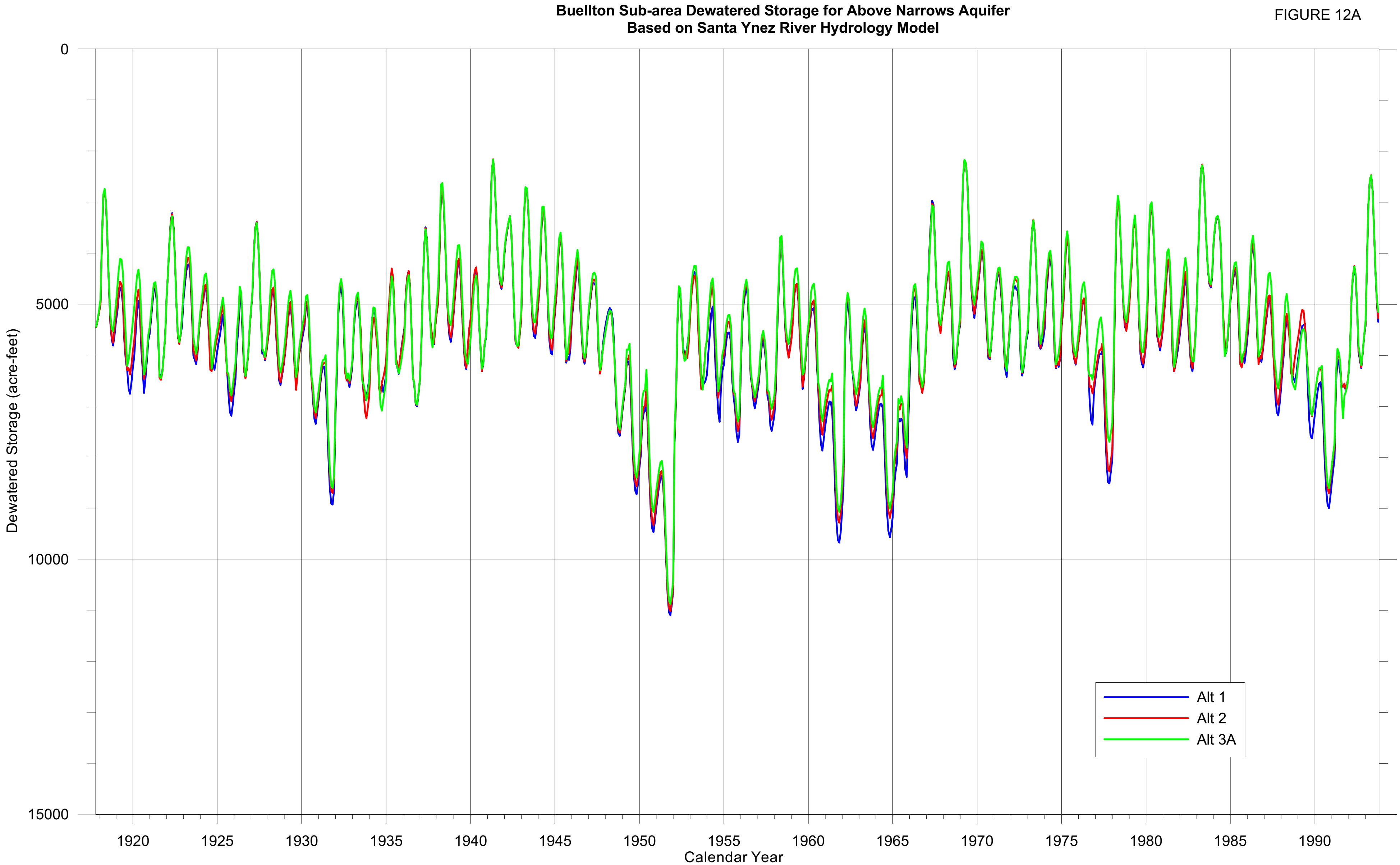
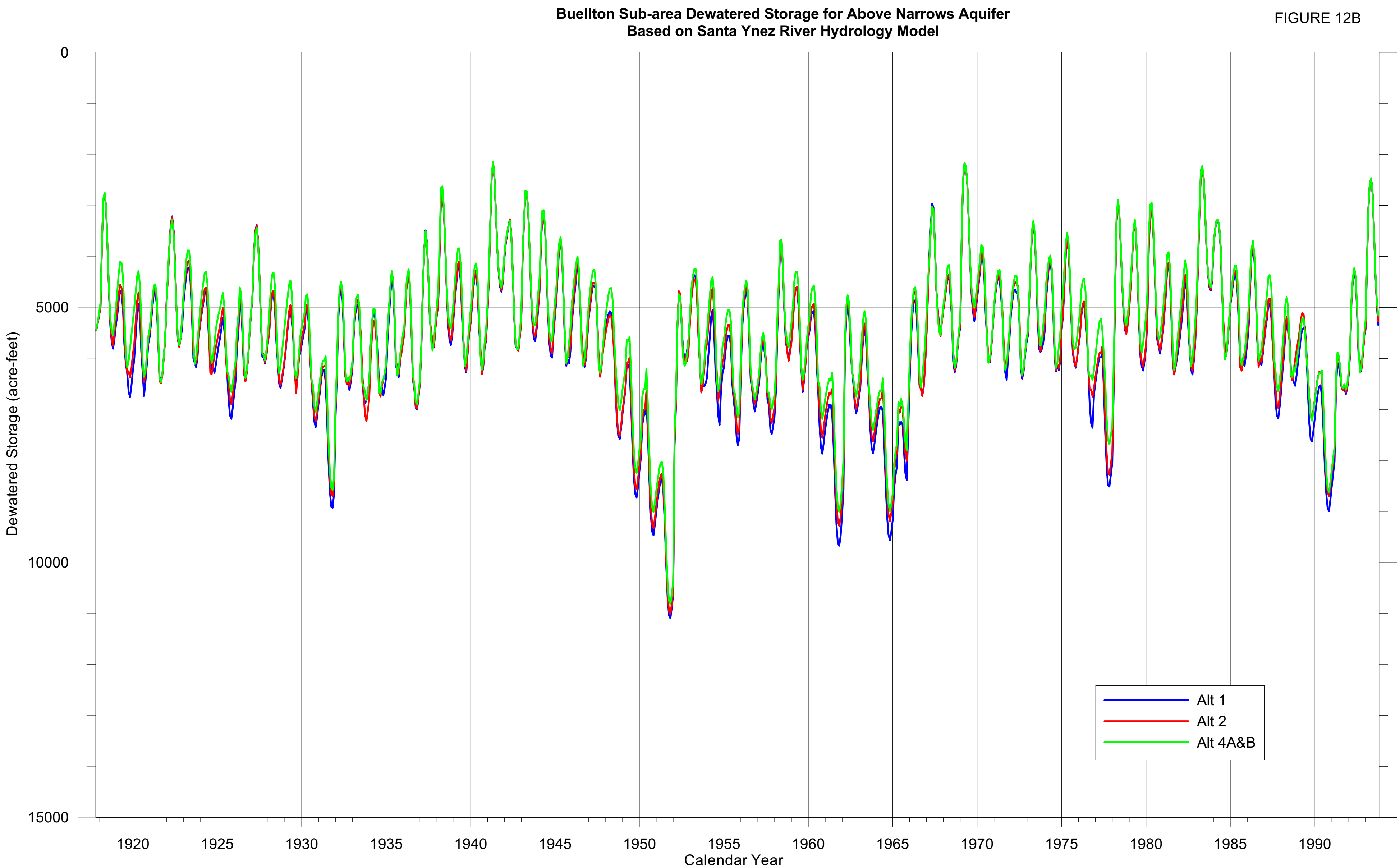

Buellton Sub-area Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model
Dewatered Storage (acre-feet)
0
5000
10000
15000
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alt 1
Alt 2
Alt 3A

FIGURE 12B


Buellton Sub-area Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model
Dewatered Storage (acre-feet)
0
5000
10000
15000
1920
1925
1930
1935
1940
1945
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1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alt 1
Alt 2
Alt 4A&B

FIGURE 13A

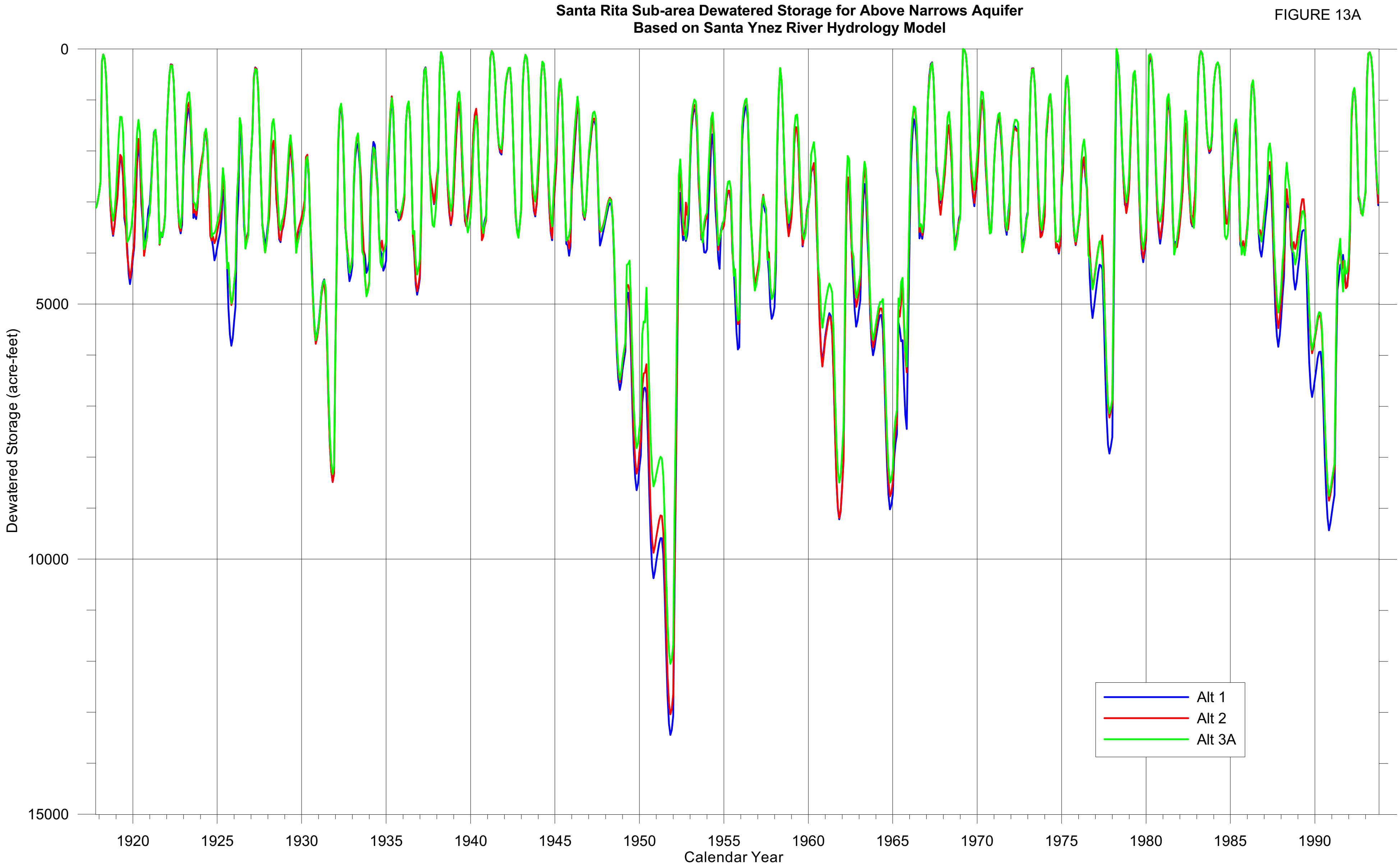
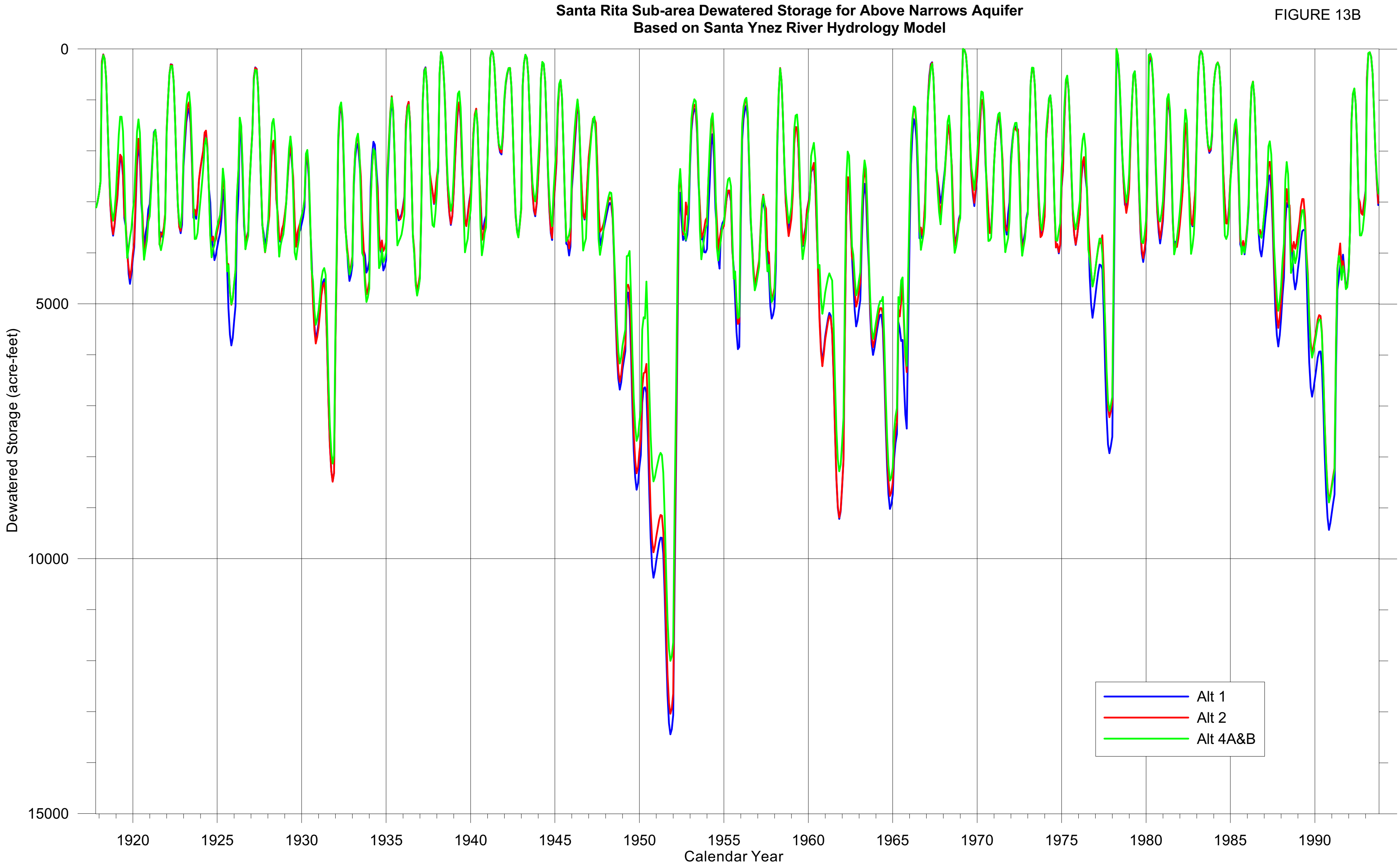

Santa Rita Sub-area Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model
Dewatered Storage (acre-feet)
0
5000
10000
15000
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alt 1
Alt 2
Alt 3A

FIGURE 13B



Santa Rita Sub-area Dewatered Storage for Above Narrows Aquifer
Based on Santa Ynez River Hydrology Model
Dewatered Storage (acre-feet)
0
5000
10000
15000
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Alt 1
Alt 2
Alt 4A&B

TECHNICAL M E M O R A N D U M No. 2

STETSON ENGINEERS INC.
2171 E. Francisco Blvd., Suite K • San Rafael, California • 94901
TEL: (415) 457-0701 FAX: (415) 457-1638 e-mail: peterp@stetsonengineers.com

TO: John Gray
URS Corp., Santa Barbara, CA

DATE: January 16, 2001
rev. December 22, 2001

FROM: Curtis Lawler

JOB NO.: 1815

RE: **Hydrologic Analyses of Daily Flows for Use in Assessing Impacts on Rainbow Trout/ Steelhead**

---

1. INTRODUCTION

This second technical memorandum includes DEIR hydrologic impact analyses for the seven alternatives identified for the Cachuma Water Rights EIR. Please see the previous draft technical memorandum (RE: Impacts of EIR Alternatives using the Santa Ynez River Hydrology Model, 12/22/2000, rev.12/22/2001) for a detailed discussion on how these alternatives were incorporated into the model and the results concerning Cachuma Reservoir operations, storage and elevations; Santa Ynez River flows and above Narrows groundwater storage; and water right releases and Cachuma Project deliveries. Included in this memorandum are the DEIR hydrologic impact analyses for:

- Effects on Spawning Habitat for Rainbow Trout/Steelhead
- Effects on Rearing Habitat for Rainbow Trout/Steelhead
- Effects on Passage for Rainbow Trout/Steelhead

The same procedures and tools as used in the Biological Assessment(BA) and Fish Management Plan (FMP) were used for these EIR analyses concerning Rainbow Trout/Steelhead. These analyses use the same results from the Santa Ynez River Hydrology Model (SYRHM) as presented in the first technical memorandum. However, monthly flows from the SYRHM were converted to daily flows based on daily variations of gaged flow in Salsipuedes Creek (1941-1993). Discussion of these hydrologic impacts analyzed in this memo will be developed in coordination with ENTRIX.

2. EFFECTS ON SPAWNING AND REARING HABITAT

Table 1 shows the exceedance flows for various alternatives and for various seasons within the year. The daily exceedance flows in Table 1 generally match the monthly flow exceedances presented in Figures 7A, 7B, and 7C of the first memorandum (12/22/2000).

During the spawning period of the Rainbow Trout/Steelhead, extending from January through April, flows in the Santa Ynez River from Bradbury Dam to Highway 154 would increase under Alternatives 3A-C and 4A-B roughly by 4 cfs and 2 cfs, compared with Alternatives 1 and 2, respectively.

During the remaining period (May-December) when the fish would be rearing, flows in the Santa Ynez River from Bradbury Dam to Highway 154 would also increase under Alternatives 3A-C and 4A-B roughly by 4 cfs and 2 cfs compared with Alternatives 1 and 2, respectively.

Table 2 shows the minimum flows by water year for each alternative. In the reach between Bradbury Dam and Highway 154 Bridge, Alternative 1 provides year-round flows in about 3 out of 52 years (6%). Alternatives 2, 3A-C and 4A-B maintain a higher minimum flow in the reach between Bradbury Dam and Highway 154 Bridge than Alternative 2 and provide year-round flows in 50 out of 52 years (96%).

3. EFFECTS ON PASSAGE

Tables 3Aand 3B show the summary of passage days generated for each of the EIR alternatives. A passage day was defined when flows of the Santa Ynez River at Solvang were 25 cfs or greater during the period from January through April. In general, Table 3a shows that in wet years all of the EIR alternatives have many passage days; and in normal and dry years, Alternatives 3A-C and 4A-B have more passage days than Alternatives 1 and 2. The Biological Opinion (BO) states that Reclamation will have to come up with a strategy to reduce the potential enhancement of passage days in dry years and increase the enhancement of passage days in average and wet years, but that plan is currently not available.

TABLE 1
EXCEEDANCE FLOWS FOR EIR ALTERNATIVES
USING SANTA YNEZ RIVER HYDROLOGY MODEL AND DAILY FLOW ANALYSIS [1)]
(all flows in cfs)

Alt 1

Alt 1	Exceedance Flows 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	0.2	1.0	47.5
Jan-Mar	0.2	0.9	22.6
April-Jun	0.6	4.3	56.8
Jul-Sep	0.6	7.6	44.0
Oct-Dec	0.0	0.6	6.2
Highway 154 to Refugio Road			
Jan-April	0.0	0.9	54.0
Jan-Mar	0.0	0.8	29.2
April-Jun	0.1	3.9	51.9
Jul-Sep	0.1	7.2	40.7
Oct-Dec	0.0	0.1	5.4
Refugio Road to Alisal Bridge			
Jan-April	0.0	1.3	72.1
Jan-Mar	0.0	1.1	39.8
April-Jun	0.0	2.9	44.6
Jul-Sep	0.0	3.0	30.5
Oct-Dec	0.0	0.0	3.9

Alt 2

Alt 2	Exceedance Flows 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	2.6	3.3	46.3
Jan-Mar	2.5	3.2	19.7
April-Jun	3.1	5.1	55.7
Jul-Sep	3.7	10.4	45.3
Oct-Dec	2.9	3.4	7.0
Highway 154 to Refugio Road			
Jan-April	2.0	2.5	50.7
Jan-Mar	2.0	2.5	26.7
April-Jun	2.5	4.8	52.5
Jul-Sep	2.5	9.5	42.6
Oct-Dec	1.5	2.5	5.5
Refugio Road to Alisal Bridge			
Jan-April	0.2	2.5	70.3
Jan-Mar	0.1	2.3	39.9
April-Jun	0.4	4.7	45.8
Jul-Sep	0.0	4.8	29.0
Oct-Dec	0.0	0.1	4.2

Alt 3A

Alt 3A	Exceedance Flows 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.5	5.5	54.1
Jan-Mar	3.3	5.4	33.1
April-Jun	4.9	6.3	55.5
Jul-Sep	6.0	11.7	45.6
Oct-Dec	3.6	5.8	9.4
Highway 154 to Refugio Road			
Jan-April	2.7	5.0	61.6
Jan-Mar	2.7	5.0	40.2
April-Jun	4.9	5.0	52.8
Jul-Sep	4.9	10.1	40.8
Oct-Dec	2.4	4.9	9.3
Refugio Road to Alisal Bridge			
Jan-April	1.1	4.5	77.7
Jan-Mar	0.8	4.0	56.6
April-Jun	2.1	5.2	46.2
Jul-Sep	0.8	6.1	31.1
Oct-Dec	0.0	1.5	5.9

Alt 3B

Alt 3B	Exceedance Flows 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.5	5.5	51.7
Jan-Mar	3.3	5.4	30.8
April-Jun	5.0	6.3	55.5
Jul-Sep	6.0	11.7	46.9
Oct-Dec	3.6	5.8	9.5
Highway 154 to Refugio Road			
Jan-April	2.7	5.0	59.6
Jan-Mar	2.7	5.0	36.5
April-Jun	4.9	5.0	52.8
Jul-Sep	4.9	10.1	42.7
Oct-Dec	2.4	4.9	8.4
Refugio Road to Alisal Bridge			
Jan-April	1.1	4.5	76.7
Jan-Mar	0.8	4.1	54.7
April-Jun	2.3	5.2	46.2
Jul-Sep	0.8	6.1	31.2
Oct-Dec	0.0	1.5	5.5

Alt 3C

Alt 3C	Exceedance Flows 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.5	5.5	49.9
Jan-Mar	3.3	5.4	29.9
April-Jun	5.0	6.3	55.5
Jul-Sep	6.2	11.7	46.3
Oct-Dec	3.8	5.9	9.6
Highway 154 to Refugio Road			
Jan-April	2.7	5.0	59.3
Jan-Mar	2.7	5.0	35.9
April-Jun	4.9	5.0	52.8
Jul-Sep	4.9	10.1	42.9
Oct-Dec	2.5	4.9	8.5
Refugio Road to Alisal Bridge			
Jan-April	1.1	4.5	75.7
Jan-Mar	0.8	4.1	53.6
April-Jun	2.3	5.2	46.2
Jul-Sep	0.8	6.1	31.1
Oct-Dec	0.0	1.5	5.5

Alt 4A&B

Alt 4A&B	Exceedance Flows 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.6	5.5	47.7
Jan-Mar	3.4	5.4	27.3
April-Jun	4.8	6.2	28.0
Jul-Sep	6.3	11.2	35.2
Oct-Dec	3.7	5.8	12.3
Highway 154 to Refugio Road			
Jan-April	2.8	5.0	54.2
Jan-Mar	2.8	5.0	32.1
April-Jun	4.9	5.0	24.7
Jul-Sep	4.9	9.8	30.6
Oct-Dec	2.5	4.9	11.2
Refugio Road to Alisal Bridge			
Jan-April	1.5	4.6	70.9
Jan-Mar	1.2	4.1	51.2
April-Jun	1.9	4.5	19.0
Jul-Sep	0.8	5.3	15.4
Oct-Dec	0.0	1.5	7.1

1) Monthly flows from the Santa Ynez River Model were converted to daily flows based on daily variations of gaged flow in Salsipuedes Creek (1941-1993).

TABLE 2
MINIMUM FLOW BY WATER YEAR
FOR EIR ALTERNATIVES
(CFS)

	ALT 1			ALT 2			ALT 3A			ALT 3B			ALT 3C			ALT 4A&B		
Water Year	Below Hilton Ck	154 Bridge	Alisal Bridge	Below Hilton Ck	154 Bridge	Alisal Bridge	Below Hilton Ck	154 Bridge	Alisal Bridge	Below Hilton Ck	154 Bridge	Alisal Bridge	Below Hilton Ck	154 Bridge	Alisal Bridge	Below Hilton Ck	154 Bridge	Alisal Bridge
1942	0.5	0.5	0.5	1	2.5	0.5	2.5	5	1.5	2.5	5	1.5	2.5	5	1.5	2.5	5	1.5
1943	0.5	0	0	3.5	2.5	0	6	5	1	6	5	1	6	5	1	6	5	1
1944	0.5	0	0	3	2.5	0	4.5	5	1.5	4.5	5	1.5	4.5	5	1.5	4.5	5	1.5
1945	0.5	0	0	2	2.5	0	3	5	1.5	3	5	1.5	3	5	1.5	3	5	1.5
1946	0.5	0	0	0.5	2.5	0	3.5	5	1	3.5	5	1	3.5	5	1	3.5	5	1
1947	0	0	0	3	2.5	0.5	5.5	5	2	5.5	5	2	5.5	5	2	5	5	0.5
1948	0	0	0	2	1.5	0	3	2.5	0	3.5	2.5	0	3.5	2.5	0	4	2.5	0
1949	0	0	0	0	1.5	0	2	2.5	0	2	2.5	0	2	2.5	0	2	2.5	0
1950	0	0	0	2.5	1.5	0	2	2.5	0	2	2.5	0	2	2.5	0	2	2.5	0
1951	0	0	0	0.5	0	0	0.5	0	0	0.5	0	0	0.5	0	0	0.5	0	0
1952	0	0	0	0.5	0	0	0.5	0	0	0.5	0	0	0.5	0	0	0.5	0	0
1953	0	0	0	0.5	2.5	0	2.5	5	1	2.5	5	1	2.5	5	1	2.5	5	1
1954	0	0	0	0.5	2.5	0.5	2.5	5	1.5	2.5	5	1.5	2.5	5	1.5	2.5	5	1
1955	0	0	0	2	1.5	0	2.5	2.5	0	2.5	2.5	0	2.5	2.5	0	2.5	2.5	0
1956	0	0	0	0	1.5	0	1	2.5	0	1	2.5	0	1	2.5	0	1	2.5	0
1957	0	0	0	2	1.5	0	2.5	2.5	0	2.5	2.5	0	2.5	2.5	0	2.5	2.5	0
1958	0	0	0	0.5	1.5	0	1	2.5	0	1	2.5	0	1	2.5	0	1	2.5	0
1959	0	0	0	0.5	2.5	0	3.5	5	1.5	3.5	5	1.5	3.5	5	1.5	3.5	5	1.5
1960	0	0	0	2.5	1.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0
1961	0	0	0	2.5	1.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0
1962	0	0	0	0	1.5	0	2	2.5	0	2	2.5	0	2	2.5	0	2	2.5	0
1963	0	0	0	0	2.5	0	2.5	5	0.5	2.5	5	0.5	2.5	5	0.5	2.5	5	0.5
1964	0	0	0	2.5	1.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0
1965	0	0	0	0.5	1.5	0	1.5	2.5	0	1.5	2.5	0	1.5	2.5	0	1.5	2.5	0
1966	0	0	0	0	1.5	0	1.5	2.5	0	1.5	2.5	0	1.5	2.5	0	1.5	2.5	0
1967	0.5	0.5	0.5	0.5	2.5	1.5	2	5	1.5	2	5	1.5	2	5	1.5	2	5	2
1968	0	0	0	3	2.5	0	5	5	1.5	5	5	1.5	5	5	1.5	5	5	1.5
1969	0	0	0	1.5	2.5	0.5	6	5	2	6	5	2	6	5	2	6	5	2
1970	0.5	0	0	3	2.5	0	4	5	1.5	4	5	1.5	4	5	1.5	4	5	1.5
1971	0.5	0	0	0.5	2.5	0.5	3	5	1.5	3	5	1.5	3	5	1.5	3	5	1
1972	0	0	0	0	2.5	0	2.5	2.5	0	2.5	2.5	0	2.5	5	0	2.5	5	0
1973	0	0	0	0	1.5	0	1	2.5	0	1	2.5	0	1	2.5	0	2	2.5	0
1974	0.5	0	0	0.5	2.5	0	2.5	5	1.5	2.5	5	1.5	2.5	5	1.5	2.5	5	1.5
1975	0	0	0	0.5	2.5	0	2.5	5	1	2.5	5	1	2.5	5	1	2.5	5	1
1976	0	0	0	1	2.5	0	4.5	5	0.5	4.5	5	0.5	4.5	5	0.5	4.5	5	1
1977	0	0	0	2.5	1.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0
1978	0	0	0	0	1.5	0	1	2.5	0	1	2.5	0	1	2.5	0	1	2.5	0
1979	0.5	0	0	1	2.5	0.5	3	5	1.5	3	5	1.5	3	5	1.5	3	5	1.5
1980	0.5	0	0	1	2.5	0	3	5	1.5	3	5	1.5	3	5	1.5	3	5	2
1981	0.5	0	0	1.5	2.5	0	2.5	5	1.5	2.5	5	1.5	2.5	5	1.5	2.5	5	1.5
1982	0.5	0	0	1	2.5	0.5	2.5	5	2	2.5	5	2	2.5	5	2	2.5	5	1
1983	0	0	0	1	2.5	0.5	2.5	5	0.5	2.5	5	0.5	2.5	5	0.5	2.5	5	3.5
1984	1	0.5	0	3.5	2.5	1	4.5	5	1.5	4.5	5	1.5	4.5	5	1.5	4.5	5	1.5
1985	0.5	0	0	3	2.5	0	5	5	1	5	5	1	5	5	1	5	5	1
1986	0	0	0	0	1.5	0	2	5	0.5	2	5	0.5	2	5	0.5	2	5	0.5
1987	0	0	0	0.5	2.5	0	5	5	0.5	5	5	0.5	5	5	0.5	5	5	0.5
1988	0	0	0	3	2.5	0	3	2.5	0.5	4.5	5	0.5	4.5	5	0.5	3.5	2.5	0
1989	0	0	0	2	1.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0
1990	0	0	0	2.5	1.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0	3.5	2.5	0
1991	0	0	0	0	1.5	0	1	2.5	0	1	2.5	0	1	2.5	0	1	2.5	0
1992	0	0	0	0	1.5	0	2	2.5	0	2	2.5	0	2	2.5	0	2	2.5	0
1993	0	0	0	3	2.5	0.5	5.5	5	2.5	5.5	5	2.5	5.5	5	2.5	5.5	5	3

TABLE 3A
SUMMARY OF PASSAGE DAYS GENERATED
FOR EIR ALTERNATIVES [1)]
JANUARY THROUGH APRIL

YEAR	Hydrologic Year Type Classification [2)]	ALT 1 # of Passage Days [3)]	ALT 1 Indicator of > 14 days	ALT 2 # of Passage Days	ALT 2 Addtl Days from Alt 1	ALT 2 Indicator of > 14 days	ALT 3A # of Passage Days	ALT 3A Addtl Days from Baseline	ALT 3A Indicator of > 14 days	ALT 3B # of Passage Days	ALT 3B Addtl Days from Baseline	ALT 3B Indicator of > 14 days	ALT 3C # of Passage Days	ALT 3C Addtl Days from Baseline	ALT 3C Indicator of > 14 days	ALT 4A&B # of Passage Days	ALT 4A&B Addtl Days from Baseline	ALT 4A&B Indicator of > 14 days
1942	normal	55	X	47	-8	X	42	-13	X	41	-14	X	41	-14	X	40	-15	X
1943	wet	120	X	120	0	X	120	0	X	120	0	X	120	0	X	120	0	X
1944	wet	90	X	90	0	X	91	1	X	91	1	X	91	1	X	89	-1	X
1945	wet	65	X	66	1	X	66	1	X	66	1	X	66	1	X	66	1	X
1946	normal	33	X	33	0	X	25	-8	X	25	-8	X	23	-10	X	7	-26	
1947	normal	0		0	0		0	0		0	0		0	0		0	0	
1948	dry	0		0	0		0	0		0	0		0	0		0	0	
1949	dry	1		1	0		14	13	X	14	13	X	14	13	X	15	14	X
1950	dry	0		0	0		14	14	X	14	14	X	14	14	X	14	14	X
1951	dry	0		0	0		0	0		0	0		0	0		0	0	
1952	wet	76	X	76	0	X	76	0	X	73	-3	X	73	-3	X	73	-3	X
1953	normal	3		5	2		19	16	X	18	15	X	18	15	X	19	16	X
1954	normal	5		9	4		23	18	X	24	19	X	24	19	X	24	19	X
1955	dry	0		0	0		0	0		0	0		0	0		1	1	
1956	normal	9		11	2		11	2		11	2		11	2		11	2	
1957	dry	0		0	0		0	0		0	0		0	0		0	0	
1958	wet	66	X	68	2	X	70	4	X	70	4	X	70	4	X	70	4	X
1959	normal	2		4	2		15	13	X	15	13	X	15	13	X	15	13	X
1960	dry	1		1	0		15	14	X	15	14	X	15	14	X	15	14	X
1961	dry	0		0	0		0	0		0	0		0	0		0	0	
1962	wet	32	X	39	7	X	42	10	X	42	10	X	42	10	X	42	10	X
1963	dry	4		5	1		6	2		6	2		6	2		6	2	
1964	dry	0		0	0		0	0		0	0		0	0		0	0	
1965	normal	4		5	1		5	1		5	1		5	1		5	1	
1966	wet	9		11	2		11	2		11	2		11	2		11	2	
1967	wet	98	X	97	-1	X	97	-1	X	97	-1	X	97	-1	X	97	-1	X
1968	dry	1		1	0		15	14	X	15	14	X	15	14	X	15	14	X
1969	wet	104	X	104	0	X	104	0	X	104	0	X	104	0	X	104	0	X
1970	normal	10		9	-1		17	7	X	17	7	X	17	7	X	17	7	X
1971	normal	0		0	0		1	1		1	1		1	1		1	1	
1972	dry	0		0	0		0	0		0	0		0	0		0	0	
1973	wet	85	X	86	1	X	87	2	X	87	2	X	87	2	X	87	2	X
1974	normal	37	X	28	-9	X	13	-24		12	-25		12	-25		10	-27	
1975	normal	68	X	67	-1	X	74	6	X	74	6	X	74	6	X	74	6	X
1976	dry	1		1	0		16	15	X	16	15	X	16	15	X	16	15	X
1977	dry	0		0	0		0	0		0	0		0	0		0	0	
1978	wet	92	X	92	0	X	92	0	X	92	0	X	92	0	X	91	-1	X
1979	wet	86	X	85	-1	X	84	-2	X	84	-2	X	81	-5	X	76	-10	X
1980	wet	92	X	95	3	X	95	3	X	95	3	X	95	3	X	95	3	X
1981	normal	10		11	1		22	12	X	22	12	X	22	12	X	22	12	X
1982	normal	6		6	0		19	13	X	19	13	X	19	13	X	19	13	X
1983	wet	100	X	100	0	X	100	0	X	100	0	X	100	0	X	100	0	X
1984	normal	60	X	60	0	X	60	0	X	60	0	X	60	0	X	60	0	X
1985	dry	0		0	0		0	0		0	0		0	0		0	0	
1986	wet	62	X	61	-1	X	62	0	X	62	0	X	62	0	X	57	-5	X
1987	dry	0		2	2		15	15	X	15	15	X	15	15	X	15	15	X
1988	dry	0		0	0		15	15	X	15	15	X	15	15	X	15	15	X
1989	dry	0		0	0		0	0		0	0		0	0		0	0	
1990	dry	0		0	0		0	0		0	0		0	0		0	0	
1991	normal	9		11	2		11	2		11	2		11	2		11	2	
1992	wet	26	X	28	2	X	29	3	X	29	3	X	29	3	X	31	5	X
1993	wet	120	X	120	0	X	120	0	X	120	0	X	120	0	X	120	0	X
AVG 42-93		32		32			35			35			35			34		
SUM 42-93			21			21			33			33			33			32
			40%			40%			63%			63%			63%			62%

Notes
1) based on Table 1, 10/12/2000, received from URS
2) A wet year is the third of the years analyzed with greatest inflow inf Lake Cachuma, normal years were the middle third of years, and dry years were the third of years with the lowest inflow into Lake Cachuma using USGS Los Laureles gage data.
3) Passage days are defined as number of days when flows at Solvang were 25 cfs or greater, January through April

TABLE 3B
SUMMARY OF PASSAGE DAYS GENERATED
FOR EIR ALTERNATIVES [1)]
JANUARY THROUGH APRIL
In Years in Which Passage Supplementation Releases Would be Made

		Alt 1		Alt 2			Alt 3A			Alt 3B			Alt 3C			Alt 4A&B		
YEAR	Hydrologic Year Type Classification [2)]	# of Passage Days [3)]	Indicator of > 14 days	# of Passage Days [4)]	Addtl Days from Alt 1	Indicator of > 14 days	# of Passage Days	Addtl Days from Alt 1	Indicator of > 14 days	# of Passage Days	Addtl Days from Alt 1	Indicator of > 14 days	# of Passage Days	Addtl Days from Alt 1	Indicator of > 14 days	# of Passage Days	Addtl Days from Alt 1	Indicator of > 14 days
1949	dry	1		1	0		14	13	X	14	13	X	14	13	X	15	14	X
1950	dry	0		0	0		14	14	X	14	14	X	14	14	X	14	14	X
1953	normal	3		5	2		19	16	X	18	15	X	18	15	X	19	16	X
1954	normal	5		9	4		23	18	X	24	19	X	24	19	X	24	19	X
1959	normal	2		4	2		15	13	X	15	13	X	15	13	X	15	13	X
1960	dry	1		1	0		15	14	X	15	14	X	15	14	X	15	14	X
1968	dry	1		1	0		15	14	X	15	14	X	15	14	X	15	14	X
1970	normal	10		9	-1		17	7	X	17	7	X	17	7	X	17	7	X
1975	normal	68	X	67	-1	X	74	6	X	74	6	X	74	6	X	74	6	X
1976	dry	1		1	0		16	15	X	16	15	X	16	15	X	16	15	X
1981	normal	10		11	1		22	12	X	22	12	X	22	12	X	22	12	X
1982	normal	6		6	0		19	13	X	19	13	X	19	13	X	19	13	X
1987	dry	0		2	2		15	15	X	15	15	X	15	15	X	15	15	X
1988	dry	0		0	0		15	15	X	15	15	X	15	15	X	15	15	X
AVG 42-93		8		8			21	13		21	0		21	0		21	0	
SUM 42-93			1			1			14			14			14			14
			7%			7%			100%			100%			100%			100%

Notes
1) based on Table 1, 10/12/2000, received from URS
2) A wet year is the third of the years analyzed with greatest inflow inf Lake Cachuma, normal years were the middle third of years, and dry years were the third of years with the lowest inflow into Lake Cachuma using USGS Los Laureles gage data.
3) Passage days are defined as number of days when flows at Solvang were 25 cfs or greater, January through April

TECHNICAL M E M O R A N D U M No. 3

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TO: John Gray
URS Corp., Santa Barbara, CA

DATE: February 23, 2001
rev. December 22, 2001

FROM: Curtis Lawler

JOB NO.: 1815

RE: **Hydrologic Analyses of Surface Water Salinity**

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1. INTRODUCTION

This third technical memorandum includes DEIR hydrologic impact analyses concerning surface water salinity for the seven alternatives identified for the Cachuma Water Rights EIR. The previous draft technical memoranda (RE: Impacts of EIR Alternatives Using the Santa Ynez River Hydrology Model, 12/22/2000, rev. 12/22/2001 and RE: Daily Flows for Use in Assessing Impacts on Rainbow Trout/ Steelhead, 1/16/2001, rev. 12/22/2001) provide a detailed discussion on: (a) how these alternatives were incorporated into the model; (b) the results concerning Cachuma Reservoir operations, storage and elevations; (c) Santa Ynez River flows and above Narrows groundwater storage; (d) water right releases and Cachuma Project deliveries; and (e) impacts on spawning, rearing, and passage for rainbow trout/steelhead. Included in this memorandum are the DEIR hydrologic impact analyses for:

- Effects on salinity in Cachuma Reservoir
- Effects on salinity in the surface flow at the Narrows

The focus of this salinity analysis is on the total dissolved solids (TDS) concentration of the Santa Ynez River flow (surface flow) at the Lompoc Narrows. The Santa Ynez River passes through the Lompoc Narrows, then flows across the Lompoc Plain, where the Lompoc Plain ground water basin is located. The dissolved-solids concentration of the groundwater in the central and western Lompoc plains has increased from less than 1,000 milligrams per liter in the 1940s to greater than 2,000 milligrams per liter in the 1960s (USGS, 1997). The surface water flow of Santa Ynez River reaching the Lompoc Narrows is a significant source of recharge for the Lompoc Plain aquifer. This study has been undertaken, primarily, for the purpose of determining the impacts, if any, of the Cachuma Project operations (including SWP water deliveries) on the dissolved-solids concentrations of surface flow at the Lompoc Narrows.

Separate technical memoranda are provided to you on impacts of Santa Ynez River water salinity in the Lompoc ground water basin for the EIR alternatives using the Lompoc groundwater models (USGS and HCI).

2. METHODOLOGY FOR MODELING SALINITY IN SANTA YNEZ RIVER FROM CACHUMA RESERVOIR TO LOMPOC NARROWS

The methodology used to determine the impacts of the EIR alternatives on surface water salinity includes the use of Santa Ynez River Hydrology Model (SYRHM). Lompoc Basin ground-water models, which are used in conjunction with the results from this surface water model, are run for the periods 1942-1994 (HCI) and 1941-1988 (USGS). The SYRHM salinity model was developed and includes analyses for the overlapping time period of 1942-1993.

2.1 FLOW AND SALT BALANCE

Two basic principles were employed in determining the TDS of the Santa Ynez River at Lompoc Narrows: water balance and salt balance. Figure 1 shows the surface flow components in the water balance as used in the SYRHM. For each of these surface flow components, a surface water salt flux was assigned as part of the salt balance.

Figure 2 shows the key gaged salinity locations and corresponding sub-areas. The key gaged salinity locations are described below (Table 1) and were used in the model calibration and verification process.

TABLE 1
KEY TO SALINITY LOCATIONS FOR
TDS DATA IN SANTA YNEZ RIVER WATERSHED USED TO
DEVELOP SALT LOADING RELATIONSHIPS

LOCATION	NUMBER OF MEASUREMENTS TDS	EC W/O TDS	PERIOD OF RECORD AVAILABLE	SOURCES
1. SantaYnez River below Los Laureles Canyon	64	21	1951-54, 73, 80, 89, 91-98	USGS
2. Santa Cruz Creek	65	1	1980, 92-98	USGS
3. Cachuma Reservoir at Tecolote Tunnel Intake	618	3	1982-1999	City of Santa Barbara
4. Cachuma Reservoir Near Dam	388	66	1958-1999	USBR, DWR, Lompoc
5. Santa Ynez River near Solvang	223	121	1951-89, 91-98	USGS, DWR, Lompoc
6. Salsipuedes Creek near Lompoc	241	2	1971, 77-98	USGS
7. Santa Ynez River at Narrows near Lompoc	235	8	1962-64, 66-70, 72-88, 91-98	USGS, Lompoc

For each of the five sub-areas shown in Figure 2, input files were created which include loading of dissolved solids into the system based on flow and salt relationships at one of the above gaged locations. Thus, all salinity-flow relationships used are based upon empirical data that exist specifically in the Santa Ynez watershed for tributaries both above and below Cachuma Reservoir. Figures 3a-d show the flow-salt loading relationships per drainage area using actual gaged flow and measured TDS sampling at four key stations.

- Santa Ynez River at Los Laureles
- Santa Cruz Creek near Santa Ynez
- Santa Ynez River at Solvang when Cachuma is not releasing or spilling
- Salsipuedes Creek near Lompoc

Each of the gaging stations corresponds to a sub-area from which the calculated dissolved solids mass is used as an input just like flow accretions are currently utilized in the SYRHM. Due to lack of water quality data for tributaries from Alisal Bridge to Narrows, the flow-salt loading relationship of Santa Ynez River at Solvang when Cachuma is not releasing or spilling was used in combination with the flow-salt loading relationship for the Salsipuedes Creek for this sub-area due to similarities in geologic and hydrologic characteristics.

Because the SYRHM uses a monthly time-step, it was necessary to develop an algorithm that uses the monthly flow input (termed "accretion" files in the Santa Ynez River Hydrology Model manual) and proportions the amount of monthly flow on a daily basis. Daily flows for the period from 1942 through 1993 were calculated separately in an Excel spreadsheet by distributing the monthly accretions from the input files to the pattern of historical daily gaged flows in Salsipuedes Creek for inputs below Cachuma Reservoir and to the pattern of historical daily gaged flows in Santa Cruz Creek for inputs above Cachuma Reservoir. The total volume of water on a monthly basis remained unchanged as provided in the SYRHM. Table 2 shows an example of how flows and salt loads are generated on a daily basis with the monthly sums inputted in the SYRHM.

The results from the SYRHM show that when using the flow and salt loading relationships based on available data, the TDS would be consistently overestimated in Cachuma Reservoir by up to 150 mg/L. In this process, it was discovered that the key factor in modeling TDS in Cachuma Reservoir is the salinity of storm events. However, there are only a few TDS data available for high flow events. Therefore, the salinity of high flows was adjusted to match the observed TDS in the reservoir. This was achieved by reducing all dissolved solid inflows by 15% when the average monthly combined inflow into Lake Cachuma was greater than 75 cfs. After this high flow adjustment, the simulated TDS matches the observed TDS quite well with a standard deviation of 50 mg/L or 9% (see Figure 4). Conceptually, the rationale for adjusting high flows is based on lack of TDS data at high flows and lack of instantaneous flow data.

2.2 ALISAL TO NARROWS SALINITY INCREASE

Another source of salt loading was discovered when WR89-18 releases were made. Increases in TDS concentrations have been observed, but tributary runoff does not exist or is insignificant when

TABLE 2
EXAMPLE OF HOW DAILY FLOWS USED TO CREATE
SALT MASS INPUT FILES
FOR SYRHM

DATE	Salsipuedes Flow USGS ID 1132500 cfs	Salsipuedes SRYHM Accretion Flow Acre-feet	Salsipuedes Salt Mass tons
4/1/41	481	954	497
4/2/41	310	615	356
4/3/41	200	397	255
4/4/41	713	1,414	670
4/5/41	300	595	347
4/6/41	206	409	261
4/7/41	181	359	236
4/8/41	160	317	215
4/9/41	150	298	205
4/10/41	208	413	263
4/11/41	456	904	477
4/12/41	139	276	193
4/13/41	120	238	173
4/14/41	105	208	156
4/15/41	96	190	146
4/16/41	90	179	139
4/17/41	84	167	132
4/18/41	78	155	125
4/19/41	72	143	117
4/20/41	65	129	108
4/21/41	61	121	103
4/22/41	60	119	102
4/23/41	57	113	98
4/24/41	55	109	95
4/25/41	53	105	93
4/26/41	50	99	89
4/27/41	46	91	83
4/28/41	44	87	81
4/29/41	44	87	81
4/30/41	58	115	99
SUM		**9,406**	**5,992**

These monthly totals are then inputed directly into SYRHM

water right releases are made, so the concept of channel loading (currently termed "Alisal to Narrows Salinity Increase" or ANSI) as the cause and nature of the increase of TDS was examined. The nature of the ANSI is complex and is currently handled in the surface water salinity model using the empirical relationship of the ANSI and surface flow based on the available data. However, the dissolved-solids data during water right releases are limited. Using the limited observations (13 samples) made by the USGS during water rights releases and performing a water and salt balance calculation, the average flux of the ANSI is estimated to be about 25 tons/day. In addition, the amount of flux of the ANSI is proportional to the flow as shown in Figure 5. Figure 5 also shows the flow-ANSI relationships used to calculate the amount of salt input in the Buellton, East Santa Rita, and West Santa Rita sub-areas as used in the SYRHM due to the ANSI occurrence.

2.3 Surface Water Salinity Model Verification

In order to verify SYRHM accuracy regarding simulating TDS at the Narrows, a historical period was run from 1942-1993 (52 years) using historical Cachuma Reservoir operations and downstream water use. This verification run of the SYRHM allows for the opportunity to evaluate the major assumption used in this modeling effort of surface water salinity. The major factor affecting salt flux is the relationship of surface flow with tons of salt as shown in Figures 3a-d.

Because continuous recording of TDS at the Narrows does not exist for the period 1942-1993, the historic monthly salt outflows at the Narrows was independently estimated by using the measured daily flow at the Narrows and the flow-salt loading relationships (based on actual measurements) at the Narrows with and without Cachuma releases (see Figure 6a). This method of calculating salt flux is referred to as the "estimated" historic salt flux at the Narrows. Figure 6b shows that the match between the estimated salt flux and the measured salt flux for the Narrows is very good.

The method of calculating salt flux by the SYRHM is referred to as the model "simulated" salt flux at the Narrows. This method performs the water and salt balance as explained above. Figure 7a shows that the match between the simulated and estimated monthly salt flux at the Lompoc Narrows is very good. The correlation between the plotted points and the 45-degree line is determined as $R^2 = 0.9618$. Figure 7b shows that the TDS-flow relationships as simulated by the SYRHM are quite reasonable when compared with the estimated average monthly and measured instantaneous TDS at the Lompoc

Narrows. Furthermore, Figure 7c shows that the frequency of TDS in flows at the Narrows as simulated by the SYRHM compares favorably with estimated average monthly and measured instantaneous TDS values.

2.4 WATER QUALITY TECHNICAL ADVISORY COMMITTEE

Starting in October 22, 1999, Stetson Engineers has conducted several water quality technical advisory committee meetings for the purpose of pooling raw data and methodologies for modeling salinity in the Santa Ynez River watershed. Stetson would like to thank the following 13 participants of the water quality technical advisory committee for sharing data and contributing in developing concepts for the salinity modeling: Jon Ahlroth, County Water Agency; Chuck Evans, Cachuma Conservation Release Board; Chuck Howard, U.S. Bureau of Reclamation; Steve Mack, City of Santa Barbara; Bruce Wales, Santa Ynez River Water Conservation District; Jeff Lefkoff, consultant for City of Lompoc; Barry Hecht, Jonathan Owens, and Bonnie Mallory, Balance Hydrologics Consulting; Ali Shahroody, Peter Pyle, Martin Liu, Curtis Lawler, and Suleiman Mirzad, Stetson Engineers.

2.5 LIMITATIONS OF THE SURFACE WATER SALINITY MODELING

Of important note is that technical issues regarding the surface water salinity modeling have not reached closure for the above TAC participants (TAC minutes 2000-2001). Currently there are some unresolved technical issues regarding the SYRHM and surface water salinities as indicated by TAC members (Balance Hydrologics, 6/2001). The salinity modeling is also a part of the Lompoc-South Coast negotiations as well as the Cachuma water rights EIR. Several committee members feel technical issues need further review and evaluation before these latest modeling works are used for resolving the question of how the historical operations of the Cachuma Project affected, if at all, the ground water quality of the Lompoc Plain and/or the City of Lompoc. Therefore, the TAC currently supports the application of the surface water salinity modeling for the EIR alternatives and recommends additional work for the Lompoc-South Coast negotiations. Additional work by TAC may or may not affect the results of the current surface water salinity modeling. The current methodology employed in determining surface water salinity in the Santa Ynez River as described above is the best available information to determine the surface water salinity impacts for the EIR alternatives.

The intended use of the SYRHM is for comparative purposes between the EIR alternatives. The simulated salinity data generated from the SYRHM is not meant to be predictive, but it is used as an analytical tool for statistical and comparative purposes. Since the model is used for comparative analyses, some of the inherent inaccuracies in the model are expected to cancel out when comparing the results of one scenario with another.

3. STATE WATER PROJECT IMPORTS

The assumptions regarding the quantity of State Water Project (SWP) imports are discussed in the first technical memorandum (12/22/2000, rev. 12/22/2001) in sections 2.B.3 State Water Project Imports, 2.B.4 Below Narrows Exchange Project (BNE), and 3.G State Water Project Deliveries. A summary of the assumed SWP deliveries for each EIR alternative is shown in Table 3. Annual delivery amounts under Alternatives 2, 3A, 3B, 3C, 4A, and 4B are shown in Tables 4a through e. Alternatives 2, 3A, 3B, 3C, 4A, and 4B would import 10,135 to 10,369 acre-feet per year of SWP water under South Coast contracts or around 74 to 75% of their full entitlement.

3.1 OPTIONS A AND B OF ALTERNATIVE 4, THE BELOW NARROWS EXCHANGE (BNE)

Currently, the BNE is incorporated into the SYRHM by using average Below Narrows deliveries of 1,771 acre-feet per year as an amount for a possible exchange of SWP water with the South Coast member units. Due to Delta shortages in 1992 and the exchange with ID No. 1, SWP water is not available to meet the entire exchange amount of 1,771 acre-feet. The shortage of SWP to meet the BNE in this year (34 acre-feet) is small but could become larger if there are changes in exchange assumptions.

Under Option A of Alternative 4, exchanged BNA water would be provided by direct delivery of SWP water to the City of Lompoc and will be incorporated into the Lompoc groundwater models. Under Option B of Alternative 4, exchanged BNA water would be provided by discharging SWP water to the river near Lompoc for recharge. Under Option B, it was assumed that SWP water would be released for recharge at Lompoc Narrows for practical use in modeling. Also, SWP BNE imports were assumed not to be recharged under Option B at the Narrows in the months of December through June due to imprint of Delta water during the endangered steelhead

TABLE 3
SUMMMARY OF STATE WATER PROJECT DELIVERIES
AVERAGE FOR PERIOD 1942-1993
(ACRE-FEET/YEAR)

EIR Alternative	ID No. 1 Exchange [1)]	BNA Exchange [2)]	SWP in Cachuma [3)]	SWP in Outlet Works [4)]	Total Imports under South Coast Contracts	Total Imports as a Percentage of 13,750 AF
1	0	0	0	0	0	
2	2,497	0	5,849	1,789	10,135	74%
3A	2,472	0	5,878	1,802	10,152	74%
3B	2,482	0	5,844	1,841	10,167	74%
3C	2,497	0	5,836	1,866	10,199	74%
4 A&B	2,501	1,770	4,853	1,245	10,369	75%

1) Based on shortages in Cachuma Project estimated by the SYRHM 0498
2) Based on exchange of 1,771 AF each year; actual Below Narrows Exchange might vary in timing and amount.
3) Based on shortages in SWP from DWRSIM and no deliveries when Cachuma is spilling from SYRHM
4) SWP reductions in delivery due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases.

TABLE 4A
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 2
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2]	ID No. 1 Exchange Shortage [3]	Reduced Delivery due to Spill [4]	ID No. 1 Exchange	SWP in Cachuma [5]	SWP in Outlet Works [6]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	2,370	2,571	8,937	641	12,149
1943	13,750	2,571	89%	100%	3,653	2,571	6,002	0	8,573
1944	13,750	2,571	92%	100%	3,487	2,571	7,623	255	10,449
1945	13,750	2,571	90%	100%	2,448	2,571	7,811	1,285	11,667
1946	13,750	2,571	88%	100%	2,012	2,571	5,313	2,801	10,685
1947	13,750	2,571	75%	100%	0	2,571	3,485	4,260	10,316
1948	13,750	2,571	67%	100%	1,351	2,571	4,856	1,744	9,171
1949	13,750	2,571	65%	92%	914	2,372	5,847	753	8,972
1950	13,750	2,571	67%	77%	1,118	1,989	6,419	757	9,165
1951	13,750	2,571	88%	62%	2,788	1,590	9,919	520	12,029
1952	13,750	2,571	96%	90%	2,551	2,320	6,314	1,990	10,624
1953	13,750	2,571	90%	100%	0	2,571	7,432	2,706	12,709
1954	13,750	2,571	83%	100%	598	2,571	5,218	3,776	11,565
1955	13,750	2,571	69%	100%	1,898	2,571	4,829	2,251	9,651
1956	13,750	2,571	90%	98%	2,528	2,509	8,401	1,460	12,370
1957	13,750	2,571	88%	87%	2,934	2,244	7,355	3,018	12,617
1958	13,750	2,571	90%	94%	4,732	2,414	7,039	285	9,737
1959	13,750	2,571	88%	100%	0	2,571	6,959	2,601	12,131
1960	13,750	2,571	63%	100%	222	2,571	3,826	2,097	8,494
1961	13,750	2,571	61%	100%	750	2,568	5,140	695	8,403
1962	13,750	2,571	78%	100%	1,712	2,569	6,746	1,379	10,694
1963	13,750	2,571	94%	100%	1,316	2,571	8,810	1,252	12,633
1964	13,750	2,571	88%	100%	1,388	2,571	8,772	1,040	12,383
1965	13,750	2,571	82%	98%	2,180	2,524	6,134	2,114	10,772
1966	13,750	2,571	96%	99%	0	2,557	9,164	1,946	13,667
1967	13,750	2,571	96%	100%	4,224	2,571	3,712	2,916	9,199
1968	13,750	2,571	89%	100%	1,717	2,571	5,816	4,087	12,474
1969	13,750	2,571	93%	100%	5,477	2,571	4,630	1,070	8,271
1970	13,750	2,571	89%	100%	1,080	2,571	6,308	3,061	11,940
1971	13,750	2,571	94%	100%	1,526	2,571	5,042	5,367	12,980
1972	13,750	2,571	88%	100%	1,214	2,571	4,464	4,595	11,630
1973	13,750	2,571	82%	100%	1,794	2,571	6,373	1,320	10,264
1974	13,750	2,571	94%	100%	1,890	2,571	7,104	2,293	11,968
1975	13,750	2,571	96%	100%	2,882	2,571	8,420	291	11,282
1976	13,750	2,571	88%	100%	22	2,571	6,391	3,457	12,419
1977	13,750	2,571	33%	100%	56	2,571	1,495	524	4,590
1978	13,750	2,571	68%	100%	2,080	2,571	4,704	0	7,275
1979	13,750	2,571	85%	100%	2,755	2,571	6,695	431	9,697
1980	13,750	2,571	82%	100%	3,438	2,571	5,531	411	8,513
1981	13,750	2,571	83%	100%	1,238	2,571	7,151	1,926	11,648
1982	13,750	2,571	94%	100%	808	2,571	6,899	3,416	12,886
1983	13,750	2,571	100%	100%	5,254	2,571	4,901	1,025	8,497
1984	13,750	2,571	100%	100%	3,523	2,571	6,553	2,695	11,819
1985	13,750	2,571	96%	100%	1,862	2,571	7,176	2,957	12,704
1986	13,750	2,571	81%	100%	2,198	2,571	6,219	1,071	9,861
1987	13,750	2,571	69%	100%	300	2,571	5,850	1,130	9,551
1988	13,750	2,571	43%	100%	0	2,571	2,121	1,228	5,920
1989	13,750	2,571	58%	95%	1,293	2,448	3,163	2,309	7,920
1990	13,750	2,571	46%	81%	1,212	2,077	2,776	1,092	5,944
1991	13,750	2,571	29%	81%	26	2,082	1,336	1,049	4,467
1992	13,750	2,571	31%	96%	108	2,478	1,143	578	4,200
1993	13,750	2,571	76%	100%	3,729	2,571	3,841	1,089	7,501
AVG	13,750	2,571	80%	97%	1,820	2,497	5,849	1,789	10,135

NOTES
1) Based on total South Coast contractual agreements with CCWA
2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities.
The percentages in this table do not include the option of purchasing the 10% drought buffer.
3) Based on shortages in Cachuma Project estimated by the SYRHM 0498
4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills
5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.
6) Limited to being 50% of outlet releases

TABLE 4B
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 3A
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand 1)	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement 2)	ID No. 1 Exchange Shortage 3)	Reduced Delivery due to Spill 4)	ID No. 1 Exchange	SWP in Cachuma 5)	SWP in Outlet Works 6)	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	1,602	2,571	9,059	519	12,149
1943	13,750	2,571	89%	100%	3,653	2,571	6,002	0	8,573
1944	13,750	2,571	92%	100%	2,157	2,571	7,878	0	10,449
1945	13,750	2,571	90%	100%	1,410	2,571	7,308	1,121	11,000
1946	13,750	2,571	88%	100%	678	2,571	5,399	3,382	11,352
1947	13,750	2,571	75%	100%	0	2,571	3,485	4,260	10,316
1948	13,750	2,571	67%	100%	0	2,571	4,908	1,692	9,171
1949	13,750	2,571	65%	90%	0	2,305	5,613	1,054	8,972
1950	13,750	2,571	67%	71%	0	1,831	6,015	1,319	9,164
1951	13,750	2,571	88%	54%	0	1,390	10,120	520	12,029
1952	13,750	2,571	96%	88%	2,561	2,274	6,824	1,513	10,610
1953	13,750	2,571	90%	100%	0	2,571	6,423	3,416	12,410
1954	13,750	2,571	83%	100%	0	2,571	4,815	4,075	11,461
1955	13,750	2,571	69%	100%	0	2,571	3,780	3,809	10,160
1956	13,750	2,571	90%	96%	0	2,466	7,736	1,604	11,806
1957	13,750	2,571	88%	83%	0	2,143	6,536	3,351	12,030
1958	13,750	2,571	90%	92%	1,639	2,374	8,111	285	10,770
1959	13,750	2,571	88%	100%	0	2,571	6,180	3,279	12,030
1960	13,750	2,571	63%	100%	0	2,571	4,467	1,557	8,595
1961	13,750	2,571	61%	97%	0	2,499	5,201	701	8,401
1962	13,750	2,571	78%	99%	0	2,539	6,437	1,719	10,695
1963	13,750	2,571	94%	100%	0	2,571	9,225	1,190	12,986
1964	13,750	2,571	88%	100%	0	2,571	8,415	1,044	12,030
1965	13,750	2,571	82%	95%	0	2,446	5,641	3,182	11,268
1966	13,750	2,571	96%	99%	0	2,534	8,695	1,952	13,181
1967	13,750	2,571	96%	100%	4,224	2,571	2,492	3,888	8,951
1968	13,750	2,571	89%	100%	0	2,571	6,867	2,788	12,226
1969	13,750	2,571	93%	100%	3,869	2,571	5,278	1,077	8,926
1970	13,750	2,571	89%	100%	0	2,571	6,669	2,986	12,226
1971	13,750	2,571	94%	100%	0	2,571	5,439	4,976	12,986
1972	13,750	2,571	88%	100%	0	2,571	4,523	4,936	12,030
1973	13,750	2,571	82%	100%	1,246	2,571	6,651	797	10,019
1974	13,750	2,571	94%	100%	746	2,571	7,276	2,393	12,240
1975	13,750	2,571	96%	100%	1,520	2,571	8,410	674	11,655
1976	13,750	2,571	88%	100%	0	2,571	7,505	1,954	12,030
1977	13,750	2,571	33%	100%	0	2,571	1,640	368	4,579
1978	13,750	2,571	68%	100%	2,080	2,571	4,704	0	7,275
1979	13,750	2,571	85%	100%	1,953	2,571	6,740	386	9,697
1980	13,750	2,571	82%	100%	2,666	2,571	6,028	0	8,599
1981	13,750	2,571	83%	100%	0	2,571	6,719	2,171	11,461
1982	13,750	2,571	94%	100%	0	2,571	5,824	4,590	12,985
1983	13,750	2,571	100%	100%	5,254	2,571	5,926	0	8,497
1984	13,750	2,571	100%	100%	2,403	2,571	7,753	1,024	11,348
1985	13,750	2,571	96%	100%	1	2,571	7,687	2,917	13,175
1986	13,750	2,571	81%	100%	1,220	2,571	6,230	1,060	9,861
1987	13,750	2,571	69%	100%	0	2,571	6,071	909	9,551
1988	13,750	2,571	43%	100%	0	2,571	1,881	1,468	5,920
1989	13,750	2,571	58%	92%	1	2,369	3,619	2,032	8,020
1990	13,750	2,571	46%	74%	0	1,899	3,449	959	6,306
1991	13,750	2,571	29%	75%	0	1,927	963	1,119	4,009
1992	13,750	2,571	31%	95%	0	2,447	1,170	587	4,204
1993	13,750	2,571	76%	100%	2,999	2,571	3,847	1,083	7,501
AVG	13,750	2,571	80%	96%	844	2,472	5,878	1,802	10,152

NOTES

1) Based on total South Coast contractual agreements with CCWA

2) Based on DWR's SWP model DWRSIM v. 9.06T

Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan) and no new storage facilities.

The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases) are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

TABLE 4C
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 3B
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2]	ID No. 1 Exchange Shortage [3]	Reduced Delivery due to Spill [4]	ID No. 1 Exchange	SWP in Cachuma [5]	SWP in Outlet Works [6]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	1,602	2,571	9,058	520	12,149
1943	13,750	2,571	89%	100%	3,653	2,571	6,002	0	8,573
1944	13,750	2,571	92%	100%	2,157	2,571	7,878	0	10,449
1945	13,750	2,571	90%	100%	1,410	2,571	7,308	1,121	11,000
1946	13,750	2,571	88%	100%	678	2,571	4,446	4,335	11,352
1947	13,750	2,571	75%	100%	0	2,571	3,485	4,260	10,316
1948	13,750	2,571	67%	100%	0	2,571	4,991	1,609	9,171
1949	13,750	2,571	65%	91%	0	2,333	5,886	757	8,976
1950	13,750	2,571	67%	73%	0	1,883	5,997	1,289	9,168
1951	13,750	2,571	88%	56%	0	1,445	10,065	520	12,030
1952	13,750	2,571	96%	89%	1,779	2,286	7,147	1,965	11,398
1953	13,750	2,571	90%	100%	0	2,571	6,497	3,342	12,410
1954	13,750	2,571	83%	100%	0	2,571	3,932	4,958	11,461
1955	13,750	2,571	69%	100%	0	2,571	3,780	3,199	9,550
1956	13,750	2,571	90%	97%	0	2,498	8,357	1,561	12,416
1957	13,750	2,571	88%	86%	0	2,200	6,481	3,351	12,031
1958	13,750	2,571	90%	93%	1,637	2,393	8,101	285	10,779
1959	13,750	2,571	88%	100%	0	2,571	6,180	3,279	12,030
1960	13,750	2,571	63%	100%	0	2,571	3,936	2,088	8,595
1961	13,750	2,571	61%	98%	0	2,531	5,173	698	8,402
1962	13,750	2,571	78%	99%	0	2,553	6,418	1,718	10,689
1963	13,750	2,571	94%	100%	0	2,571	9,225	1,190	12,986
1964	13,750	2,571	88%	100%	0	2,571	8,415	1,044	12,030
1965	13,750	2,571	82%	96%	0	2,469	5,599	3,198	11,266
1966	13,750	2,571	96%	99%	0	2,541	8,685	1,950	13,176
1967	13,750	2,571	96%	100%	4,224	2,571	2,492	3,888	8,951
1968	13,750	2,571	89%	100%	0	2,571	7,045	2,610	12,226
1969	13,750	2,571	93%	100%	3,869	2,571	5,278	1,077	8,926
1970	13,750	2,571	89%	100%	0	2,571	6,669	2,986	12,226
1971	13,750	2,571	94%	100%	0	2,571	4,685	5,730	12,986
1972	13,750	2,571	88%	100%	1	2,571	4,257	5,202	12,030
1973	13,750	2,571	82%	100%	1,246	2,571	6,651	797	10,019
1974	13,750	2,571	94%	100%	746	2,571	7,270	2,398	12,239
1975	13,750	2,571	96%	100%	1,520	2,571	8,400	684	11,655
1976	13,750	2,571	88%	100%	0	2,571	7,858	1,601	12,030
1977	13,750	2,571	33%	100%	0	2,571	1,640	368	4,579
1978	13,750	2,571	68%	100%	2,080	2,571	4,704	0	7,275
1979	13,750	2,571	85%	100%	1,953	2,571	6,726	400	9,697
1980	13,750	2,571	82%	100%	2,666	2,571	6,028	0	8,599
1981	13,750	2,571	83%	100%	0	2,571	7,019	1,871	11,461
1982	13,750	2,571	94%	100%	0	2,571	5,824	4,590	12,985
1983	13,750	2,571	100%	100%	5,254	2,571	5,926	0	8,497
1984	13,750	2,571	100%	100%	2,403	2,571	7,752	1,025	11,348
1985	13,750	2,571	96%	100%	1	2,571	7,687	2,917	13,175
1986	13,750	2,571	81%	100%	1,220	2,571	6,228	1,062	9,861
1987	13,750	2,571	69%	100%	0	2,571	6,067	913	9,551
1988	13,750	2,571	43%	100%	0	2,571	1,881	1,468	5,920
1989	13,750	2,571	58%	93%	0	2,404	3,513	2,107	8,024
1990	13,750	2,571	46%	76%	0	1,961	3,388	953	6,302
1991	13,750	2,571	29%	77%	0	1,975	917	1,122	4,014
1992	13,750	2,571	31%	96%	0	2,457	1,105	640	4,202
1993	13,750	2,571	76%	100%	2,999	2,571	3,849	1,081	7,501
AVG	13,750	2,571	80%	97%	829	2,482	5,844	1,841	10,167

NOTES

1) Based on total South Coast contractual agreements with CCWA

2) Based on DWR's SWP model DWRSIM v. 9.06T

Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan) and no new storage facilities.

The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases) are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

TABLE 4D
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 3C
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1)]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2)]	ID No. 1 Exchange Shortage [3)]	Reduced Delivery due to Spill [4)]	ID No. 1 Exchange	SWP in Cachuma [5)]	SWP in Outlet Works [6)]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	1,602	2,571	9,057	521	12,149
1943	13,750	2,571	89%	100%	2,768	2,571	6,887	0	9,458
1944	13,750	2,571	92%	100%	2,157	2,571	7,878	0	10,449
1945	13,750	2,571	90%	100%	1,410	2,571	7,308	1,121	11,000
1946	13,750	2,571	88%	100%	678	2,571	4,446	4,335	11,352
1947	13,750	2,571	75%	100%	0	2,571	3,485	4,260	10,316
1948	13,750	2,571	67%	100%	0	2,571	5,049	1,551	9,171
1949	13,750	2,571	65%	93%	0	2,393	5,630	951	8,974
1950	13,750	2,571	67%	78%	0	2,000	5,850	1,319	9,169
1951	13,750	2,571	88%	62%	0	1,582	9,931	520	12,032
1952	13,750	2,571	96%	90%	1,773	2,317	7,092	1,990	11,399
1953	13,750	2,571	90%	100%	0	2,571	6,497	3,342	12,410
1954	13,750	2,571	83%	100%	0	2,571	4,302	4,588	11,461
1955	13,750	2,571	69%	100%	1	2,571	3,868	3,112	9,551
1956	13,750	2,571	90%	98%	0	2,529	8,324	1,558	12,411
1957	13,750	2,571	88%	88%	0	2,270	6,739	3,026	12,035
1958	13,750	2,571	90%	94%	1,632	2,420	8,075	285	10,780
1959	13,750	2,571	88%	100%	0	2,571	6,180	3,279	12,030
1960	13,750	2,571	63%	100%	0	2,571	3,936	2,088	8,595
1961	13,750	2,571	61%	100%	0	2,563	5,145	695	8,403
1962	13,750	2,571	78%	100%	0	2,567	6,399	1,726	10,692
1963	13,750	2,571	94%	100%	0	2,571	9,221	1,194	12,986
1964	13,750	2,571	88%	100%	0	2,571	8,415	1,044	12,030
1965	13,750	2,571	82%	97%	0	2,497	5,557	3,216	11,270
1966	13,750	2,571	96%	99%	0	2,549	8,680	1,948	13,177
1967	13,750	2,571	96%	100%	3,464	2,571	3,252	3,888	9,711
1968	13,750	2,571	89%	100%	0	2,571	6,871	2,784	12,226
1969	13,750	2,571	93%	100%	3,870	2,571	5,279	1,076	8,926
1970	13,750	2,571	89%	100%	0	2,571	6,669	2,986	12,226
1971	13,750	2,571	94%	100%	0	2,571	4,685	5,730	12,986
1972	13,750	2,571	88%	100%	0	2,571	4,257	5,202	12,030
1973	13,750	2,571	82%	100%	1,246	2,571	6,651	797	10,019
1974	13,750	2,571	94%	100%	746	2,571	7,166	2,502	12,239
1975	13,750	2,571	96%	100%	1,520	2,571	8,308	776	11,655
1976	13,750	2,571	88%	100%	0	2,571	7,857	1,602	12,030
1977	13,750	2,571	33%	100%	0	2,571	1,640	368	4,579
1978	13,750	2,571	68%	100%	2,080	2,571	4,704	0	7,275
1979	13,750	2,571	85%	100%	1,953	2,571	6,687	439	9,697
1980	13,750	2,571	82%	100%	2,666	2,571	6,028	0	8,599
1981	13,750	2,571	83%	100%	1	2,571	6,720	2,170	11,461
1982	13,750	2,571	94%	100%	0	2,571	5,804	4,611	12,986
1983	13,750	2,571	100%	100%	5,254	2,571	5,926	0	8,497
1984	13,750	2,571	100%	100%	2,403	2,571	7,752	1,025	11,348
1985	13,750	2,571	96%	100%	1	2,571	7,687	2,917	13,175
1986	13,750	2,571	81%	100%	1,220	2,571	6,226	1,064	9,861
1987	13,750	2,571	69%	100%	0	2,571	5,863	1,117	9,551
1988	13,750	2,571	43%	100%	0	2,571	1,334	2,015	5,920
1989	13,750	2,571	58%	95%	0	2,450	3,017	2,555	8,022
1990	13,750	2,571	46%	80%	0	2,062	3,299	944	6,304
1991	13,750	2,571	29%	80%	0	2,057	894	1,059	4,010
1992	13,750	2,571	31%	96%	0	2,472	1,097	636	4,205
1993	13,750	2,571	76%	100%	2,999	2,571	3,846	1,084	7,501
AVG	13,750	2,571	80%	97%	797	2,497	5,836	1,866	10,199

NOTES
1) Based on total South Coast contractual agreements with CCWA
2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities.
The percentages in this table do not include the option of purchasing the 10% drought buffer.
3) Based on shortages in Cachuma Project estimated by the SYRHM 0498
4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills
5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.
6) Limited to being 50% of outlet releases

TABLE 4E
SUMMMARY OF STATE WATER PROJECT DELIVERIES
FOR EIR ALTERNATIVE 4A&B
(ACRE-FEET/YEAR)

	DEMAND			SUPPLY				DELIVERY				
WATER YEAR	TOTAL SWP Demand [1]	ID No. 1 Exchange	BNA Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2]	ID No. 1 Exchange Shortage [3]	BNA Exchange Shortage	Reduced Delivery due to Spill [4]	ID No. 1 Exchange	BNA Exchange	SWP in Cachuma [5]	SWP in Outlet Works [6]	Total Imports under South Coast Contracts
1942	13,750	2,571	1,771	100%	100%	none	674	2,571	1,771	8,197	533	13,072
1943	13,750	2,571	1,771	89%	100%	none	2,260	2,571	1,771	5,619	0	9,961
1944	13,750	2,571	1,771	92%	100%	none	1,776	2,571	1,771	6,483	0	10,825
1945	13,750	2,571	1,771	90%	100%	none	1,156	2,571	1,771	5,554	1,360	11,256
1946	13,750	2,571	1,771	88%	100%	none	551	2,571	1,771	4,996	2,143	11,481
1947	13,750	2,571	1,771	75%	100%	none	0	2,571	1,771	4,328	1,641	10,311
1948	13,750	2,571	1,771	67%	100%	none	1	2,571	1,771	3,191	1,632	9,165
1949	13,750	2,571	1,771	65%	96%	none	0	2,473	1,771	4,136	597	8,977
1950	13,750	2,571	1,771	67%	82%	none	0	2,106	1,771	4,706	584	9,167
1951	13,750	2,571	1,771	88%	64%	none	0	1,636	1,771	8,107	520	12,034
1952	13,750	2,571	1,771	96%	90%	none	1,484	2,322	1,771	5,936	1,666	11,695
1953	13,750	2,571	1,771	90%	100%	none	0	2,571	1,771	5,881	2,189	12,412
1954	13,750	2,571	1,771	83%	100%	none	0	2,571	1,771	4,643	2,471	11,456
1955	13,750	2,571	1,771	69%	100%	none	0	2,571	1,771	2,819	2,385	9,546
1956	13,750	2,571	1,771	90%	99%	none	0	2,549	1,771	6,517	1,577	12,413
1957	13,750	2,571	1,771	88%	89%	none	0	2,285	1,771	4,937	3,040	12,033
1958	13,750	2,571	1,771	90%	94%	none	1,343	2,420	1,771	6,595	285	11,070
1959	13,750	2,571	1,771	88%	100%	none	0	2,571	1,771	6,280	1,410	12,032
1960	13,750	2,571	1,771	63%	100%	none	0	2,571	1,771	3,085	1,170	8,597
1961	13,750	2,571	1,771	61%	99%	none	0	2,550	1,771	3,549	534	8,404
1962	13,750	2,571	1,771	78%	100%	none	0	2,562	1,771	5,039	1,322	10,694
1963	13,750	2,571	1,771	94%	100%	none	0	2,571	1,771	7,437	1,202	12,981
1964	13,750	2,571	1,771	88%	100%	none	0	2,571	1,771	6,808	882	12,032
1965	13,750	2,571	1,771	82%	95%	none	1	2,432	1,771	4,474	2,592	11,269
1966	13,750	2,571	1,771	96%	98%	none	0	2,530	1,771	7,250	1,628	13,179
1967	13,750	2,571	1,771	96%	100%	none	2,886	2,571	1,771	4,690	1,259	10,291
1968	13,750	2,571	1,771	89%	100%	none	0	2,571	1,771	5,983	1,896	12,221
1969	13,750	2,571	1,771	93%	100%	none	3,199	2,571	1,771	4,180	1,076	9,598
1970	13,750	2,571	1,771	89%	100%	none	0	2,571	1,771	6,682	1,197	12,221
1971	13,750	2,571	1,771	94%	100%	none	0	2,571	1,771	5,923	2,716	12,981
1972	13,750	2,571	1,771	88%	100%	none	0	2,571	1,771	5,179	2,511	12,032
1973	13,750	2,571	1,771	82%	100%	none	992	2,571	1,771	5,298	635	10,275
1974	13,750	2,571	1,771	94%	100%	none	0	2,571	1,771	6,393	2,246	12,981
1975	13,750	2,571	1,771	96%	100%	none	1,266	2,571	1,771	6,343	1,225	11,910
1976	13,750	2,571	1,771	88%	100%	none	0	2,571	1,771	5,939	1,751	12,032
1977	13,750	2,571	1,771	33%	100%	none	0	2,571	1,771	195	44	4,581
1978	13,750	2,571	1,771	68%	100%	none	1,537	2,571	1,771	3,478	0	7,820
1979	13,750	2,571	1,771	85%	100%	none	1,572	2,571	1,771	5,225	513	10,080
1980	13,750	2,571	1,771	82%	100%	none	2,123	2,571	1,771	4,235	567	9,144
1981	13,750	2,571	1,771	83%	100%	none	0	2,571	1,771	5,404	1,710	11,456
1982	13,750	2,571	1,771	94%	100%	none	0	2,571	1,771	6,267	2,371	12,980
1983	13,750	2,571	1,771	100%	100%	none	4,420	2,571	1,771	4,276	708	9,326
1984	13,750	2,571	1,771	100%	100%	none	2,022	2,571	1,771	6,520	862	11,724
1985	13,750	2,571	1,771	96%	100%	none	0	2,571	1,771	6,242	2,593	13,177
1986	13,750	2,571	1,771	81%	100%	none	966	2,571	1,771	4,827	941	10,110
1987	13,750	2,571	1,771	69%	100%	none	0	2,571	1,771	4,390	814	9,546
1988	13,750	2,571	1,771	43%	100%	none	0	2,571	1,771	1,145	435	5,922
1989	13,750	2,571	1,771	58%	96%	none	0	2,460	1,771	2,297	1,492	8,019
1990	13,750	2,571	1,771	46%	81%	none	0	2,073	1,771	1,693	762	6,298
1991	13,750	2,571	1,771	29%	80%	none	0	2,044	1,771	88	108	4,011
1992	13,750	2,571	1,771	31%	96%	34	0	2,465	1,737	0	0	4,202
1993	13,750	2,571	1,771	76%	100%	none	2,333	2,571	1,771	2,902	930	8,174
AVG	13,750	2,571	1,771	80%	97%	1	626	2,501	1,770	4,853	1,245	10,369

NOTES

1) Based on total South Coast contractual agreements with CCWA

2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities.
The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

passage and spawning period. Also, SWP BNE imports were assumed not to occur when flow at the Narrows was greater than 0.5 cfs. Table 5 shows the SWP imports discharged in the Santa Ynez River at the Lompoc Narrows for recharge under Option B. Alternative 4 might still be affected by changes in exchange assumptions and additional analyses might be performed based on further refinements, if necessary.

3.2 Salinity of SWP Imports

The TDS concentration of the SWP deliveries being imported are shown in Figure 8. From 1968 to 1993, the historical measured TDS in the California Aqueduct near Kettleman City was used directly. The TDS concentration from 1942 to 1967 was estimated by using monthly average values of historic measured data (Figure 9) and average annual TDS values based on regression analysis with shortages in the Delta (Figure 10).

4. RESULTS OF SURFACE WATER SALINITY MODELING OF EIR ALTERNATIVES

4.1 Cachuma Reservoir

Figure 11 shows the Cachuma TDS for each alternative. (Note: Because Alternatives 3A and 3B are very similar to 3C, only 3C is shown on this graph and the rest of the graphs that deal with TDS). Alternative 1 has the highest TDS due to no imports of SWP. All of the TDS concentrations are very similar, except during droughts when the amount of storage in Cachuma decreases so that SWP imports become a larger percentage of the storage.

4.2 Water Rights Releases (WR 89-18)

Figure 12a shows the frequency of TDS concentrations in water rights releases directly below the dam. SWP mixing in the outlet works is limited to 50% of the WR89-18 release, and SWP imports are typically about 300 mg/L lower in TDS concentration than the TDS in Cachuma Reservoir. For these reasons, the TDS of WR89-18 releases under Alternative 2, 3A, 3B, 3C, 4A, and 4B are typically about 150 mg/L lower than Alternative 1 as shown in Figure 12a. In Alternative 4, even though no Below Narrows Account releases take place under the Below Narrows Exchange (BNE), it was still assumed to mix SWP imports in the outlet works for Above Narrows Account releases.

TABLE 5													
Alternative 4 - Below Narrows Exchange, Option B													
SWP Imports Discharged into the River near Lompoc Narrows for Recharge (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1942	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	0	0
1943	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	0	0
1944	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	0	0
1945	446	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	446	446	432	1,771
1946	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1947	446	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	446	446	432	1,771
1948	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1949	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1950	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1951	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1952	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	450	0	435	1,771
1953	446	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	446	446	432	1,771
1954	446	432	***0***	***0***	***0***	***0***	***0***	***0***	***0***	446	446	0	1,771
1955	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	450	0	435	1,771
1956	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	450	435	1,771
1957	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	450	0	435	1,771
1958	900	871	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	0	1,771
1959	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	597	597	578	1,771
1960	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	450	0	435	1,771
1961	446	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	446	446	432	1,771
1962	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	450	435	1,771
1963	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	450	435	1,771
1964	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1965	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	450	435	1,771
1966	446	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	446	446	432	1,771
1967	603	584	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	584	1,771
1968	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1969	900	871	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	0	1,771
1970	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	597	597	578	1,771
1971	446	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	446	446	432	1,771
1972	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1973	597	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	597	578	1,771
1974	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1975	603	584	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	584	1,771
1976	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	597	597	578	1,771
1977	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1978	900	871	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	0	1,771
1979	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	900	871	1,771
1980	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	450	435	1,771
1981	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	450	435	1,771
1982	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1983	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	0	0
1984	0	0	***0***	***0***	***0***	***0***	***0***	***0***	***0***	597	597	578	1,771
1985	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1986	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1987	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1988	450	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	450	0	435	1,771
1989	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1990	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1991	359	347	***0***	***0***	***0***	***0***	***0***	***0***	***0***	359	359	347	1,771
1992	416	435	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	450	435	1,737
1993	603	584	***0***	***0***	***0***	***0***	***0***	***0***	***0***	0	0	584	1,771
AVG	379	306								267	313	370	1,634

Notes

BNE SWP imports are not recharged at the Narrows December through June due to imprint of Delta water during endangered steelhead passage and spawning period.

BNE SWP imports are canceled in years when flow is greater than 0.5 cfs at the Narrows during the summer and fall.

Figure 12b shows the frequency of TDS of water rights releases (WR 89-18) at the Narrows. The frequency does not include months of no flows or flows less than 0.5 cfs at the Narrows. Imports of SWP water improve the TDS at the Narrows during WR89-18 releases. The median difference in TDS between Alternative 3 and Alternative 1 is about 130 mg/L.

4.3 Salinity of the Surface Flow at the Narrows

Figures 13a and b show the frequency of TDS at the Narrows for comparisons between Alternative 1 and Alternatives 2 and 3, respectively. A similar comparison is not provided for Alternative 4 because of the reduced frequency of summer flows at the Narrows by eliminating the Cachuma BNA releases under Alternative 4. The ground water models (HCI, USGS) are used to determine the impact of these changes in TDS at the Narrows on Lompoc plain ground water quality (see Technical Memorandum No. 4).

FIGURE 1

SCHEMATIC PRESENTATION OF THE SURFACE FLOWS ASSIGNED A SALT FLUX IN THE SANTA YNEZ RIVER HYDROLOGY MODEL

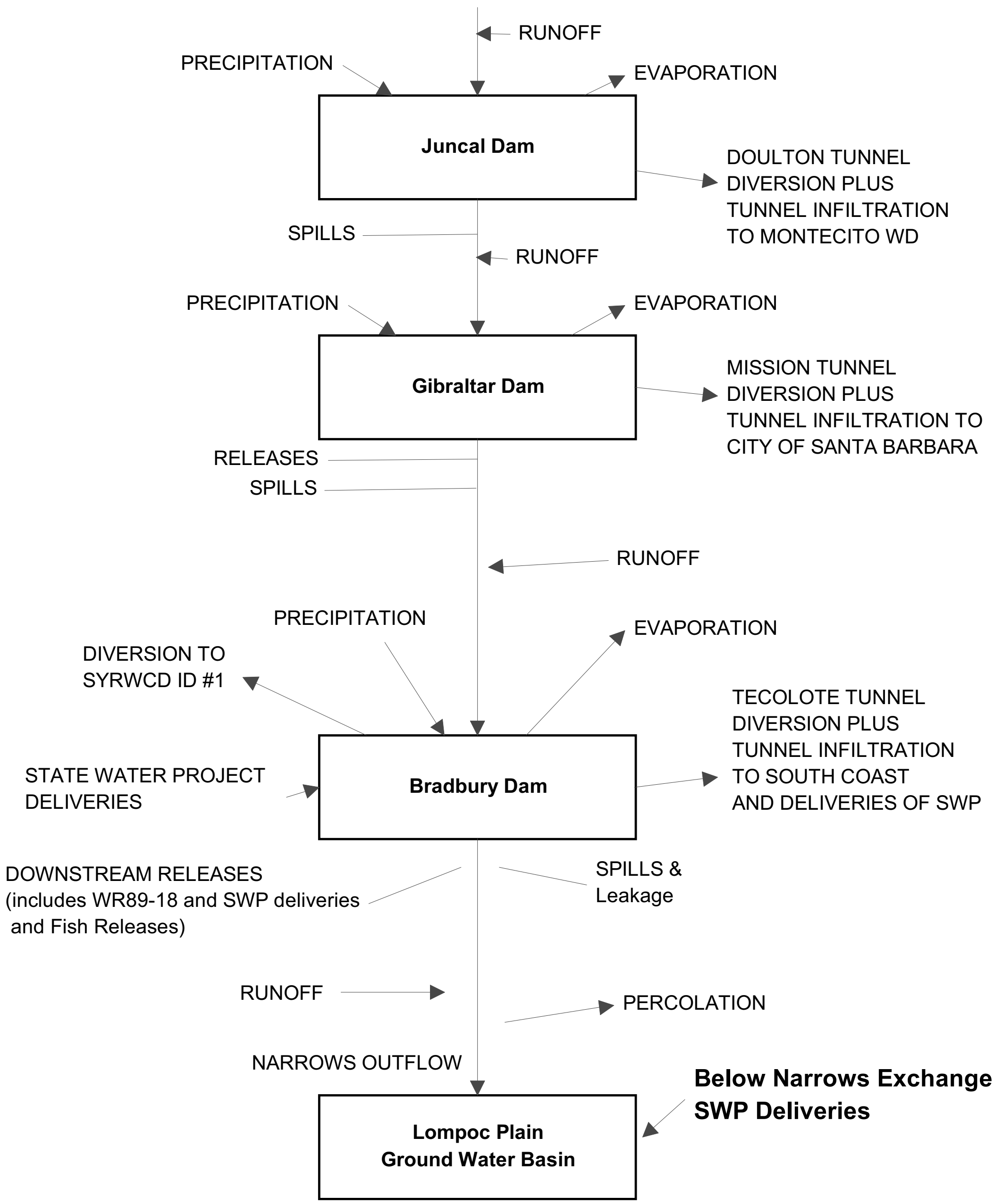
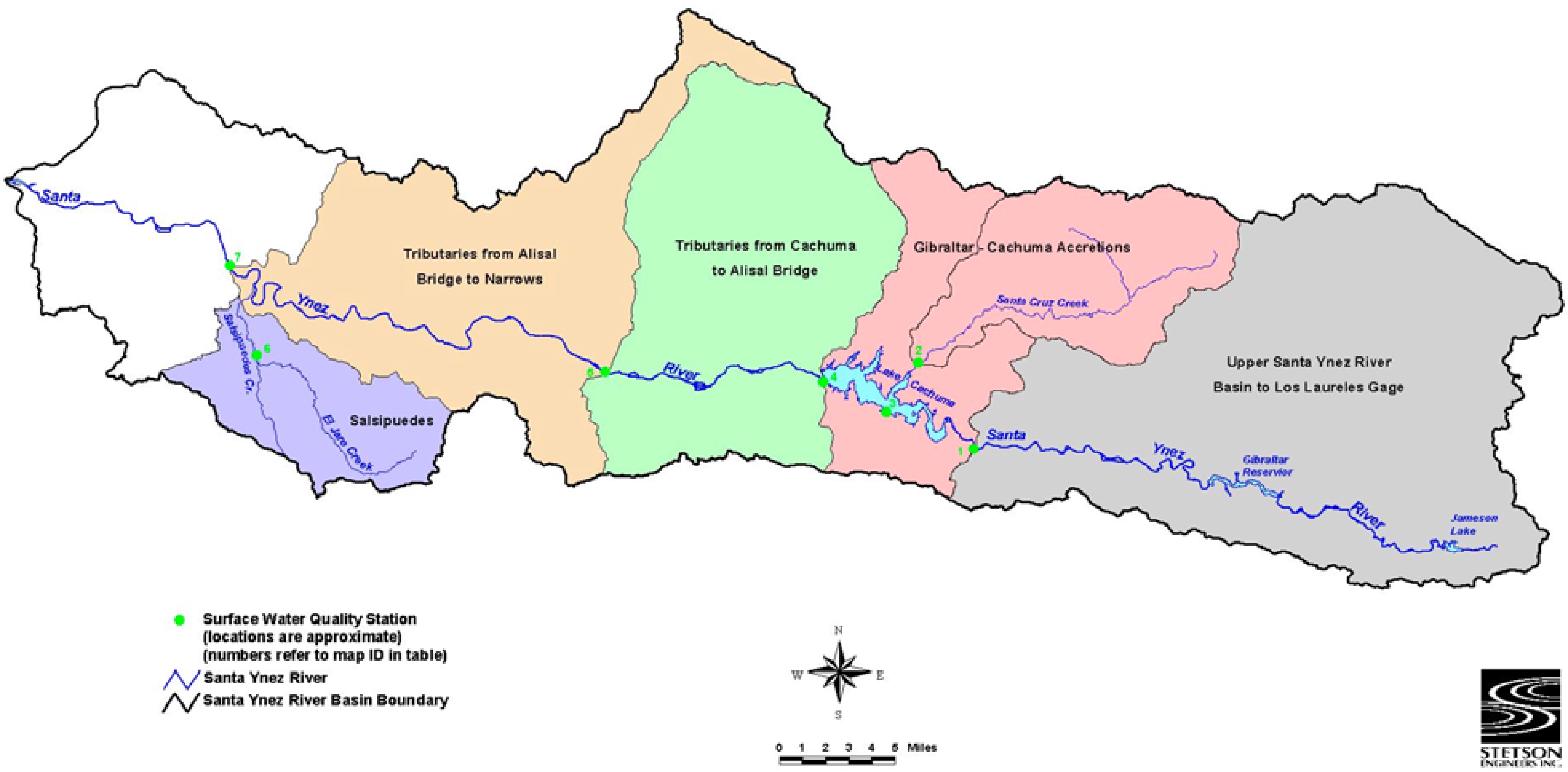
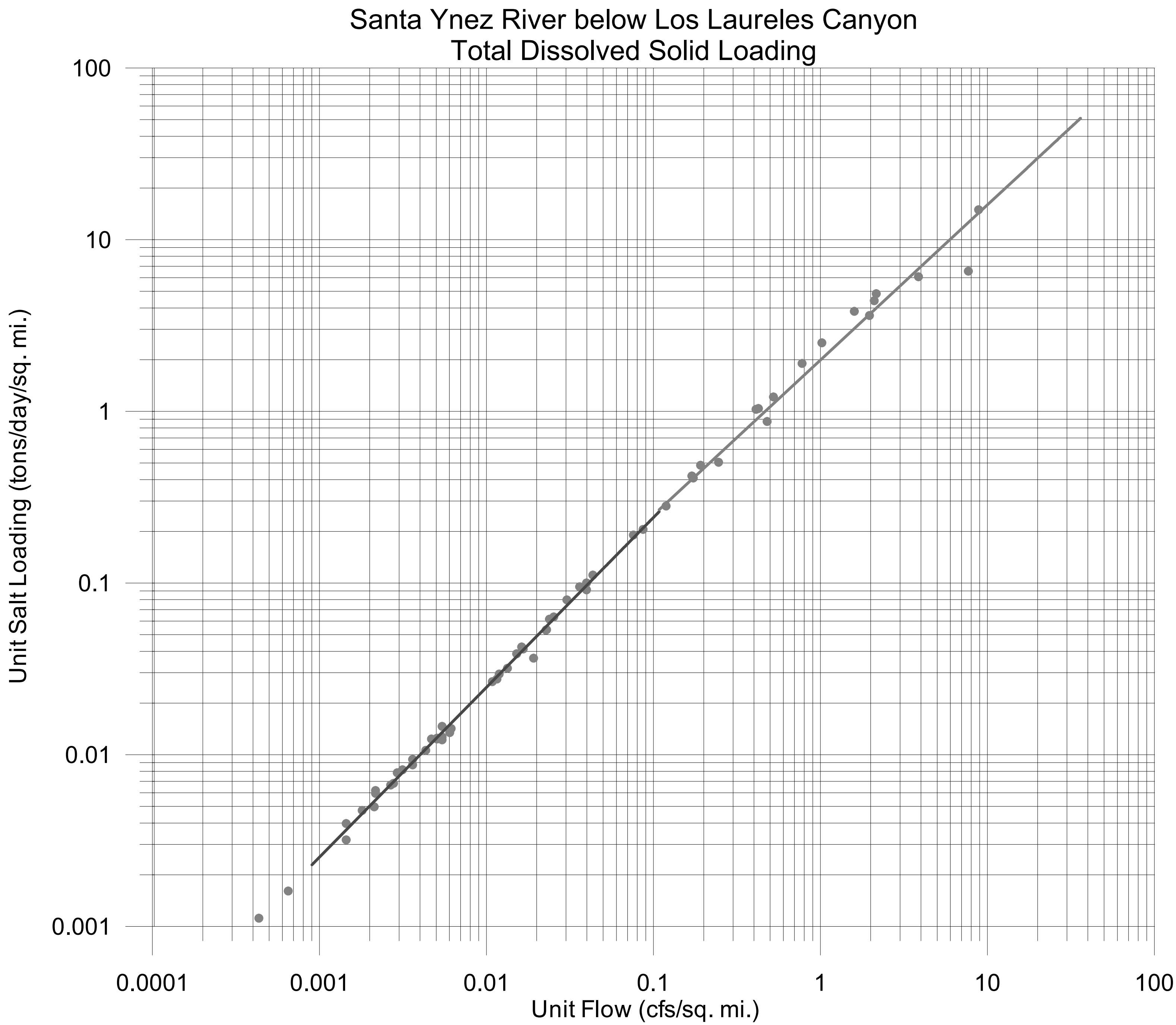


FIGURE 2

KEY SALINITY CALIBRATION LOCATIONS AND CORRESPONDING SUB-AREAS

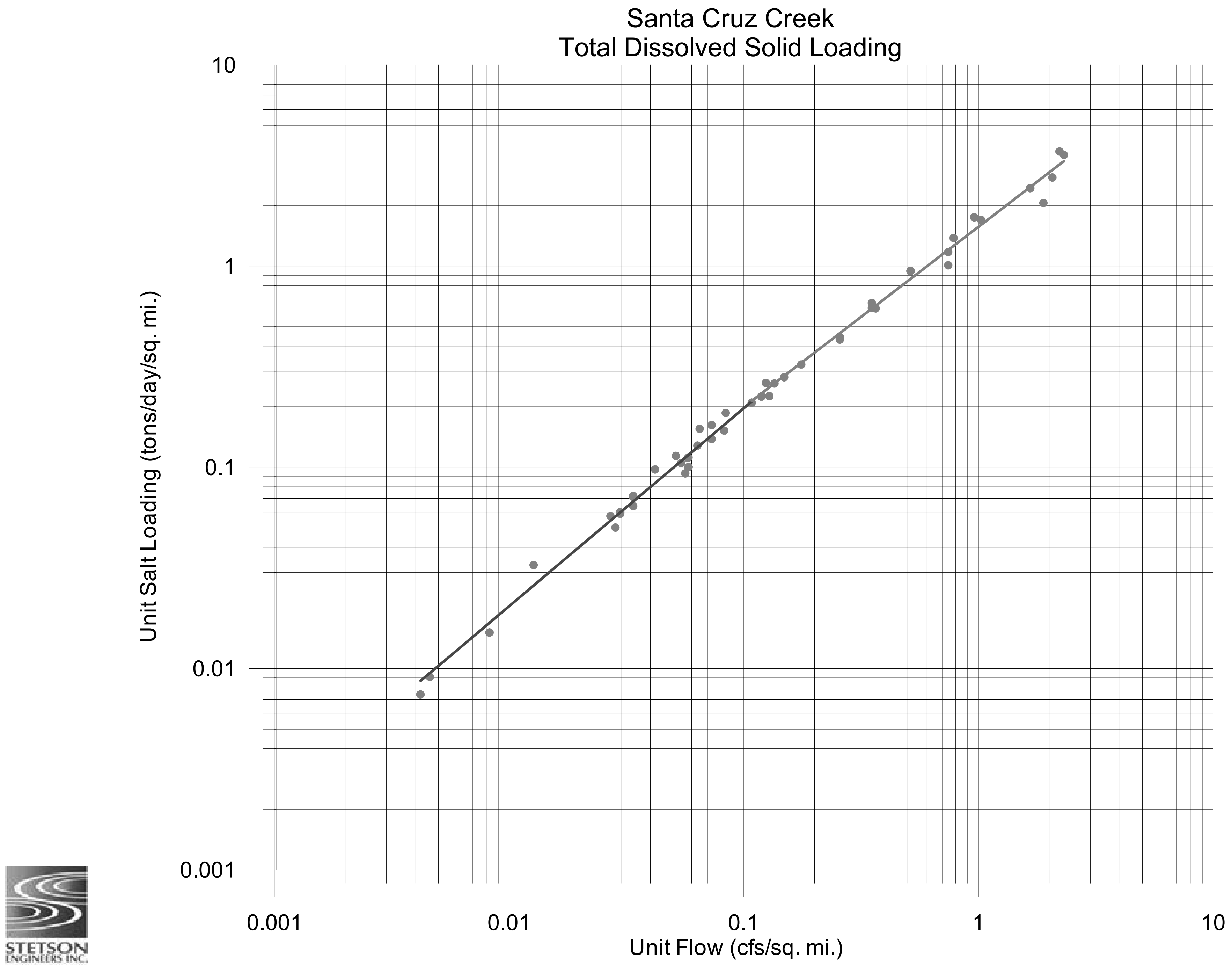
SANTA YNEZ RIVER WATERSHED





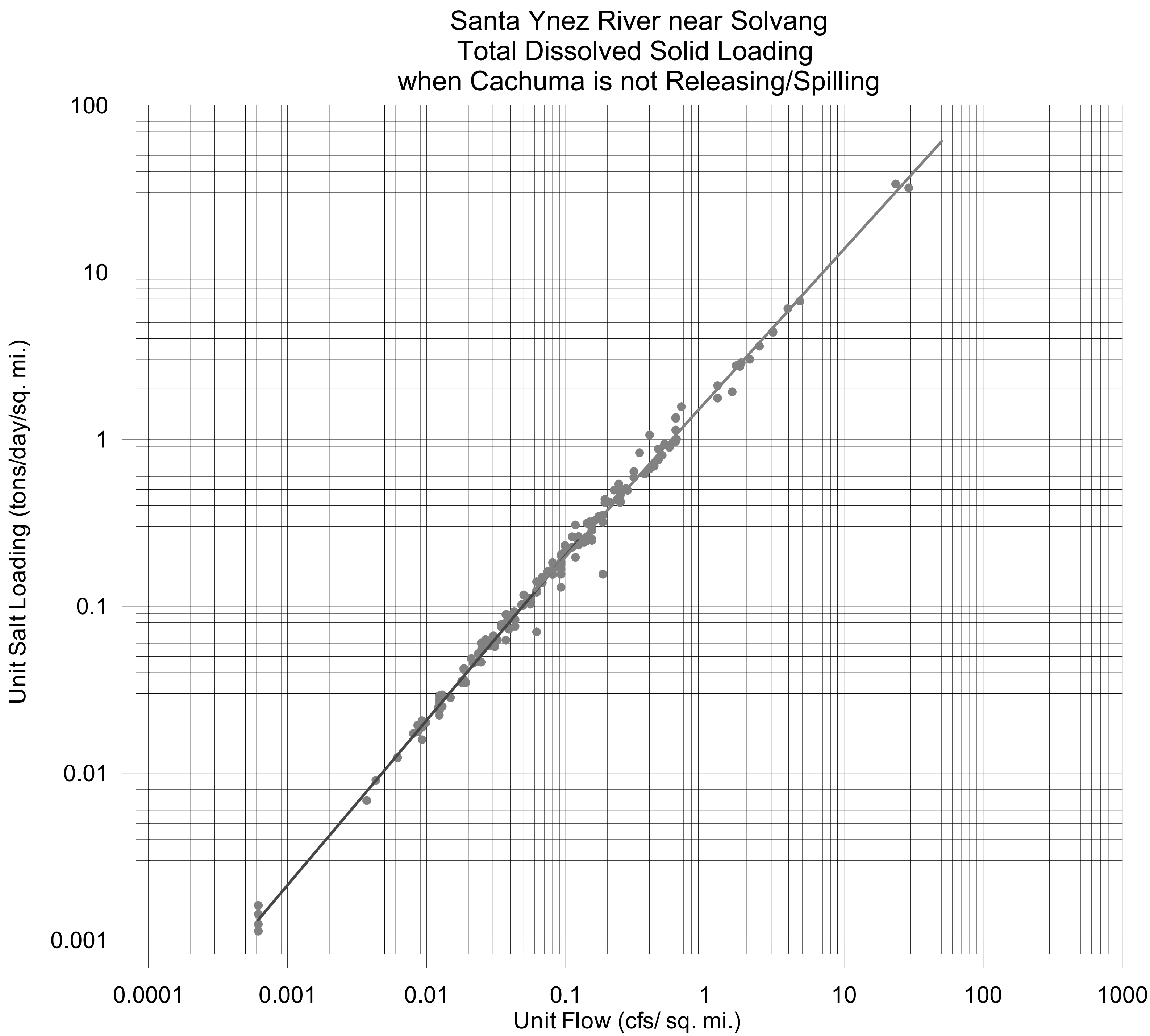
STETSON ENGINEERS INC.

Figure 3a



Santa Cruz Creek
Total Dissolved Solid Loading
Unit Salt Loading (tons/day/sq. mi.)
10
1
0.1
0.01
0.001
0.001
0.01
0.1
1
10
Unit Flow (cfs/sq. mi.)
STETSON
ENGINEERS INC.

Figure 3b



STETSON ENGINEERS INC.

Figure 3c

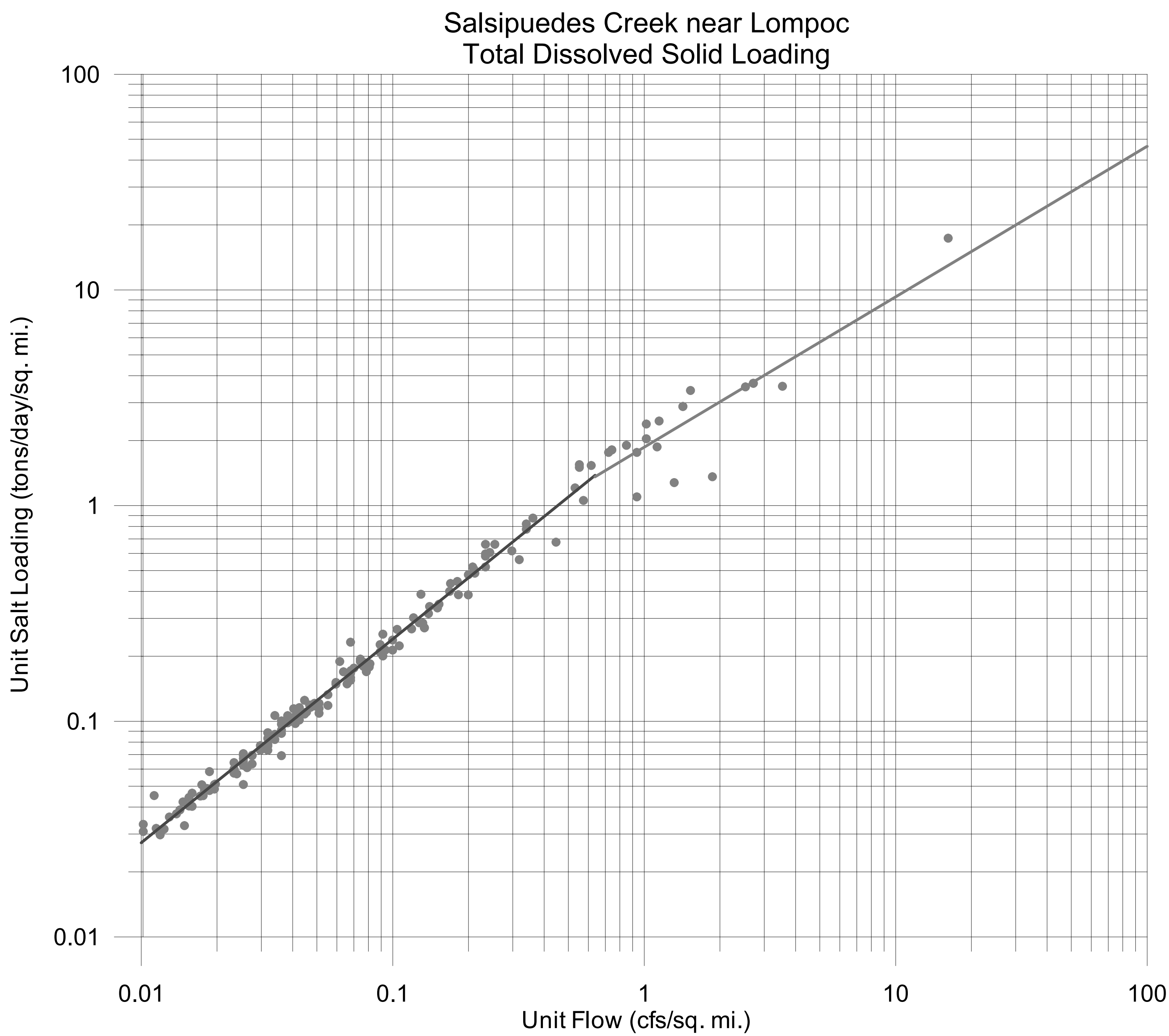
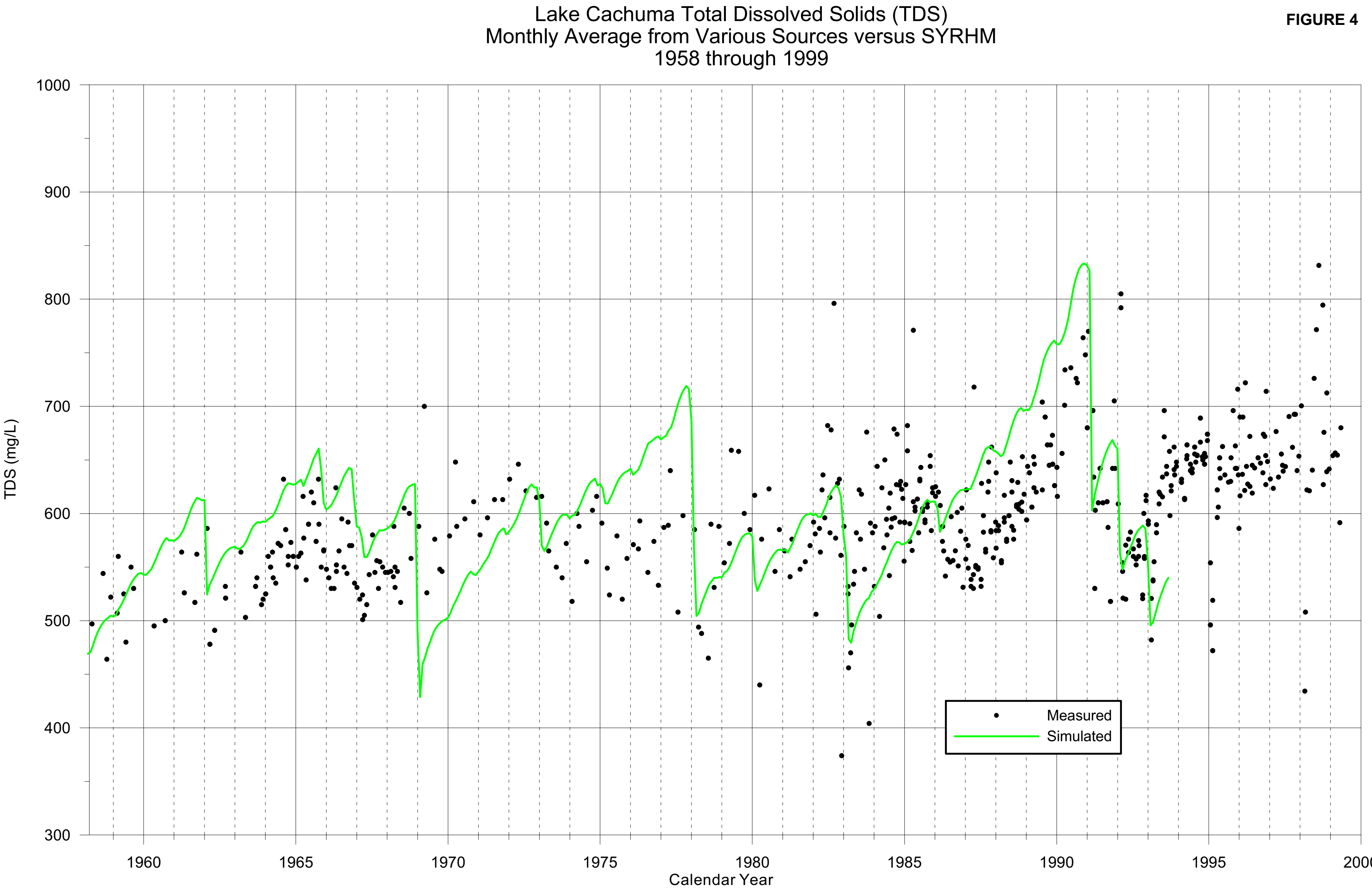
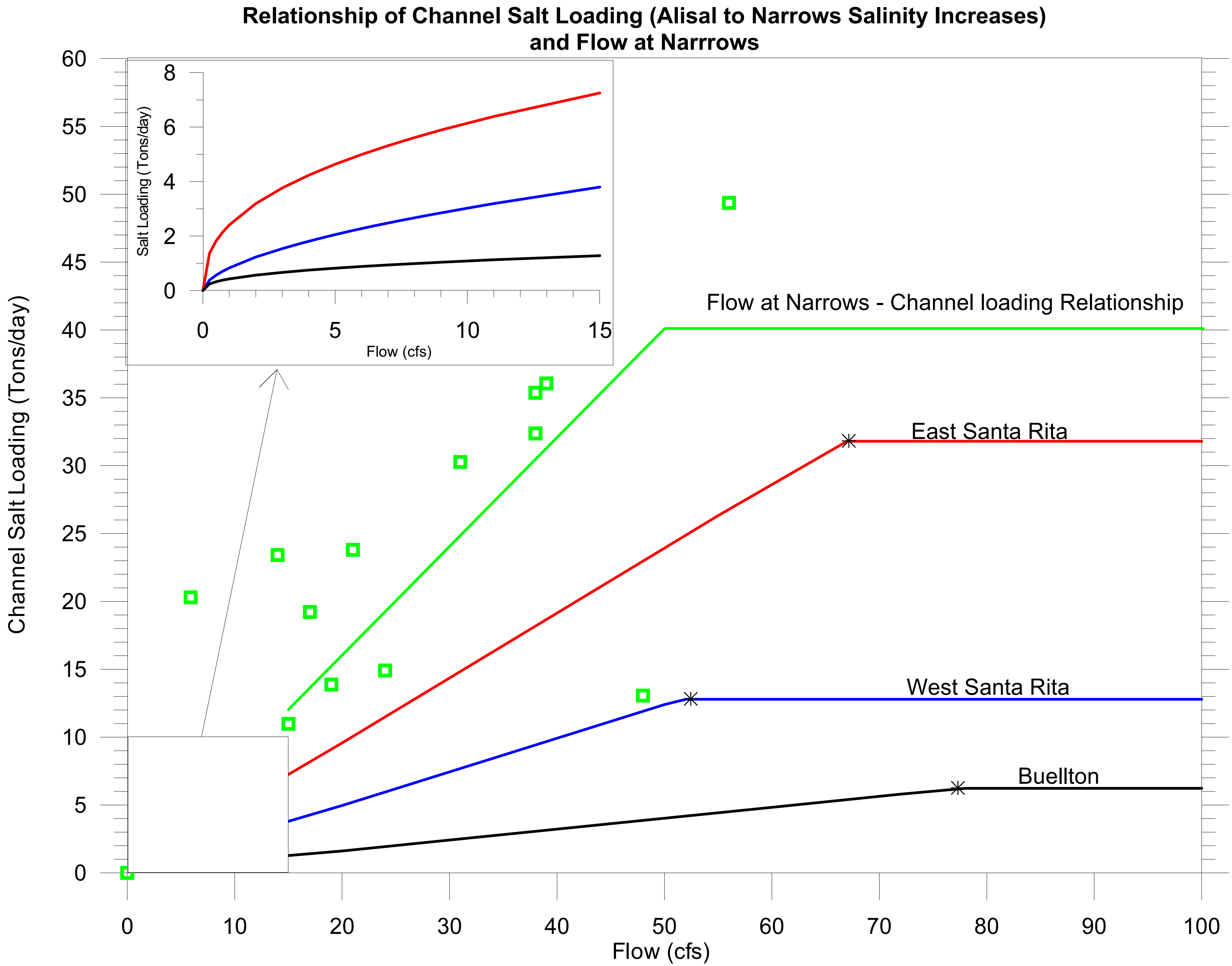

Salsipuedes Creek near Lompoc
Total Dissolved Solid Loading
100
10
1
0.1
0.01
Unit Salt Loading (tons/day/sq. mi.)
0.01
0.1
1
10
100
Unit Flow (cfs/sq. mi.)

Figure 3d

FIGURE 4



Lake Cachuma Total Dissolved Solids (TDS)
Monthly Average from Various Sources versus SYRHM
1958 through 1999
TDS (mg/L)
1000
900
800
700
600
500
400
300
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Year
Measured
Simulated



Relationship of Channel Salt Loading (Alisal to Narrows Salinity Increases)
and Flow at Narrrows
Channel Salt Loading (Tons/day)
Flow (cfs)
Salt Loading (Tons/day)
Flow (cfs)
Flow at Narrows - Channel loading Relationship
East Santa Rita
West Santa Rita
Buellton

FIGURE 5

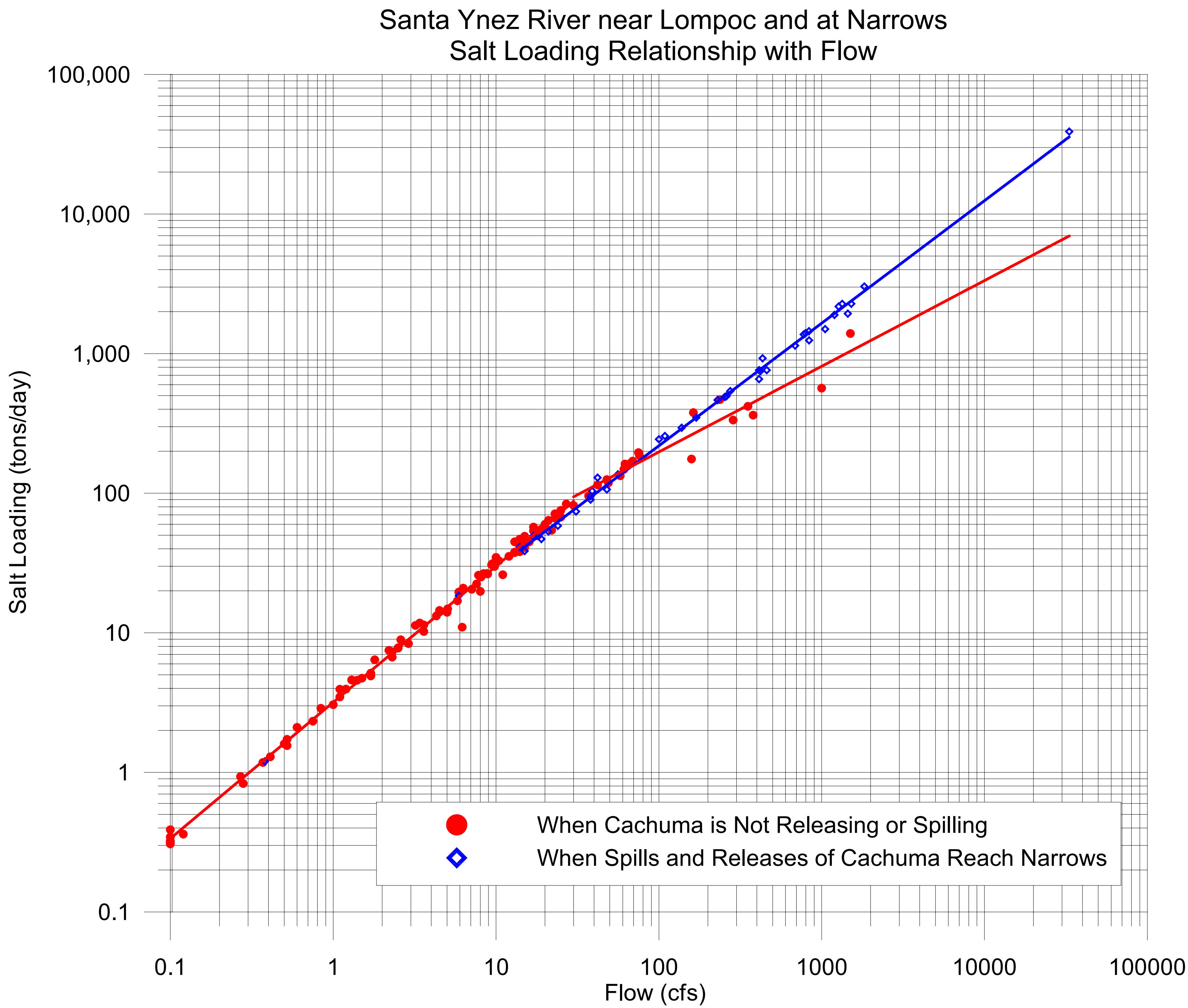

Santa Ynez River near Lompoc and at Narrows
Salt Loading Relationship with Flow
Salt Loading (tons/day)
100,000
10,000
1,000
100
10
1
0.1
0.1
1
10
100
1000
10000
100000
Flow (cfs)
When Cachuma is Not Releasing or Spilling
When Spills and Releases of Cachuma Reach Narrows

Figure 6a

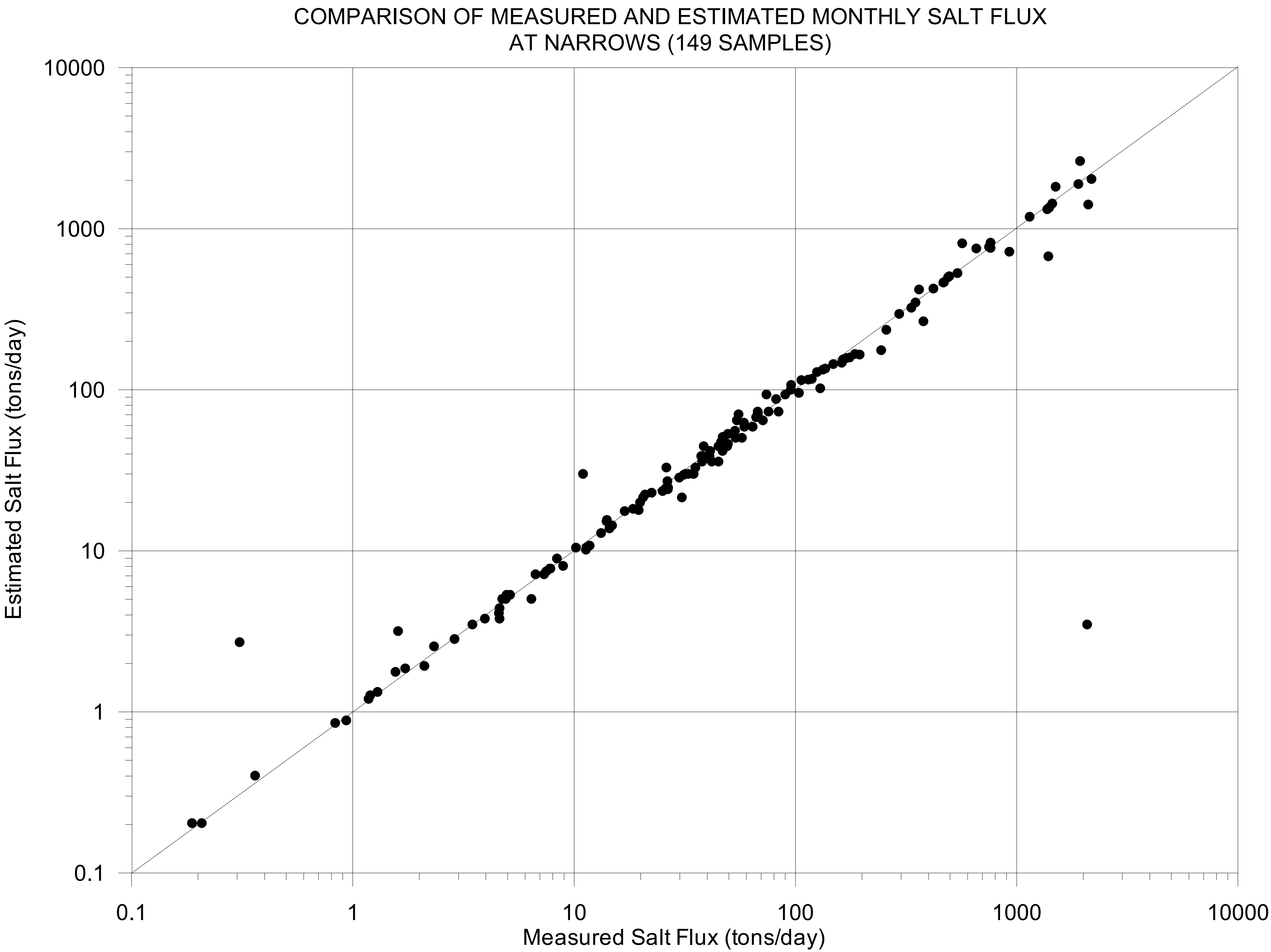

COMPARISON OF MEASURED AND ESTIMATED MONTHLY SALT FLUX
AT NARROWS (149 SAMPLES)
Estimated Salt Flux (tons/day)
Measured Salt Flux (tons/day)
10000
1000
100
10
1
0.1
0.1
1
10
100
1000
10000

FIGURE 6b

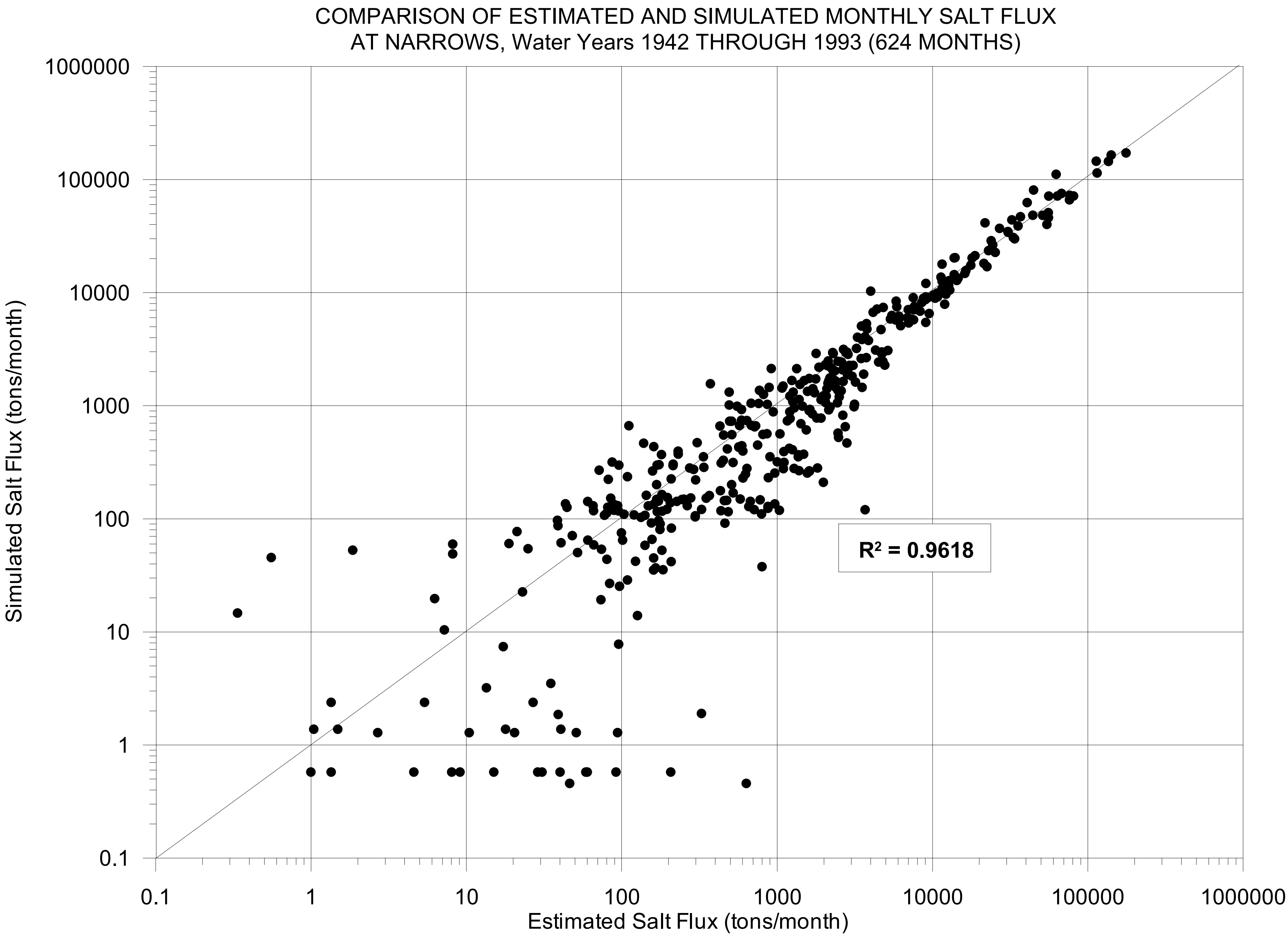
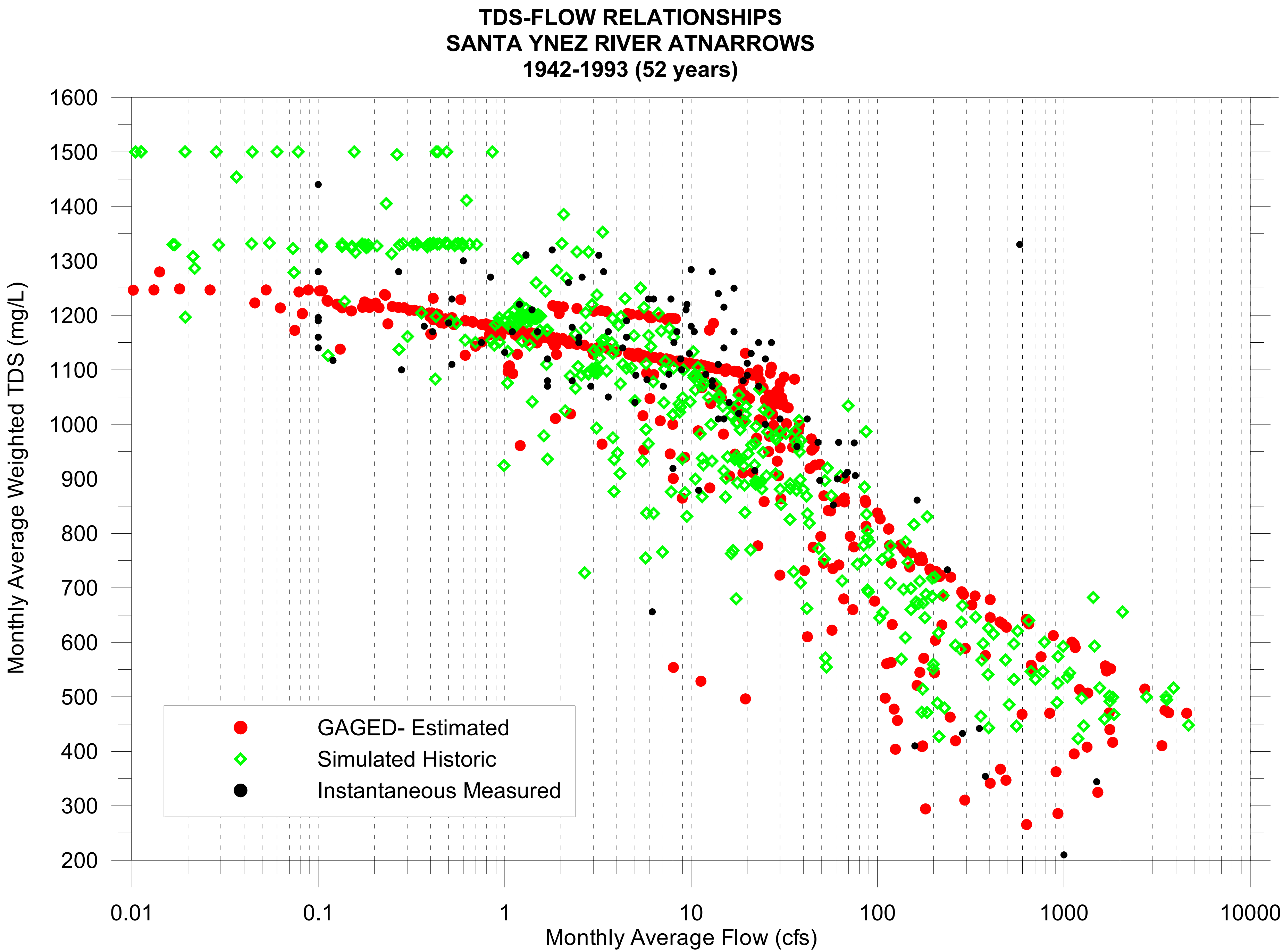

COMPARISON OF ESTIMATED AND SIMULATED MONTHLY SALT FLUX
AT NARROWS, Water Years 1942 THROUGH 1993 (624 MONTHS)
Simulated Salt Flux (tons/month)
Estimated Salt Flux (tons/month)
0.1
1
10
100
1000
10000
100000
1000000
R² = 0.9618

FIGURE 7a

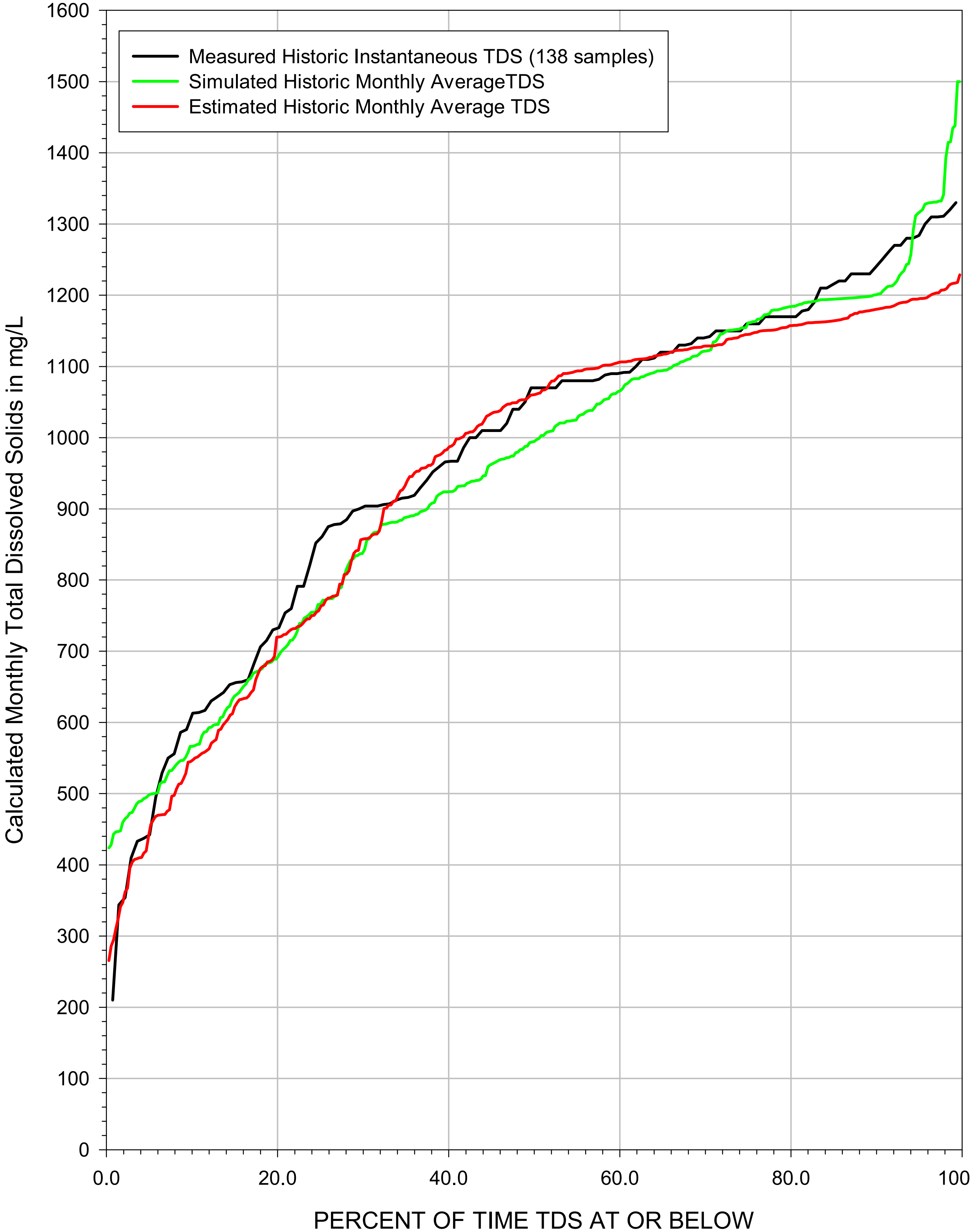


TDS-FLOW RELATIONSHIPS
SANTA YNEZ RIVER ATNARROWS
1942-1993 (52 years)
Monthly Average Weighted TDS (mg/L)
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
0.01
0.1
1
10
100
1000
10000
Monthly Average Flow (cfs)
GAGED- Estimated
Simulated Historic
Instantaneous Measured

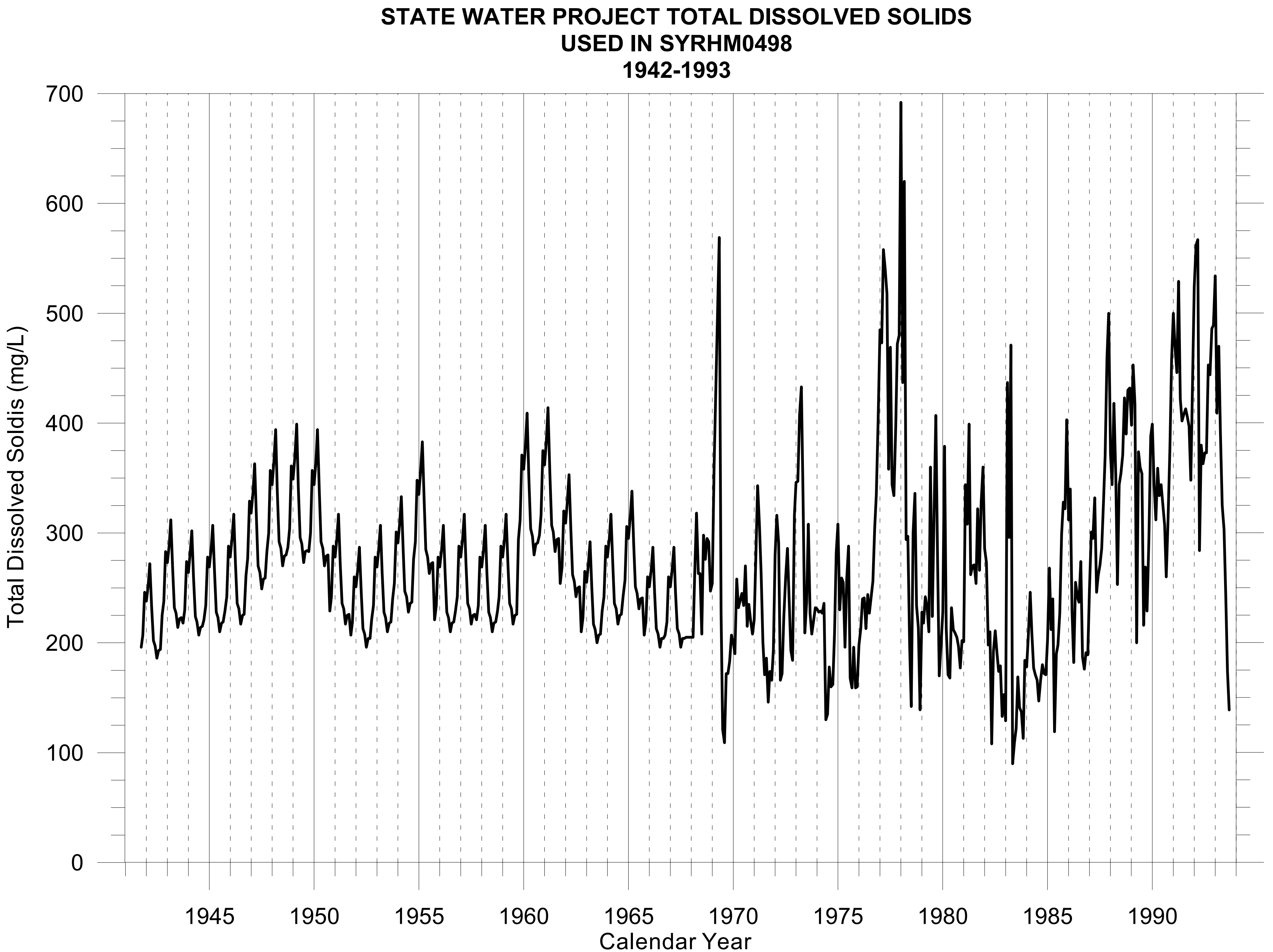
FIGURE 7b

FIGURE 7c

FREQUENCY OF DISSOLVED SOLIDS CONCENTRATIONS
IN FLOWS AT NARROWS
(WY 1942-1993)



1) Frequency does not include months of no flow or flows less than 0.5 cfs at the Narrows



STATE WATER PROJECT TOTAL DISSOLVED SOLIDS
USED IN SYRHM0498
1942-1993
Total Dissolved Soldis (mg/L)
Calendar Year
0
100
200
300
400
500
600
700
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990

FIGURE 8

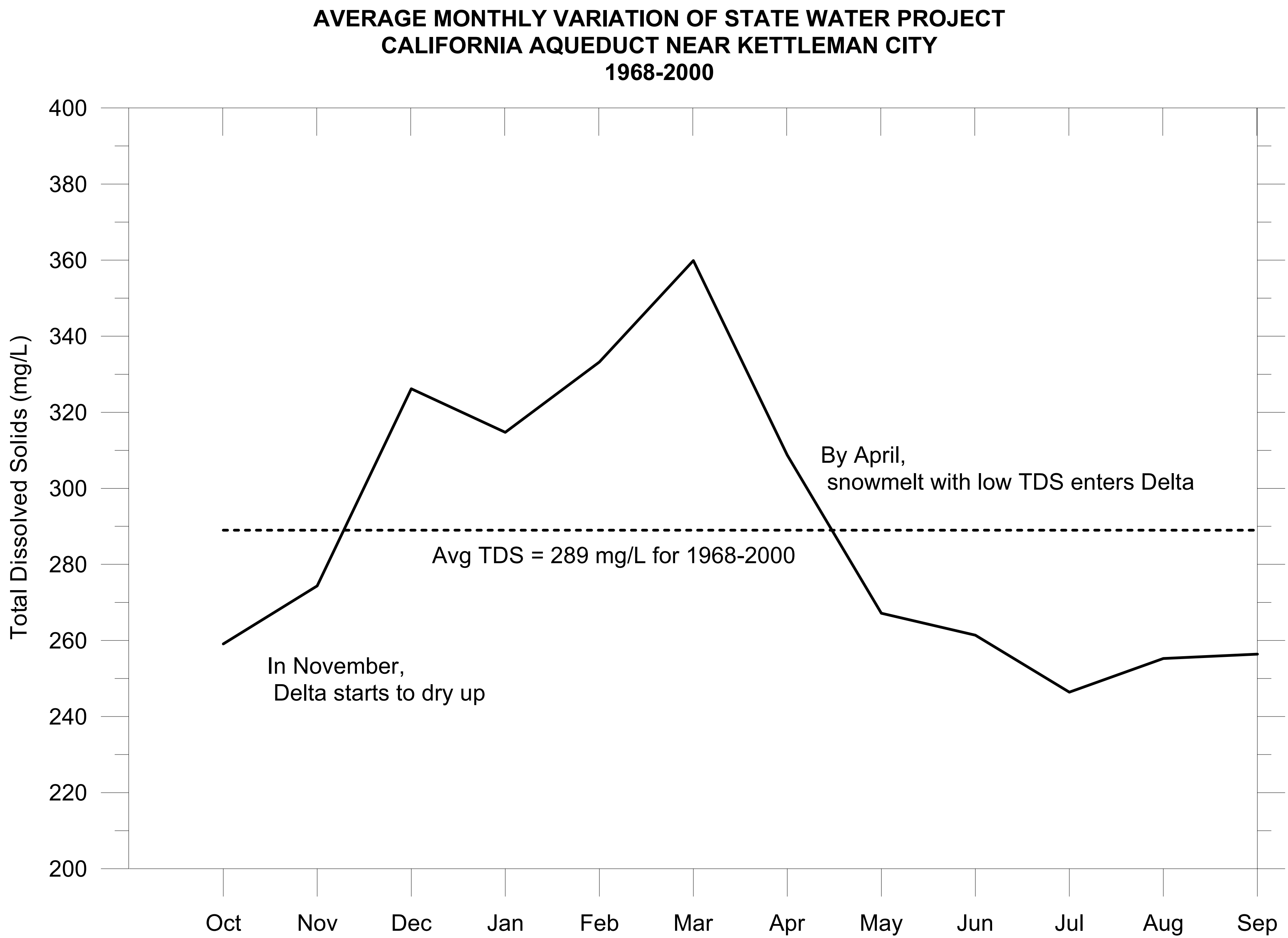

AVERAGE MONTHLY VARIATION OF STATE WATER PROJECT
CALIFORNIA AQUEDUCT NEAR KETTLEMAN CITY
1968-2000
Total Dissolved Solids (mg/L)
400
380
360
340
320
300
280
260
240
220
200
By April,
snowmelt with low TDS enters Delta
Avg TDS = 289 mg/L for 1968-2000
In November,
Delta starts to dry up
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep

FIGURE 9

RELATIONSHIP OF SHORTAGES IN DELTA AND DELTA DISSOLVED SOLIDS

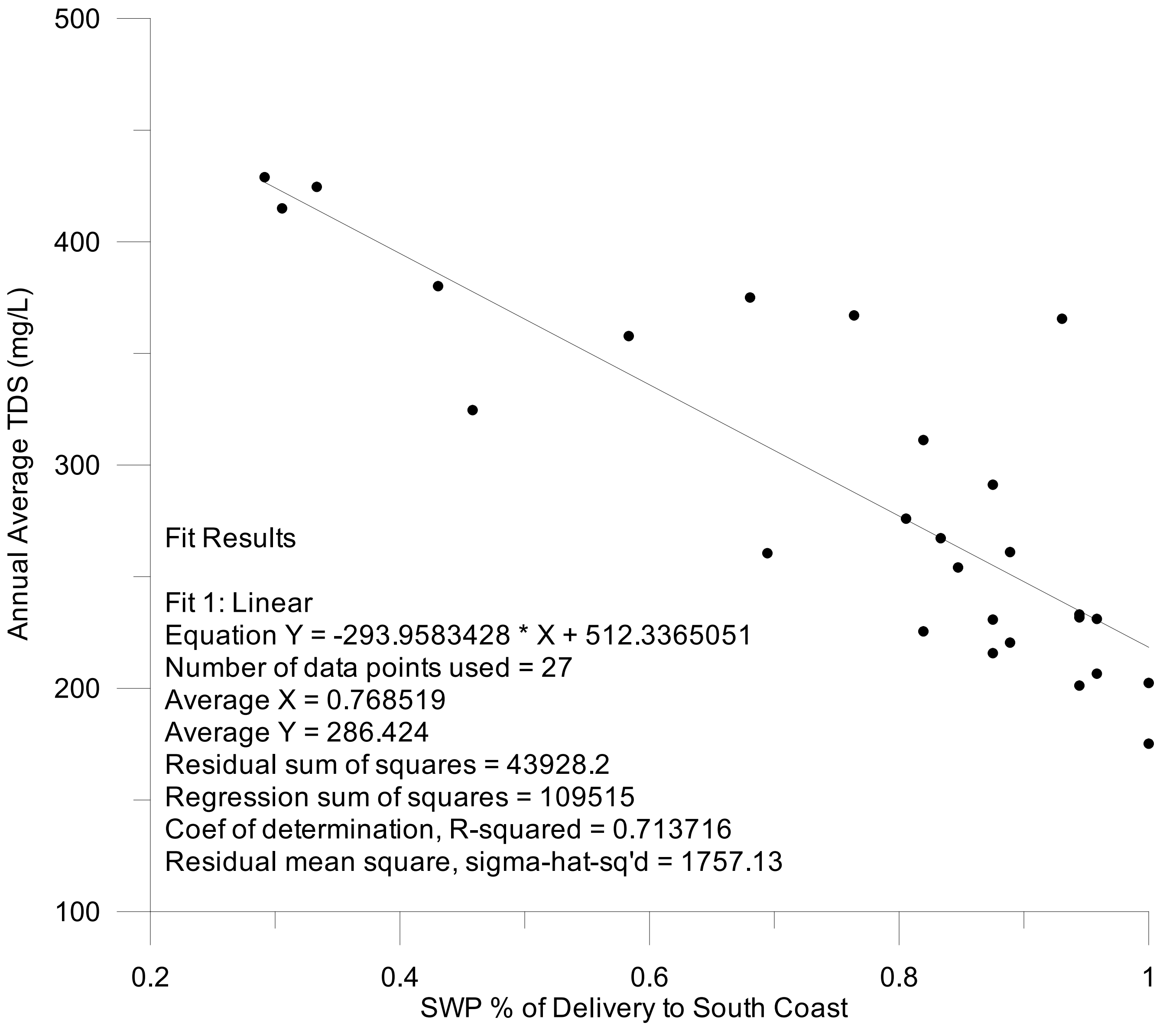
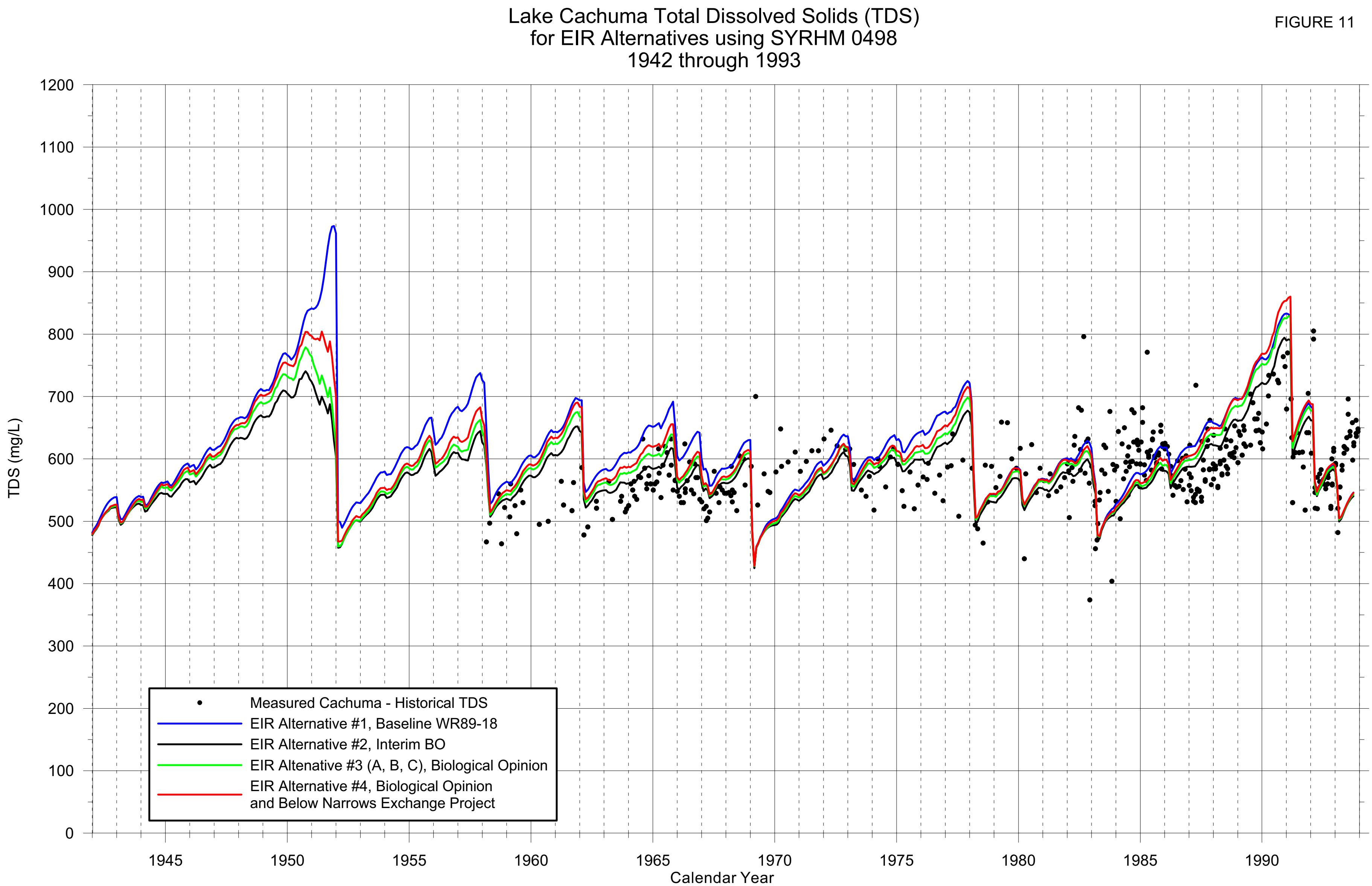


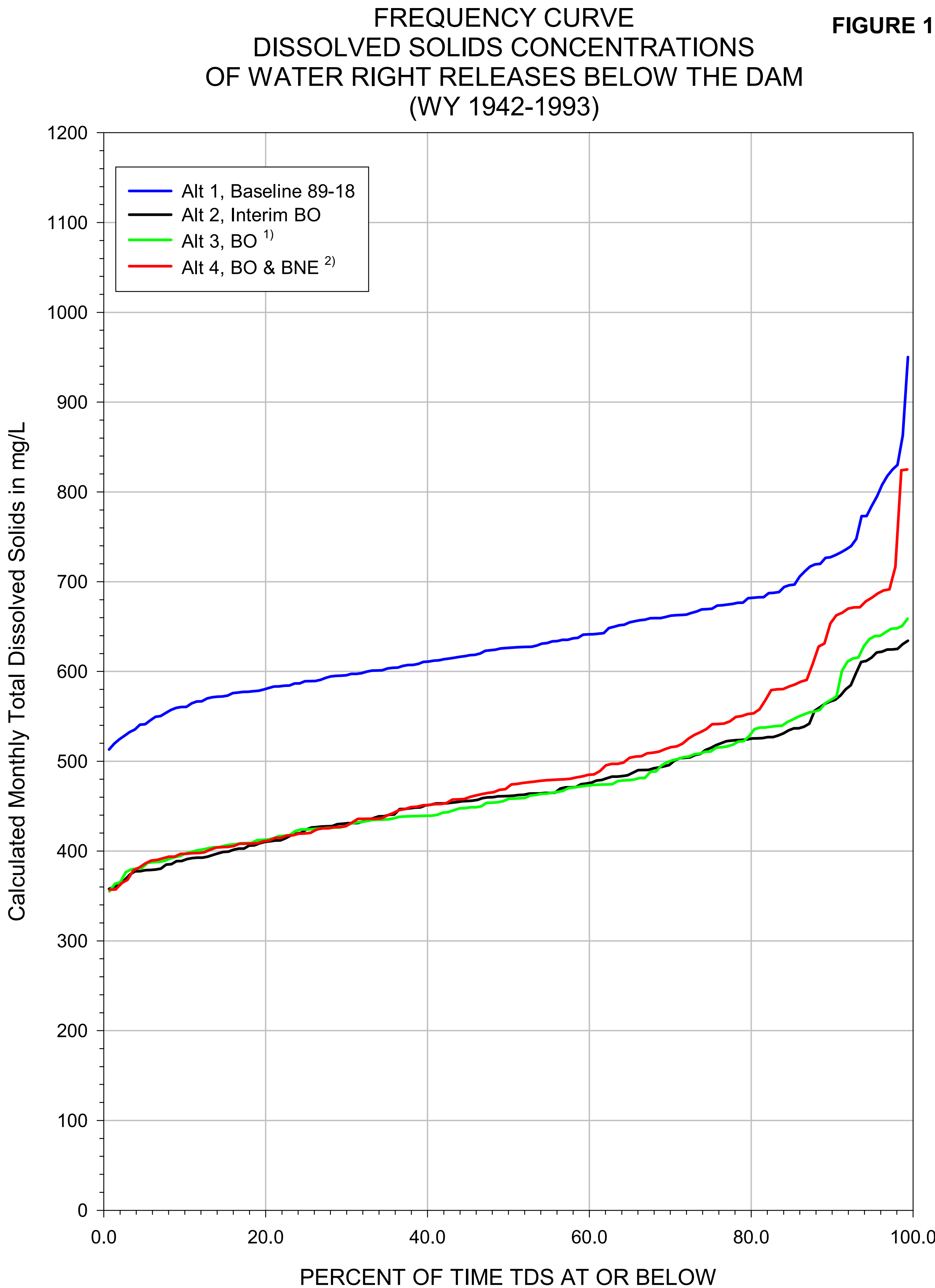
FIGURE 10

FIGURE 11



Note: Results from EIR Alternative#3C is plotted here; Alternatives 3A and 3B are very similar to 3C for Cachuma TDS

FIGURE 12a

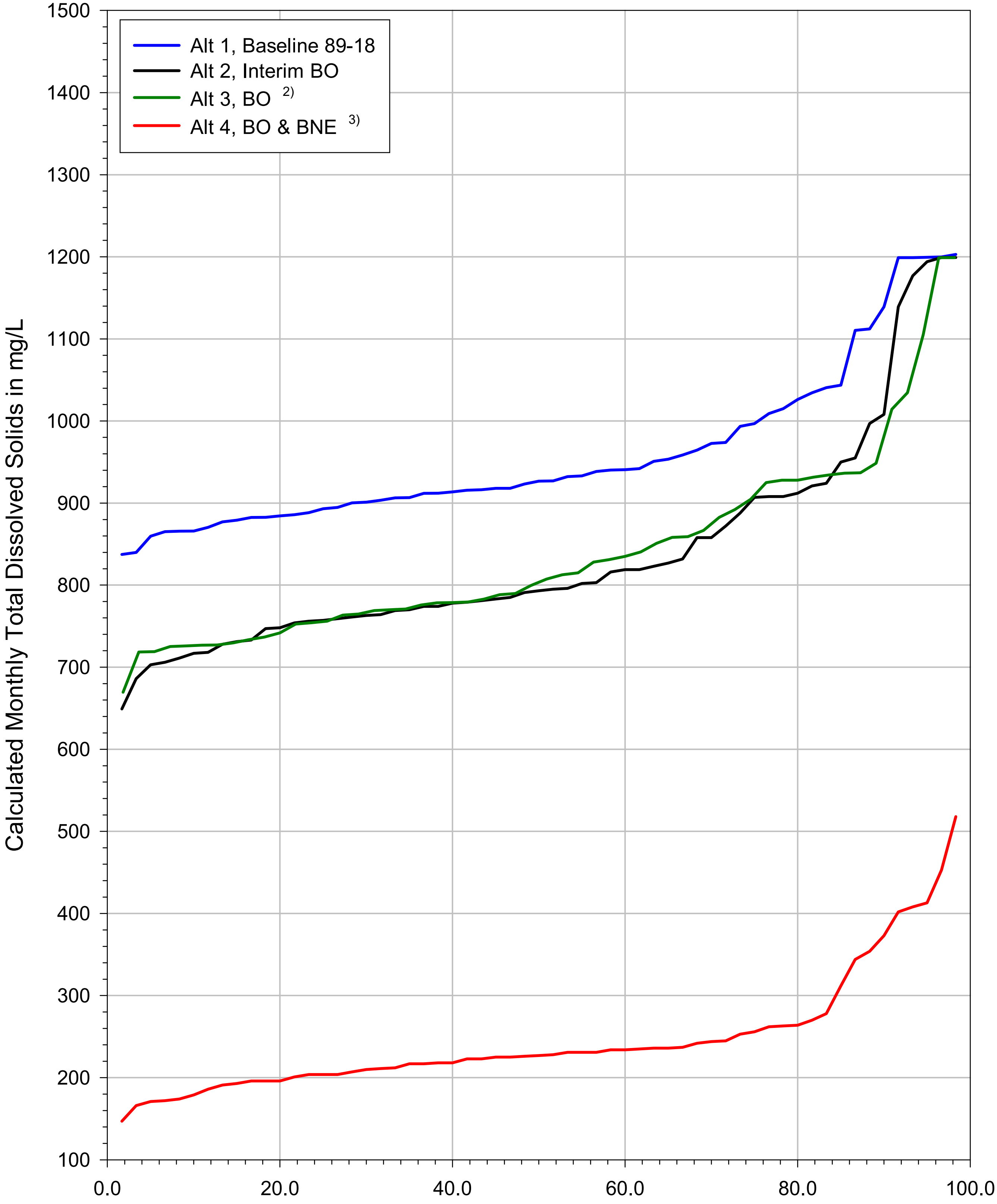


1) Results from EIR Alternative 3C are plotted here; Alts 3A and 3B are very similar to Alt 3C for Narrows TDS

2) Water right release TDS for ANA releases are shown here for 4A&B

FIGURE 12b

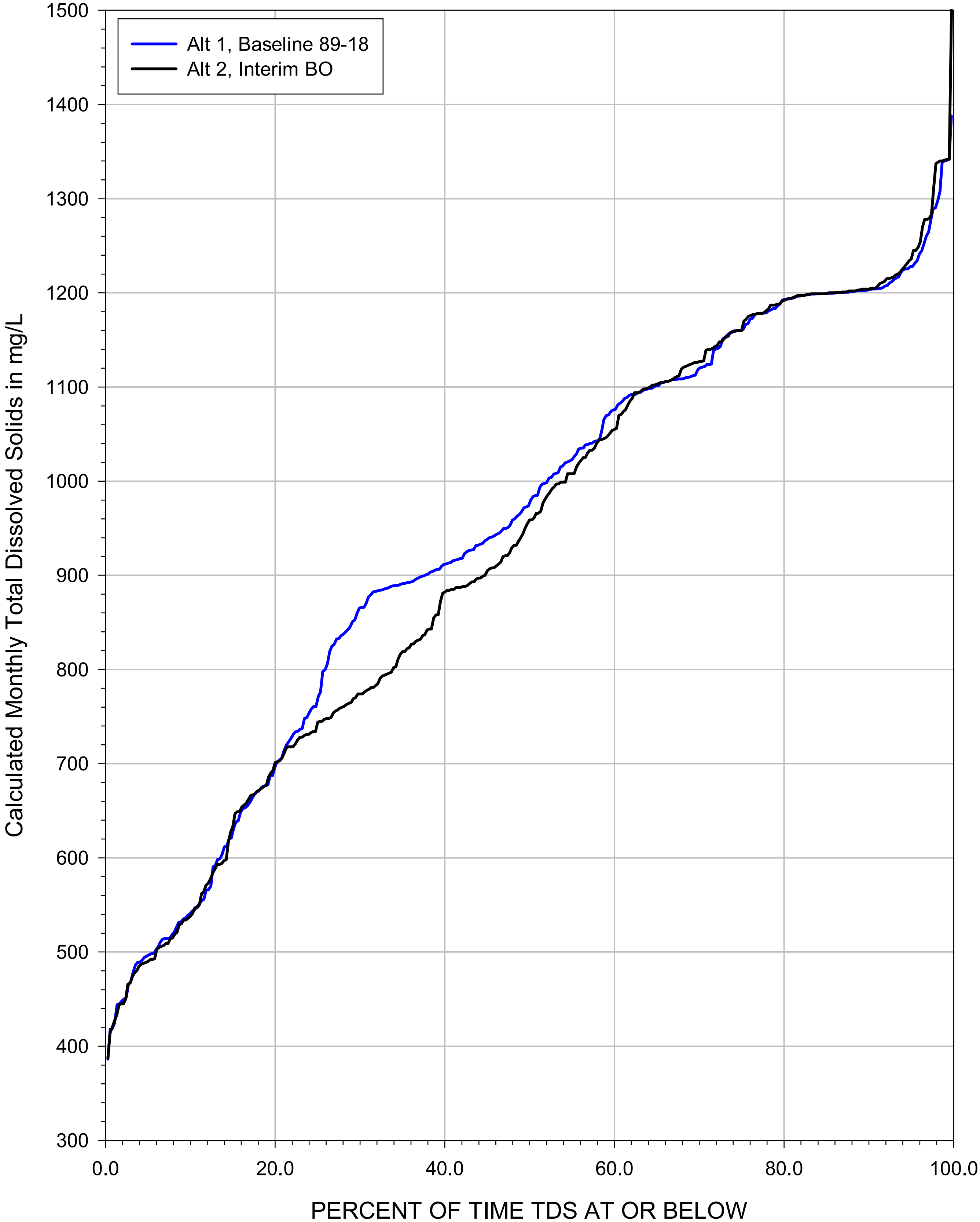
FREQUENCY OF DISSOLVED SOLIDS CONCENTRATIONS [1]
IN WATER RIGHT RELEASES AT NARROWS
(WY 1942-1993, 52 years)



1) Frequency does not include months of no flow or flows less than 0.5 cfs at the Narrows
2) Results from EIR Alternative 3C are plotted here; Alts 3A and 3B are very similar to Alt 3C for Narrows TDS
3) State Water Project TDS during Below Narrows Account water right releases

FIGURE 13a

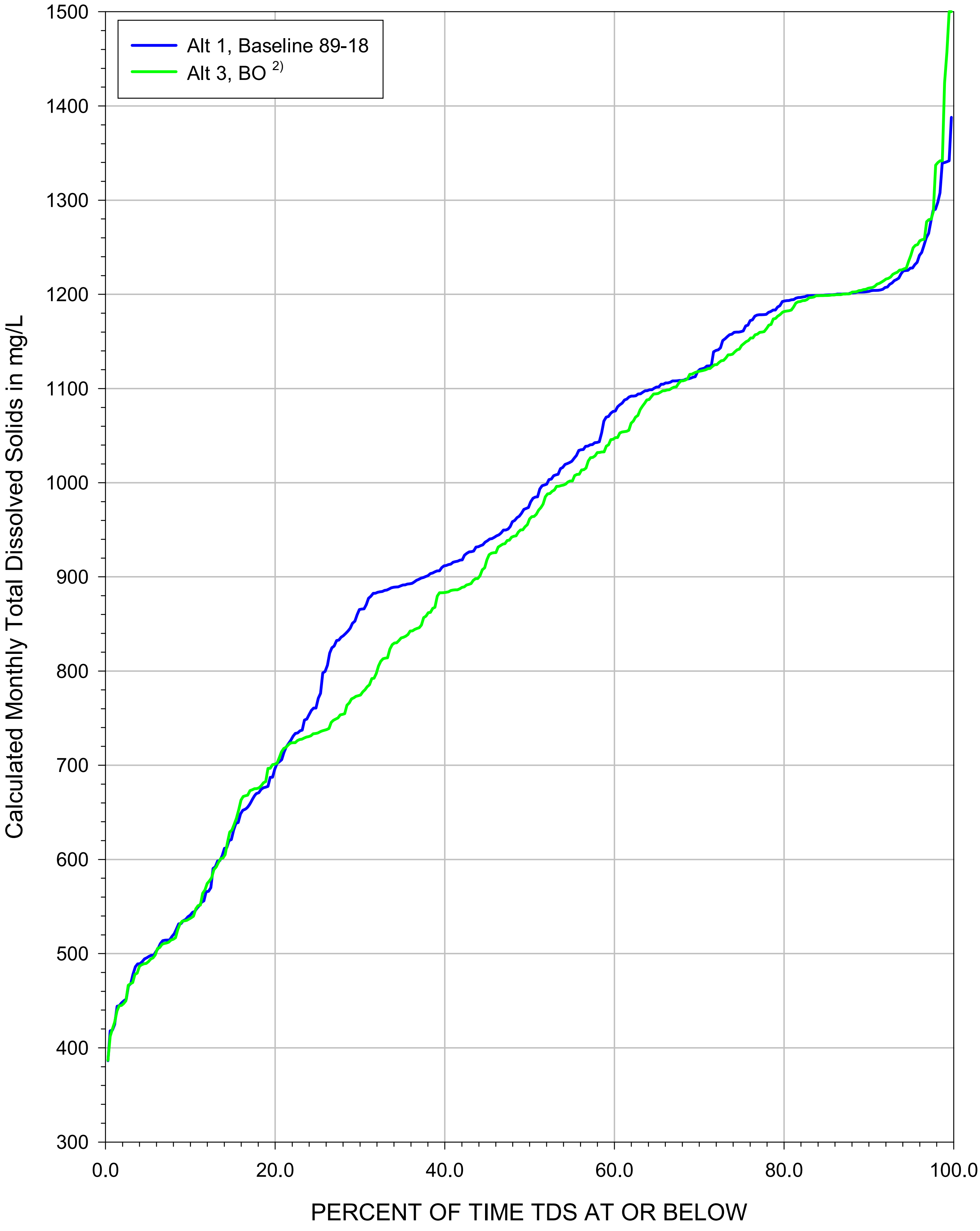
FREQUENCY OF DISSOLVED SOLIDS CONCENTRATIONS [1]
IN FLOWS AT NARROWS
(WY 1942-1993, 52 years)



1) Frequency does not include months of no flow or flows less than 0.5 cfs at the Narrows

FIGURE 13b

FREQUENCY OF DISSOLVED SOLIDS CONCENTRATIONS [1] IN FLOWS AT NARROWS (WY 1942-1993, 52 years)



1) Frequency does not include months of no flow or flows less than 0.5 cfs at the Narrows
2) Results from EIR Alternative 3C are plotted here; Alts 3A and 3B are very similar to Alt 3C for Narrows TDS

TECHNICAL MEMORANDUM No. 4

STETSON ENGINEERS INC.
2171 E. Francisco Blvd., Suite K • San Rafael, California • 94901
TEL: (415) 457-0701 FAX: (415) 457-1638 e-mail: peterp@stetsonengineers.com

TO: John Gray
URS Corp., Santa Barbara, CA

DATE: March 7 & 21, 2001
Rev. December 22, 2001

FROM: Peter M. Pyle

JOB NO.: 1815

RE: Cachuma Water Rights EIR Alternatives - Results of the USGS and HCI Lompoc Ground Water Flow and Transport Models

---

1. Introduction

The purpose of this document is to summarize the use of the U.S. Geological Survey (USGS) and Hydrologic Consultants, Inc. (HCI) flow and solute transport models for evaluation of Cachuma Water Rights EIR Alternatives. This report was originally issued as two draft technical memoranda. The first, Draft Tech Memo #4, dated March 7, 2001, addressed the results of the USGS models. The second, Draft Tech Memo #5, dated March 21, 2001 addressed the results of the HCI models. They were originally produced separately since acquisition and operation of the USGS model was successfully completed prior to that for the HCI model. Since some of the same information was presented in both draft memos, and comments received on the first drafts suggested more information was needed comparing the results of the HCI and USGS models, the two documents have been combined into one.

The objective of this analysis is to simulate the relative change in the quality of ground-water in the Main Zone aquifer of the Lompoc Plain that will result from various Cachuma Reservoir operational Alternatives to be considered in the EIR. This analysis will be focused on the total dissolved solids concentration (TDS) of ground-water in one of the four aquifers in the Lompoc Plain, called the Main Zone of the Upper Aquifer. This aquifer has historically been the primary source of water for irrigation and municipal wells in the Lompoc Plain. However, it has been reported (Balance Hydrologics, Inc, 2001) that at least one large farm in the western Lompoc

Plain has increased its withdrawals from the Middle Zone aquifer in recent years and decreased its withdrawals from the Main Zone. The Middle Zone aquifer directly overlies the Main Zone.

The USGS and HCI flow and transport model simulations for the Cachuma EIR Alternatives both use the same Santa Ynez River flow and TDS input data at the Lompoc Narrows produced as output by the Santa Ynez River Hydrology Model (SYRHM), described in Stetson Engineers Tech Memo's 1, 2 and 3. The SYRHM was developed to provide monthly average flow and TDS at the Narrows for each EIR Alternative during the hydrologic base period of October 1941 - September 1993.

Output from the SYRHM was used as input to the ground water models with modifications to adjust to the incremental time periods of the USGS models. The USGS model calibration period was January1941 to December 1988. The HCI model calibration period was October 1941 to September 1994. Although the models were run for their respective calibration periods, the hydrologic period selected for evaluation of EIR Alternatives using the ground water models is 1952 to 1988. This period was selected for averaging the effects of model results for each alternative because it was a more balanced hydrologic period that overlaps the calibration periods of both sets of models, and because it limits the effect of using the same initial conditions for all EIR Alternatives. The effect of starting from the same initial conditions reduces the difference between alternatives for the first several years of simulation.

The most significant modifications made to the ground-water flow and transport models from the calibrated versions that were provided by the USGS and HCI as a starting point was to utilize the 1988 ground-water pumping data as a constant throughout the simulations. The purpose in using constant pumping is to better represent current conditions, and allow for a suitable comparison between EIR Alternatives, including Alternative 4A, in which reduced pumping is simulated at a constant rate.

A brief description of the models is provided in the following sections to facilitate understanding of the models and results. The reader is referred to the USGS (1997) and HCI (1997, 1999) reports that provide a detailed description of the models. While, this report attempts to provide a comparison of the key differences between the HCI and USGS models, a more detailed analysis of the models and basic data would be required for a full and complete understanding of the differences between them and the EIR Alternatives.

2. Description of the USGS Models

The USGS developed the flow and transport models for their study, *Evaluation of Ground-water Flow and Solute Transport in the Lompoc Area, Santa Barbara County, California* (Bright, et. al., 1997), which describes the models in detail. The USGS used the 3-Dimensional finite-difference code, MODFLOW, to simulated flow in the four aquifers in the Lompoc Basin of which the Lompoc Plain is a part (Figure 1). The solute transport model employs a 2-Dimensional finite-element code, SUTRA, which was modified by the USGS for their study to allow time steps of varying length. This 2-D transport model simulates only transport in the Main Zone Aquifer in the Lompoc Plain using output from the flow model that is processed to become input to SUTRA.

The MODFLOW grid uses a uniform spacing of 1/4 mile (Figure 2) and includes four layers (Figure 3) representing the entire Lompoc ground-water basin. Layer 3 of the USGS flow model corresponds to the Main Zone aquifer of the Lompoc Plain.

The 2-Dimensional USGS SUTRA solute transport model represents one layer only, the Main Zone in the Lompoc Plain. It utilizes a uniform-density finite-element mesh that is rectangular in order to match the geometry of the MODFLOW grid, however, each half-mile wide flow model cell of the MODFLOW grid is assigned nine SUTRA transport model nodes, as shown in Figure 4. A total of 905 nodes were used to represent the Main Zone Aquifer in the Lompoc Plain.

The USGS calibrated their flow and transport models for the period January 1941 through December 1988 with two stress periods per year of a varying duration. The length of each stress period is based on the number of consecutive days in each year that were classified by Bright and others (1997) as wet, and the number classified as dry. The length of the wet periods varies from 0.13 to 0.85 years. Conversely, the range in length of dry periods is from 0.87 to 0.15 years. All input data that is related to hydrology is then tied to the length of the stress periods for a given year such as initial and boundary conditions, pumping rates and recharge. The fact that the length of each stress period is determined by historical conditions, particularly the flow of the Santa Ynez River, may introduce some uncertainties when converting monthly SYRHM output to USGS stress periods. It can result in a different classification or an offset in wet and dry periods in some years relative to that specified by the USGS. The degree to which this affects the comparison of results appears to be minor.

Ground-water pumping used in the USGS model of the Lompoc Basin for the calibration period is shown in Figure 5. It ranges from about 4,000 afy in 1941 to about 31,000 afy in 1988. Simulated pumping in 1988 was used in the EIR Alternative simulations for reasons discussed in greater detail in Part 8 of this study. Note that the rates of pumping shown in Figure 5 represent the entire basin, not just the Lompoc Plain where the transport model is used to represent the TDS of the Main Zone.

The measured, and USGS flow model simulated water levels for the Main Zone and Lower aquifer for Spring 1988 are shown in Figure 6. These water levels were used as initial conditions for the EIR Alternatives.

The measured and simulated TDS in the Main Zone aquifer during 1987-88 is shown in Figure 7. The simulated TDS at the end of the USGS model calibration were used as initial conditions for the EIR Alternatives for the simulations using the USGS model. The TDS of the USGS transport model boundary conditions are shown in Figure 8 and 9. These were held constant during the EIR Alternatives as they were for the most of the USGS calibration period. Note the high TDS values for the Lower Aquifer and consolidated rocks (Figure 9) compared to the Middle Zone (Figure 8). The USGS (Bright, et. al., 1997) determined that the lower aquifer and consolidated rocks provide a significant contribution of salt to the Main Zone when pumping induces flow from these formations.

Since historical TDS data for Santa Ynez River flow at the Narrows is limited, the USGS used the available data in the early 1990's to make assumptions for the historical model calibration. They assumed a fixed value of river TDS at the Narrows for all wet periods of 800 mg/l, and 1,300 mg/l for all dry periods. The USGS assumed the TDS of subflow associated with the river at the Narrows was 1750 afy (Figure 9) based on their analysis of available river TDS data at low flows.

3. Description of the HCI Models

HCI developed flow and transport models for their study, *Development of a System of Models for the Lompoc Ground-Water Basin and Santa Ynez River* (HCI, 1997). Several surface water and ground water flow and transport models were developed for that study. Of those, only the Lompoc Basin Flow, Lompoc Plain Flow and Lompoc Plain Transport (Salinity) Models were used for this study. The numerical codes used are FEMFLOW3D and TRANS3D, developed by Tim Durbin and others for the USGS. FEMFLOW3D was published in 1997 as USGS Open File Report 97-0810. Documentation for the TRANS3D code is not believed to have been published to-date.

The HCI Lompoc Basin Flow Model domain is shown in Figures 10, 11 and 12. A finite element grid is used that and includes four layers representing the Shallow, Middle, Main and Lower aquifers, similar to the USGS flow model. There are a total of 689 nodes in the HCI basin flow model. This model uses monthly stress periods, therefore, the time series input is directly compatible with that of the SYRHM output at the Narrows.

The HCI Lompoc Plain flow model, which provides output for use in the transport model, covers a smaller area and uses a more refined grid than the HCI Lompoc Basin flow model. It consists of a total of 3936 nodes (Figure 13). It has 7 layers (4-Shallow, 2-Middle, 1-Main) (Figure 14). The Lower Aquifer is not represented in the HCI Lompoc Plain flow and transport models. Instead a no flow boundary represents the contact between consolidated rock and the Main Zone in the Western Plain and along the southeast and northwest margins of the Lompoc Plain ground-water basin. A constant head boundary is used to represent the contact between the Lower Aquifer and the Main Zone in the Central and Eastern Plain that uses output from the Basin Flow model to determine the head within the modeled area and flux across the boundary.

The HCI Plain flow model does not extend westward to the Pacific shoreline as the USGS model does. A constant head boundary to the west allows inflow or outflow depending upon whether the head inside the boundary is higher or lower than that specified. The salinity at the western boundary of the Plain flow model was set at 2000 mg/l, which appears to correspond to measured data for the Main Zone in that area (Figure 7).

The HCI Lompoc Plain model simulates salt loading of applied water and rainfall as it percolates through unsaturated zone before it enters the saturated aquifer in the Shallow Zone. The rate of dissolution of salts from soil into percolating water is simulated based on a series of equations (HCI, 1997). These equations include coefficients that account for the type of land use, initial soil salinity, salinity of applied water, a threshold concentration above which no dissolution of salts in the soils can enter, and a transfer rate coefficient. The transfer rate is reportedly the most sensitive of these parameters. It was initially obtained from limited data in the technical literature and analysis of limited local soil samples. The transfer rate for each subarea was held constant during simulation, but was adjusted from initial estimates in order to achieve calibration.

A limit was set by HCI on the maximum TDS of percolating water in each subarea that can cause additional leaching of salts from soils. Only salts occurring as solids in the unsaturated zone are simulated by the model as contributing to the salinity of ground water. The transport model does not simulate the exchange of salts between the aquifer matrix and ground water within the saturated zone, but allows for hydrodynamic dispersion (mixing) of recharged and stored ground water within subareas and layers.

The HCI Lompoc Plain transport model has the same structure as the Plain flow model, however, it operates on annual, rather than monthly, stress periods. For this reason, the model results generally fluctuate to a lesser degree than if output monthly or biannually.

For the purposes of this study, where Santa Ynez River flow and TDS data are generated by the SYRHM up to the Lompoc Narrows, the HCI ground-water models are run sequentially, beginning with the Basin flow model, followed by the Plain flow model, and the Plain transport model. Each model provides input to successive models. The end results are simulated ground-water levels and TDS within each layer represented for each aquifer in the Lompoc Plain.

One of the key features of the TRANS3D code that is used for the HCI transport model is that, unlike the SUTRA code used for the USGS transport model, it accounts for changes in aquifer TDS due to changes in applied water. As groundwater is pumped from any well for irrigation, the TDS of water that is pumped is tracked according to the time and location and aquifer from which it is produced, and applied onto specified locations on the land surface. Whatever portion of the applied water that percolates will carry its salt load that will change as it percolates through the unsaturated zone, based on soil salinity in that area. This simulated recycling effect can provide a more realistic method of calculating the change in aquifer salinity over time based on land and water use practices. It allows for trends to develop as water quality increases or decreases based, in part, on the quality of water applied at the surface. However, the accuracy of this approach to ground-water salinity modeling is dependent upon the extent to which the additional input data and assumptions required are constrained by measured values or some other empirical data.

Figures 15 and 16 show the simulated of the Middle and Main Zones in 1991. The 1988 results of this model were used as initial conditions for the EIR Alternative simulations to be compatible with the end of the simulation period of the USGS model. Figure 17 illustrates the TDS values used in HCI's Lompoc Plain transport model along the lateral and lower boundaries. Inflow beneath the Central and Eastern Plain from the Lower Aquifer is assigned a TDS range of about 600 mg/l to over 1000 mg/l. In the Western Plain, where the Main Aquifer overlies consolidated rocks, the HCI model represents this contact as a no flow boundary.

Ground water pumping simulated in the HCI Basin Flow model is shown in Figure 18 along with the 1988 constant pumping rate used in the EIR Alternatives for this study. The monthly distribution of pumping by the City of Lompoc is shown in Figure 19 along with that assumed for EIR Alternative 4A. Modifications to model input data for the EIR Alternative simulations are discussed in more detail in Section 5.

A summary of the USGS and HCI models is provided as Appendix A.

4. Key Differences between the USGS and HCI Ground Water Models

Although an extensive evaluation of and comparison between the USGS and HCI models has not been performed as a part of this study, some significant difference have emerged as a result of preparing input data and processing output data for the EIR Alternatives.

a) Model Code

The USGS study was developed in the late 1980's early1990's, at which time they determined the 2-D SUTRA code, one of few available at the time, to be most suitable for this application. This choice required that the transport model boundary conditions of TDS in overlying (Middle Zone-Upper Aquifer) and underlying aquifers (Lower Aquifer) would be predetermined based on historical data and can not change over time based on changes in pumped and applied water salinity. The TDS of flow from the Middle Zone to the Main Zone and from the Lower Aquifer to the Main Zone is held constant at the TDS assigned to the node associated with the flow cell (Figures 8 and 9). The model was calibrated to historical measured data in selected wells by adjusting the TDS in the overlying and underlying aquifers, in conjunction with calibration of the flow model.

The transport code used by HCI allows simulation of TDS in all layers and the TDS in each can vary over time due to variations in the quality of applied water, hydrology and pumping rates as well as leaching of salts in the unsaturated zone. Since, TDS was not fixed in relation to some specific historical period, it can better react to changing conditions. This is an improvement in numerical simulation, but the results are dependent on the validity of additional assumptions and input data. The TDS at the boundary of the USGS transport model could be manually adjusted for each stress period to approach the dynamic adjustment achieved by the TRANS3D code but would require significant additional input data development and iterative simulations.

The actual equations used to represents flow and mass transport in the any of the USGS or HCI model codes have not been compared or evaluated relative to standard references in the literature for this study. Nor was documentation available for the TRANS3D, including results of benchmark testing using standard problem sets.

b) Model Structure

The USGS flow model includes a layer for the Lower Aquifer that they consider to be a significant source of high TDS water that flows into the Main Zone when pressures/heads are lower in the Main zone than in the Lower Aquifer. The USGS transport model has a boundary condition that assigns a TDS to flow from the Lower Aquifer depending upon location (Figure 9).

The HCI model does not have a layer representing the Lower Aquifer in the flow or transport model of the Lompoc Plain and do not allow flow where the Main Zone contacts consolidated rocks. They do not consider the consolidated rocks or the Lower Aquifer a significant source of salt that moves into the Main Aquifer. Instead, the primary source of salt entering the Main Zone in the HCI model is the dissolution of salts in the unsaturated zone that are entrained in percolating recharge from irrigation return flow, precipitation and stream losses.

The USGS model simulates the flow the Santa Ynez River from the Lompoc Narrows to the Pacific Ocean. However, the TDS of the Santa Ynez River at the Narrows is input directly into about 20 transport model nodes in the Main Zone just down stream of the Narrow, equivalent to three flow model cells (Figure 8). The apparent basis for this approach is that only the Main Zone is simulated in the transport model and there is very high vertical conductivity near the Narrows such that percolation from the river reachs the Main Zone with little mixing and no significant change in TDS.

At times, when surface flows pass the three flow model cells that are used to represent the river bed infiltration below the Narrows, the infiltration of River water is influenced only by the specified TDS of in areas underlying the river representing the Middle Zone (Figure 8). The actual TDS of the river flow below the Narrows simulated by the SYRHM is <u>not</u> used in the ground water models.

The HCI models have identical layering for both flow and transport in the Lompoc Plain, such that the TDS percolating to the Main Zone in that area has to move through six other layers representing the Shallow and Middle aquifers first and may be diluted or increased in TDS through mixing before it reaches the Main Zone.

c) Model Calibration

The approach to calibration is discussed in detail in the USGS (1997) and HCI (1997) reports. Some of the significant differences are discussed below;

i. The USGS approach was to calibrate the flow model to match water levels and then adjust the TDS of aquifers bounding the main zone, within a reasonable range determined from available ground water TDS data collected over time. This resulted in a good match of simulated and measured TDS for the Main Zone, but since it was, in effect, "hardwired" for that result it could be less adaptable for future simulations, unless the boundary conditions in over and underlying formations are changed based on current and future data or updated during simulations.

HCI had a similar as the USGS for flow modeling. But the approach used by HCI to calibrate the transport model was to first develop an average TDS for each layer for each decade from the 1940's to the 1990's. This was for use as a calibration target for each layer. This approach was used because HCI felt historical TDS data was inadequate for matching individual well TDS over time, but sufficient to determine trends within aquifers over long time periods. This assessment of data quality was based on the sporadic spatial and temporal nature of the available data, differences in sampling and analysis methods that could result differences in data quality, and the fact that many wells were completed into more than one aquifer or that leakage may occur between layers along the outside of casing. This evaluation of the available water quality data also may have influenced HCI's use of annual stress periods in the transport model.

These differences in approach (along with the stress period length, discussed below) is the primary reason that the HCI model is generally exhibits smaller variations in TDS over time at a given layer or node than the USGS model.

ii. The USGS flow and transport models use two variable stress periods per year which contribute to the variability shown in the output. The HCI flow models use monthly stress periods. The HCI transport model uses annual stress periods, which contributes to the dampened response shown in the output.

iii. Initial conditions in the HCI model were the same (1200 mg/l TDS) for all layers at the beginning of model calibration based on limitations in TDS data available for that period. The USGS transport model had large variations in TDS within the Main Zone and in the over and underlying aquifer boundary conditions (Figures 7, 8 and 9). This can affect the change in TDS during the calibration, but may not significantly affect the simulated difference between EIR Alternatives, since those simulations were run using common initial and boundary conditions and constant pumping for a given model (HCI or USGS). However, there were differences in initial and boundary conditions between these two models as used to simulated the EIR alternatives.

iv. The HCI and USGS models were calibrated over slightly different periods. The USGS calibration period was January 1941 to December 1988, ending in a significant dry period. The HCI calibration period was October 1941 to September 1993, ending in a relatively wet period. The HCI calibration period ends about six years later than the USGS calibration period. Although the model were run for their respective calibration periods for the EIR alternatives, results were averaged over a common period for analysis.

v. The USGS used a salinity of 1750 mg/l for subsurface inflow at the Lompoc Narrows and HCI used 1000 mg/l. Both were held constant for the entire simulation period of each model. The rate of underflow was variable in the USGS model depending upon the simulated head in the aquifer. The rate of underflow in the HCI model was fixed at 1900 afy. These input data were not changed for the EIR Alternative simulations and may affect results at low flows near the Narrows.

Although the primary differences between the transport models provide somewhat different results for a similar historical calibration period (only the TDS of the Main Zone is commmon to both), it is not clear which model better represents the actual system. This is because they are difficult to compare directly without a thorough evaluation of the historical ground water salinity data and the calibrated model results from year to year. Carefully planned sensitivity analyses would also be needed for a comparison of the models. The models may have to be modified to run on similar stress periods and their output processed both by spatial averaging, and for individual well locations to allow a statistical or other quantitative analysis. A detailed evaluation the models and historical data was not conducted as part of this study.

5. Development of Model Input Data for this Study

The following changes in model input data were made for the simulation of the EIR Alternatives:

a) Stream flow and TDS of the Santa Ynez River at the Lompoc Narrows were generated by the SYRHM for each EIR Alternative and processed to be compatible with the structure and time periods of the ground-water flow and transport models.
b) Initial water levels and TDS were reset to those simulated at the end of 1988 for the original calibration of each model.
c) Ground-water pumping and return flow from agriculture are held constant at 1988 levels.
d) Pumping from the City of Lompoc wells was reduced by 1770 afy in Alternative 4A.
e) Where the ground-water model simulation periods did not coincide with the simulation period of the SYRHM, flow and TDS input at the Narrows from the original calibration of each model was used.

Modification (a) includes the adjustments necessary to process the monthly flow and TDS output from the SYRHM for each EIR Alternative for input data to the USGS ground-water flow and transport models. This involves averaging flow weighted TDS for each of the variable stress periods of the USGS model. HCI flow models and salinity preprocessing programs read monthly flows and TDS data directly.

Modification (b) was used to better represent current conditions. Simulated and measured TDS for 1988 for Main Zone from the USGS model is shown in Figure 7. USGS model output for 1988 was used as input for all EIR Alternative simulations. The simulated TDS from the HCI model for Fall 1991 for the Middle and Main Zones are shown in Figures15 and 16. Initial conditions for the EIR Alternatives was generated from the HCI model output for 1988 for use in EIR simulations.

Modification (c) was used to allow simulation of constant pumping over the simulation period which better represent current conditions than the increased pumping over the entire historical period. Simulated pumping for 1988 for each of the Lompoc Basin flow models are shown in Figures 5 and 18. The use of a constant pumping rate is important to evaluation of each of the

EIR Alternatives to minimize simulated differences between alternatives that are not related to Cachuma operations. Although there is a difference between the USGS and HCI model in simulated rate of pumping in 1988 of about 4,000 afy (or 13% to 15%), no attempt was made to match the pumping rates. This would have required significant modification to the models and recalculation of 1988 initial conditions. The rates of pumping in the Lompoc Plain may be more similar between the models than the rates for the entire Lompoc Basin, but locations and rates of pumping were not extracted from the models and compared to available data as part of this study.

There are some changes in pumping rates and distribution that have reportedly occurred since 1988 that are not represented in the models. These changes include; 1) at least one landowner in the Western Plain is reported to currently pump a greater amount of water from shallower aquifers and a lesser amount from the Main Zone, and 2) some municipal ground water users outside the Lompoc Plain have begun to use State Project water which may have reduced their pumping and slightly improved the quality of discharge from the Lompoc Wastewater Treatment Plant (WWTP). Details regarding current practices and uses of ground water were not available for this study.

Modification to the pumping files may allow greater accuracy of model results, but would not necessarily affect the comparison between EIR alternatives using an identical set of input data in all cases. The results of the ground water model simulations for the EIR alternatives should not be considered a precise representation of ground-water quality and water-levels at any particular time period in the future.

Modification (d) was made to simulate direct delivery of 1770 afy of State Project Water (SWP) to the City of Lompoc under Alternative 4A. Ground water pumping by the City was reduced by a like amount for this alternative only. The effect of SWP these deliveries on ground-water pumping by the City of Lompoc are shown in Figure 19. A small reduction in the TDS of WWTP discharge due to these deliveries would be expected since the range of TDS of ground water pumped by the City of Lompoc in the late 1980's ranged from under 1,000 to over 1,500 mg/l. In contrast, the average State Water Project TDS, based on samples taken from the Coastal Aqueduct inlet near Kettleman City, was about 300 mg/l. The estimated proportion of constant SWP deliveries to the City for Alternative 4A, in relation to monthly variable total demand, ranging from about 45% in winter to 25% in summer (Figure 19). Therefore, the SWP deliveries were estimated to reduce the TDS of WWTP discharge, as represented in the USGS model, from about 1,000 mg/l to about 800 mg/l. For the HCI model the TDS of WWTP discharge was similarly reduced. Although the proportionate reduction in TDS is significant, the amount of water is relatively small compared to total recharge and the effect is probably localized. In addition, the WWTP discharge is applied at the surface and must percolate and potentially increase in TDS due to percolation through soils and mixing before it reaches the Main Zone. The effect of this reduction in return flow from the WWTP in each model is difficult to determine without running the models with this modification only, holding all other variables constant and processing model output at selected distances from the point of WWTP discharge.

Modification (e) simplified input and output processing and running of the models, since all programs and data and worksheets were set up for the original calibration periods. The affected periods were January to September 1941 for the USGS model, and October 1993 to September 1994 for the HCI model. The model results were not significantly affected due to the lengthy stress periods for both models. In addition, only the results from the period 1952 to 1982 were processed generate comparative tables showing the average differences between EIR Alternatives.

6. Limitations of the Ground-water Models as Utilized for this Study

Various measures were taken in use of these models to assure that the input data representing flow and TDS at the Narrows be similar for both HCI and USGS models in order that the results of the simulations may be compared equally. The simulations were not expected to predict, with a high degree of accuracy, the TDS and water levels in the future. Rather, they were intended to allow a relative comparison between alternatives with only reasonable model modifications that could be made within the scope of this study. The differences between EIR Alternatives are best viewed within one model rather than between models since the differences in model construction and approach to calibration and the complexity of the system and limitation of data make it difficult to compare the models directly without detailed knowledge of the hydrogeology of the basin and the quality and spatial and temporal of available data.

The predictive capability of these models to simulate ground water quality conditions in the future is limited by; 1) the conversion of monthly SYRHM output into the biannual and annual stress periods of the USGS and HCI transport models, 2) the use of constant 1988 pumping, as originally developed for the model calibration, which may not represent present or future pumping amounts or pumping distribution by aquifer and subregion. In addition, water and land use changes that may affect the distribution and quality or water recharging the aquifers in the future are not accounted for. An evaluation of such changes was beyond the scope of this study.

As previously mentioned, the HCI transport model does account for changes in TDS within each layer and changes in TDS of waters produced from each layer and applied or used, some of which returns as recharge. The USGS transport model does not have this capability, but has a fixed distribution of TDS of the Middle Zone throughout the simulated period.

From the limited evaluation of the models that could be conducted within the scope of this study, it believed that the TDS results models are only accurate for future predictions to within a range of roughly 100 to 300 mg/l, depending upon location, magnitude of changes in input data, hydrologic conditions, length of simulation period and other factors. For use in comparative analysis, such as between EIR Alternatives where changes in input are limited, the differences in TDS between simulations in a single model of less than 100 mg/l may be useful in cases where clear trends are exhibited.

7. Method of Presentation of Model Results

a) Methods Employed by HCI and USGS to Present the Results of Model Calibration and Management Scenarios

i) USGS model

The USGS (Bright, and others, 1997) elected to present the results of their transport model calibration in the Main Zone Aquifer by three methods; 1) plotting the simulated TDS in the Main Zone at selected well locations along with available measured data, considered reliable, at those locations, 2) contour maps of TDS for simulated TDS in the Main Zone for 1941 and 1988, and 3) average measured and simulated water levels at selected sites for 1987 and 1989. For their presentation of model results for management scenarios, in which a constant, average hydrology was used, the USGS elected to present only contour maps of TDS in the Main Zone for each alternative and the difference in TDS between alternatives, at the end of a 25 year simulation period.

ii) HCI model

HCI presented the results of their transport model calibration as a graph of points representing the calculated 10 year average TDS in each aquifer, along with the simulated average TDS for each year of the simulation period and a contour map of simulated TDS in each aquifer for 1991. Individual well history matching was not used as basis for calibration.

b) Methods Developed to Present the Results for the EIR Alternatives

1For this study two well locations were selected from each of the primary subareas, Eastern, Central and Western Plain in order to evaluate the effects of each alternative in the regions of the majority of ground water pumping (Figure 1). The wells were selected on the basis of location, availability of measured water quality data at that location, and the fact that they were used as calibration wells by the USGS (Bright, and others, 1997). USGS personnel indicated they selected these wells carefully, based on well construction and evaluation of the available geochemical data and determined the data for these wells could be reliably attributed to the Main Zone aquifer alone. The USGS flow model row and column and transport model node was specified for each of the wells they used for calibration of the transport model. Wells used by the USGS for their model calibration were favored since the wells and data were not independently evaluated for this study. Identifying nodes related to wells was not straightforward because well locations were not overlain on grid maps and no geospatial data was available to develop such data electronically with greater accuracy. However, there are some node numbering typos in the USGS report (Bright, and others, 1997), and an average simulated TDS from two nodes is used in some cases where measured data for different periods from two nearby wells was used to represent a continuous record.

The TDS output from the models that is presented herein as representative of each of the six selected wells are the results for a <u>single</u> node in each transport model that was determined to be closest to the selected well location. For pumping wells, the location nearest the center of the pumping cell in the flow model was used although the TDS may vary by over 100 mg/l in neighboring cells and one flow model cell has nine associated transport model nodes in the USGS model. In addition, a single well symbol on published maps may overlap multiple SUTRA nodes in the USGS model.

Pumping wells were associated with particular model nodes by HCI for their models, but output was by grid element not by node, so an element had to be selected by creating maps with the model grid superimposed over the well locations. In the case of some pumping wells a specific node wase located as closely as possible using coordinates assigned to each node in the input data and maps of well locations. There are no existing maps that show numbered nodes and well locations.

c) Presenting Simulated City of Lompoc Well TDS

HCI developed a program for calculating the simulated TDS of the Lompoc City wells on an average annual basis which includes, a) a weighted average of simulated TDS for multiple nodes immediately adjacent to pumping well/node, b) calculates a weighted average TDS produced by each well based on flow, thickness and pore volume of layers/aquifers opposite the screened portion of the well, and c) calculates a flow weighted TDS for combined City well production based on the amount of water pumped in 1988 by each of the eight City wells. The average production weighting for 1988 based on HCI model input is approximately 57% from Well 3(27Q2), 22% from Well 1 (34B1), 11% from Well 2 (34F6), with the remaining 9% from Wells 4, 7, and 5.

Stetson Engineers created a method for providing a weighted average TDS of Lompoc City wells based on output from the USGS model for comparison to the HCI output. A simpler approach was used due time and data constraints, and differences in model structure. A single node from the USGS model was used to represent the TDS in the Main Zone for each City pumping well. The TDS each node was then weighted by pumping for each well based on the pumping schedule in the model as simulated in 1988. This effort required selection of the appropriate nodes, program testing and QC.

8. Simulation of EIR Alternatives

Seven Cachuma Reservoir operations alternatives were evaluated using the USGS flow and transport models. These are described elsewhere in detail and are briefly listed below:

Alternative 1 - (WR 89-19 Operations): No Action

Alternative 2 - (Post WR 94-5): Pre-Biological Opinion Operations

Alternative 3A - Operations Incorporating BO Actions (0.75 feet surcharging)

Alternative 3B - Operations Incorporating BO Actions (1.8 feet surcharging)

Alternative 3C - Operations Incorporating BO Actions (3 feet surcharging)

Alternative 4A - Operations Incorporating BO Actions, Plus Below Narrows Exchange Project (Direct Delivery of State Project Water for Municipal Use)

Alternative 4B - Operations Incorporating BO Actions, Plus Below Narrows Exchange Project (Recharge of State Project Water below Lompoc Narrows)

The differences in the simulated flow and TDS of the Santa Ynez River at the Narrows for each Alternative are discussed in detail in Stetson Engineers' Tech Memo #3. These differences are discussed briefly here in order to facilitate the understanding of the degree to which a simulated response in the TDS of ground water is due to flow and TDS at the Narrows or inherent characteristics of the ground water models.

The primary differences between Alternatives 1, 2 and 3 are the operation of Cachuma Reservoir and resulting discharge and TDS at the Narrows. The EIR Alternatives are similar with respect to the timing, rate and TDS of flows at the Lompoc Narrows, but the flows for the Alternatives generally differ from historical conditions in that peak flows are reduced and flows during dry periods are increased (Figure 20). The flows for Alternative 4B are consistently higher than the others because, although Santa Ynez River flow up to the Lompoc Narrows is identical for both Alternative 4A and 4B, Alternative 4B flows include an additional direct discharge 1770 afy of imported State Project water at or just below the Narrows.

The monthly average simulated flows for the SYHRM for the period 10/1941 to 9/1993 are shown in Figure 21. The differences between the Alternatives are most apparent during summer months. The greatest differences exist between Alternatives 1, 2 and 3, which are very similar, and Alternatives 4A and 4B. In Alternative 4B, State Project water is recharged directly at or below the Narrows and increases the flow significantly in dry months. In Alternative 4A, State Project water is not discharged to the River, but delivered directly to the City of Lompoc, resulting in lower river flows during dry months.

The SYRHM simulated average annual flow weighted TDS of river flows at the Narrows for historical conditions and EIR Alternatives is shown in Figure 22. The monthly average TDS of flows simulated at the Narrows under historical conditions and for each EIR alternative is shown in Figure 23. These graphs clearly show the inverse relationship between flow and TDS. The TDS for Alternative 3A, B and C are very similar. There is less similarity in the TDS for Alternatives 1, 2 and 4. Alternative 4B stands out because, at low flows, the effects of discharging State Project water below the Narrows for recharge significantly reduce the average TDS, even though the amount of water discharged is relatively small. Note that the TDS data used by the USGS for inflows at the Narrows for the historical calibration is not shown on these graphs because of the variable length of stress periods they used.

The difference between the TDS input to the HCI and USGS models for calibration and for EIR Alternative 2 are shown in Figures 24 and 25 to illustrate one of the primary differences between the USGS and HCI transport models. These differences are most apparent when viewing graphical output that is presented in Part 9 of this report. Only the TDS input for the model calibrations and Alternative 2 are shown for clarity and the fact that the annual and biannual flow weighted average TDS at the Narrows is very similar for each Alternative, except 4B as shown in Figures 22 and 23 for the SYRHM output.

9. Ground Water Model Results for Cachuma EIR Alternatives

The following is a summary of the simulated water levels and TDS for selected sites within the Main Zone of the Lompoc Plain for each of the Cachuma EIR Alternatives. The USGS and HCI model results for the seven Cachuma EIR Alternatives are represented by two well locations within each of the three main subareas within the Lompoc Plain (Figure 1). The results are presented for each Alternative as tables representing the average TDS at each location over the period 1952 through 1998, and time series graphs of TDS and Water Levels representing the results for the entire simulated period used in the USGS and HCI models. The graphs also show results generated from the original model calibrations for each of the model for comparison to each of the Alternatives, primarily to illustrate differences in the magnitude of historical changes in TDS compared to the relatively minor differences simulated for most of the EIR Alternatives.

A) Average Simulated TDS over the 1952 – 1982 Base Period

The average TDS for the Main Zone aquifer in the Lompoc Plain for each subarea at selected locations and the flow-weighted average for the five City of Lompoc active wells are shown in Table 1. The period over which the results were averaged (1952 to 1982) was selected because it was a relatively balanced hydrologic period shared by both HCI and USGS model calibrations and because it limits the effect of the initial conditions of the simulations which were the same for all EIR Alternatives.

The average difference in TDS between Alternative 2 and other alternatives are shown in Table 2 as both a difference in TDS in mg/l and as a percentage. Alternative 2 was selected as the baseline, by which other Alternatives can be compared for the purposes of the Cachuma EIR. Comparisons between all alternatives and river inflows at the Narrows can also be made using Table 2. Another method of comparison between EIR Alternatives is shown in Table 3. These are the average differences between selected Alternatives chosen by URS for the purposes of presenting results in the EIR.

The results shown in Table 1 illustrate the magnitude of the average simulated TDS in each sub area and within a given sub area. This table is more useful for a general comparison between sub areas and, to some extent, between models than Tables 2 and 3, which provide a useful comparison between Alternatives. The values in Table 1 can provide an indication of the relative precision of the model results that, athough presented to the nearest 1 mg/l, may be best evaluated by rounding to the nearest 100 mg/l. As previously noted, the USGS and HCI transport model results are estimated to be accurate for such simulations to within about 100 to 300 mg/l, depending upon various factors. However, for comparisons between alternatives, differences of less than 100 mg/l may be useful where clear trends are observed.

Table 1 shows that, within the HCI model, the overall magnitude of the average TDS ranges from about 2000 to 2300 mg/l in the Western Plain, a relatively uniform 1800 mg/l in the Central Plain, over 800 to 1700 mg/l in the Eastern Plain, and about 900 to 1000 mg/l for the City of Lompoc Wells. The range of TDS in the HCI model is approximately 1500 mg/l basin wide . The differences in results within each subarea range from about 900 mg/l in the Eastern Plain, 300 mg/l in the Western Plain, and no significant difference within the Central Plain.

Within the USGS model, Table 1 shows the overall magnitude of the average TDS ranges from about 2200 to 2900 mg/l in the Western Plain, 1900 to 2200 mg/l in the Central Plain, about 900 to 1800 mg/l in the Eastern Plain, and about 1100 mg/l for the City of Lompoc Wells. The range of TDS in the USGS model is approximately 2000 mg/l basin wide. The differences in results within each subarea range from about 700 mg/l in the Western Plain, about 300 mg/l within the Central Plain, and 800 mg/l in the Eastern Plain,

Table 1 shows that, except very near the Narrows, the USGS model simulates higher overall TDS in the Main Zone than the HCI model by less than 100 mg/l to about 600 mg/l. The greatest differences between the models occurs in the Western Plain where the difference in TDS ranges from less than 200 to about 600 mg/l. This may be because of the difference in the boundary conditions at the base of the models. The USGS model includes a head dependent boundary between the consolidated rocks, a source of high TDS waters, and the Main Aquifer in the Western Plain, whereas the HCI model represents that contact as a no flow boundary.

In the Central and Western Plain the USGS model also simulates a greater range of TDS and higher average concentrations than the HCI model by about 100 to 300 mg/l. This difference may also be attributed to the lower boundary conditions as well as the difference between the USGS and HCI conceptual models. In the USGS model, the primary source of salts introduced to the Main Zone is poor quality water the lower aquifer and consolidated rocks. In the HCI model, dissolution of salts by percolating recharge from rainfall and irrigation return flows in the unsaturated zone is the primary source of salts.

Table 2 was created to show the extremely small simulated TDS differences between the EIR Alternatives. Results shown in Table 2 have been normalized relative to EIR Alternative 2. The difference in mg/l and TDS between alternatives at a given location may be considered below the absolute accuracy of either model. However, it is hoped that they may exhibit trends that would allow evaluation of the Alternatives.

The results shown in Table 2 are primarily for comparison between Alternatives as simulated by a single model. These indicate only minor differences in the water quality in the Main Zone aquifer of the Lompoc Plain result from minor changes in Cachuma Operations (Alt. 2 and 3A,B,C). Cachuma operations that result in higher dry season and dry period flows provide benefits to the Eastern Plain and possibly to the Western Plain. The Central Plain appears relatively unresponsive to Cachuma Operations. Alternatives that involve changes in operations directly within the Lompoc Plain basin such as Alternative 4A and 4B, which includes reductions in ground water pumping and direct recharge of high quality SWP water in the basin, result in the most significant changes throughout the Main Zone in the Lompoc Plain.

In general, the HCI model results indicate very small differences between alternatives that are less than one percent, probably due to their modeling approach and use of annual stress periods. None of the Alternatives considered for future operations exhibit conspicuous basin wide trends that would suggest it was superior to the others. Alternative 1 is more representative of past operations, but does exhibit a clear trend of inferior water quality basin wide, although the magnitude is relatively minor or even insignificant. Locally, the greatest improvement in ground water quality occurs very near the Lompoc Narrows under Alternative 4B where recharging of low TDS SWP water results in a significant improvement near the City wells, including Well 34B1, possibly due to high vertical permeability which allows localized deep percolation of high quality SWP discharge. Slight improvements in TDS are shown in the HCI model results for Alternatives 3-A, B, and C.

It is more difficult to explain the HCI model response for Alternative 4A. The relative increase in TDS in the Central Plain, Well 34B1 and the City wells in the Eastern Plain may be due to the sensitivity of this model to reduced pumping which reduces the amount of storage available for recharge of good quality high flows from the river. The slight improvement in TDS in the western plain may result from a lesser amount of induced inflow from saline waters to the west, also due to reduced pumping. The TDS for Well 28M2 shows improvement for this Alternative, probably due to the proximity to the waste water treatment plant discharge which was assumed to have a lower TDS for this Alternative only, as discussed in Part 5.

The differences between simulation results shown in Table 2 for the USGS model are generally larger in magnitude compared to the HCI model, except in the extreme eastern portion of the basin. Alternative 1 appears to be generally inferior compared to the other alternatives. Alternative 3A, B, and C show general improvement, except for minor differences near the Narrows. Alternative 4A shows somewhat greater improvement due to reduced pumping and increased inflow of poor quality water from underlying formations and boundaries and then improved quality of waste water discharge near Well 28M2.

The effect of Alternative 4B is a marked improvement in water quality in the Eastern and Central Plain, for the USGS model, relative to the other alternatives, due to direct recharge of high quality SWP waters at low flows. The magnitude of the improvement in the extreme eastern Plain is far less than that simulated by the HCI model, possibly reasons discussed above regarding vertical permeability and the greater TDS of river subflow in the USGS model. The cause of the relative decrease in quality in the Western Plain for this alternative is unknown.

Table 3 shows the results as presented in the EIR. The data are identical to that presented in Table 2 except for some rounding of numbers and the addition of flow-weighted TDS of Lompoc City water supply based on direct delivery and mixing with SWP water for Alternative 4A. These results were not generated by the ground water models, but the flow-weighted model output for water pumped by City wells was combined with 1770 afy of State Project water assuming a TDS of 300 mg/l to obtain a flow-weighted average TDS for the mixed water supply. The results indicate a significant theoretical improvement in the quality of the City's water supply relative to any other Alternative. The mixing result using USGS output result is proportionately greater reduction based on its simulated aquifer response.

In general, the results for both models are area generally consistent, although some differences in magnitude occur that may be explained by differences in boundary conditions, calibration approach and conceptual models. The ground water model results tend to favor Alternatives 4A and 4B in the Eastern Plain. Results are mixed for Alternatives 4A and 4B and generally neutral for Alternative 3 in the Central Plain. In the Western Plain, Alternaitves 3 and 4A are favored.

B. Time Series Graphs of USGS Model Results

Time series graph of water levels and TDS are presented as Figures 26 to 49 and are discussed briefly below for each of the six locations selected for comparison of EIR Alternatives (Figure 1). In general, the graphs show a degree of similarity between the Alternatives that make it difficult to identify clear difference between them. They are presented for completeness and to show the relative difference between the Alternatives and historical conditions in the Lompoc Plain Main Zone aquifer.

The times series graphs are shown for the entire calibration period of each model, unlike the TDS Tables 1, 2 and 3 which are based on averages from the period 1952-82.

Eastern Lompoc Plain

The simulated TDS in the Main Zone in the eastern Lompoc Plain using the USGS model are shown for two selected well locations in Figures 26 and 27. Figure 26 shows the simulated TDS at Eastern Plain well 34B1. Alternative 4B clearly results in a lower TDS than the others at this location. Overall, the simulated TDS at this location shows a somewhat greater variation for the Alternatives than the historical calibration. One explanation for this response is that the higher (1988) pumping rate (Figure 5) used for each Alternative results in a greater dewatered storage during dry periods relative to the allowing greater amounts of higher quality recharge near the Narrows during high flow-lower TDS events. Part of the variation in TDS for the Alternatives may be due to the greater variation in simulated TDS of river inflows at the Narrows than the USGS used in their historical calibration (Figure 24). This effect may only occur locally very near the Narrows and does not appear to extend far down-gradient. At increasing distances from the Narrows, a greater influence on ground water quality in the Main Zone appears to be the TDS of water in overlying or underlying aquifers or along margins.

Figure 27 shows the simulated TDS in the Main Zone for Well 28M2 on the western side of the Eastern subarea. There is little difference between the results for each Alternative at this location, which begins to show a more subdued response more characteristic of wells in the

Central Plain. The long-term trend shows the effects of hydrologic conditions are similar to those for the historical calibration in the latter half of the period when the pumping rates are more comparable. This similarity is due to the lack of simulated variation in ground water conditions in this area relative to historical conditions, compared to the Eastern Plain which is greatly influenced by flows and TDS at the Narrows.

Figure 28 shows the water level response in the Main Zone near the Lompoc Narrows. It suggests the higher rate of pumping in the Alternative simulations causes greater water level declines during dry periods, until later years when historical pumping begins to approach the 1988 level used for the Alternatives. Figure 19 shows a similar but more subdued water level response. The simulated water level response in the Eastern Plain to all the Alternatives are very similar and none stands out as having a clear advantage over the others with respect to ground water levels in the Main Zone in this area.

Central Lompoc Plain

The simulated TDS response in the Central Plain shows the dampened response to flow and TDS changes at the Narrows with increasing distance (Figures 30 and 31). The lower permeability of overlying sediments and distance from the Narrows has the effect of allowing the simulated TDS for all Alternatives to become very similar. This difference in the response between Well 29N2 (Figures 30) and Well 31A4 (Figure 31) may be due to proximity to the river. There is no clear difference between the Alternatives in this area based on these graphs.

The simulated water levels for these same locations in the Lompoc Plain are shown in Figures 32 and 33. Both locations show a similar response to each Alternative such that none is clearly superior over the others.

Western Lompoc Plain

The simulated TDS graphs for each Alternative in the Western Plain is shown in Figures 34 and 35. The response for the Alternatives are similar to the USGS historical calibration, but the TDS higher due to a higher initial condition for the Alternative simulations. The TDS response is unique and may be related to wet and dry periods. The differences between Alternatives are small relative to the magnitude of the TDS in the Main Zone in the Western Plain subarea.

The various EIR Alternatives show an overall increase in TDS in this part of the Lompoc Plain probably because pumping, as simulated, remains high. TDS is simulated to increase significantly during dry periods, and remain higher by the end of the simulation. As previously noted, pumping may now be distributed more widely across different aquifers in the Western Plain. The effect of pumping redistribution on simulated TDS in the Main Zone is unknown without well specific data and revised model simulations.

Figures 36 and 37 show the water level response in the Main Zone beneath the Western Lompoc Plain. The water levels in this region show similar responses as those in the Eastern and Central Plain. There appears to be little difference between the Alternatives, but the simulated water levels are lower than under historical conditions which supports the higher simulated TDS values for the Alternatives that are caused by greater inflow of poor quality water from adjacent boundaries of underlying formations.

C. Time Series Graphs of HCI Model Results

The graphs of results for the HCI model contrast with those of the USGS model in the HCI model results appear smoother due to the annual stress periods and other differences in modeling approach discussed under Part 4 of this report.

Eastern Lompoc Plain

The simulated TDS in the Main Zone in the eastern Lompoc Plain using the HCI model are shown in Figures 38 and 39. Figure 38 shows the simulated TDS at Eastern Plain well 34B1. Overall, the simulated TDS at this location shows a general decrease in TDS for all EIR Alternatives relative to the historical calibration. The simulated TDS in the Main Zone is similar for all the EIR Alternatives, except Alternative 4B. In Alternative 4B, the direct recharge of much lower TDS water (approximately 300 mg/l) in the Santa Ynez river bed near this well location, lowers the simulated TDS in the aquifer in that area by about 150 mg/l relative to the other Alternatives. The minor differences in simulated TDS at this location between the other Alternatives is a result of the similarity in the simulated flow and TDS at the Narrows for those Alternatives.

Figure 39 shows the simulated TDS in the Main Zone for Well 28M2 on the western side of the Eastern subarea. There is little significant difference between the results for each Alternative at this location except a small overall improvement in Alternative 4A which may benefit from lower wastewater TDS discharge near this well. The effects of direct recharge of high quality water in Alternative 4B appears to provide little benefit at this distance from the recharge area. The long-term trend is relatively flat, showing little response to hydrology.

The simulated water level response in the Eastern Plain to all of the Alternatives are very similar and none stands out as showing clear advantages over another in the Main Zone. Figure 40 shows the water level response in the Main Zone near the Lompoc Narrows. The higher rate of pumping in the EIR Alternative simulations results in lower water levels than for the calibration. The lower pumping rates simulated in Alternative 4A result in slightly higher water levels than for the other alternatives.

Figure 41 shows a similar water level response to that shown in Figure 40, but is more subdued due to distance from the area of highest recharge and highest degree of hydraulic communication with surface water, near the Narrows.

Central Lompoc Plain

The simulated TDS response in the Central Plain is more subdued than near the Narrows due to the lower permeability of overlying sediments and increased distance from the primary area of stream recharge (below Lompoc Narrows) (Figures 42 and 43). There is no significant difference between the Alternatives in this area, however, the TDS for Alternatives 4A and 4B is slightly higher than for the other Alternatives although they would be expected to be slightly lower. There is no explanation for these apparently anomalous results.

The simulated water levels for these Central Lompoc Plain locations are shown in Figures 44 and 45. Both locations show a similar response to each Alternative, with no apparent advantage of one over the others or that can shed light on the TDS response of Alternatives 4A and 4B.

Western Lompoc Plain

The simulated TDS for each Alternative in the Western Plain is shown in Figures 46 and 47. The results for each of the Alternatives are very similar and show little variation over time, due to hydrology. The simulated TDS values are higher than for the historical calibration, primarily due to the updated initial conditions and continued trend of induced poor quality water from leaching of salt in the unsaturated zone and along model boundaries.

Figures 48 and 49 show the water level response in the Main Zone beneath the Western Lompoc Plain. There is little difference in water levels between the Alternatives and they show only a minor response to hydrologic trends, possibly due to proximity to the western constant head boundary in the HCI model.

Table 1: Lompoc Plain Groundwater Quality
Simulated Average TDS for Selected Locations
Main Zone Aquifer (1952-1982)
[mg/L]

HCI Model

	Alt 2	Alt 1	Alt 3A	Alt 3B	Alt 3C	Alt 4A	Alt 4B
Western Plain							
Well 26F1,3,4,5	2330	2331	2329	2329	2330	2327	2332
Well 25D1,3	2018	2020	2016	2016	2016	2010	2018
Central Plain							
Well 31A3	1784	1786	1782	1784	1782	1809	1803
Well 29N6	1784	1785	1786	1784	1786	1800	1794
Eastern Plain							
Well 28M2	1728	1733	1726	1726	1723	1711	1731
Well 34B1	1009	1019	1005	1006	1002	1019	842
City Wells - Avg	1012	1022	1010	1011	1008	1029	854

USGS Model

	Alt 2	Alt 1	Alt 3A	Alt 3B	Alt 3C	Alt 4A	Alt 4B
Western Plain							
Well 26F1,3,4,5	2885	2901	2849	2844	2850	2794	2906
Well 25D1,3	2273	2291	2234	2231	2235	2174	2284
Central Plain							
Well 31A3	2180	2180	2176	2176	2176	2159	2176
Well 29N6	1937	1933	1936	1935	1935	1906	1928
Eastern Plain							
Well 28M2	1770	1769	1757	1758	1758	1725	1752
Well 34B1	973	984	976	975	974	982	931
City Wells - Avg	1108	1115	1110	1109	1107	1102	1085

Table 2: Lompoc Plain Groundwater Quality
Simulated Average TDS for Selected Locations
Main Zone Aquifer (1952-1982)
[Alternatives - Alternative 2]

HCI Model

	Alt 2		Alt 1		Alt 3A		Alt 3B		Alt 3C		Alt 4A		Alt 4B	
	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%
Western Plain														
Well 26F1,3,4,5	0.0	0.0%	1.4	0.1%	-0.2	0.0%	-0.4	0.0%	0.0	0.0%	-2.7	-0.1%	2.0	0.1%
Well 25D1,3	0.0	0.0%	2.6	0.1%	-1.9	-0.1%	-1.9	-0.1%	-2.0	-0.1%	-7.9	-0.4%	-0.1	0.0%
Central Plain														
Well 31A3	0.0	0.0%	2.3	0.1%	-1.5	-0.1%	-0.1	0.0%	-1.5	-0.1%	25.6	1.4%	19.6	1.1%
Well 29N6	0.0	0.0%	1.0	0.1%	1.3	0.1%	-0.3	0.0%	1.2	0.1%	16.0	0.9%	9.9	0.6%
Eastern Plain														
Well 28M2	0.0	0.0%	5.0	0.3%	-2.5	-0.1%	-1.6	-0.1%	-4.8	-0.3%	-17.3	-1.0%	3.1	0.2%
Well 34B1	0.0	0.0%	9.3	0.9%	-4.1	-0.4%	-3.2	-0.3%	-6.8	-0.7%	9.9	1.0%	-167.1	-16.6%
City Wells - Avg	0.0	0.0%	10.3	1.0%	-1.9	-0.2%	-1.4	-0.1%	-4.5	-0.4%	16.6	1.6%	-158.2	-15.6%

USGS Model

	Alt 2		Alt 1		Alt 3A		Alt 3B		Alt 3C		Alt 4A		Alt 4B	
	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%
Western Plain														
Well 26F1,3,4,5	0.0	0.0%	15.5	0.5%	-36.7	-1.3%	-41.0	-1.4%	-35.0	-1.2%	-91.1	-3.2%	21.1	0.7%
Well 25D1,3	0.0	0.0%	17.3	0.8%	-39.0	-1.7%	-42.6	-1.9%	-38.3	-1.7%	-99.3	-4.4%	10.4	0.5%
Central Plain														
Well 31A3	0.0	0.0%	-0.1	0.0%	-4.4	-0.2%	-4.0	-0.2%	-4.0	-0.2%	-20.8	-1.0%	-4.5	-0.2%
Well 29N6	0.0	0.0%	-3.6	-0.2%	-0.8	0.0%	-1.1	-0.1%	-1.2	-0.1%	-30.5	-1.6%	-8.4	-0.4%
Eastern Plain														
Well 28M2	0.0	0.0%	-0.7	0.0%	-13.3	-0.8%	-11.9	-0.7%	-11.9	-0.7%	-44.5	-2.5%	-17.5	-1.0%
Well 34B1	0.0	0.0%	10.8	1.1%	2.7	0.3%	1.7	0.2%	1.6	0.2%	8.7	0.9%	-42.0	-4.3%
City Wells - Avg	0.0	0.0%	7.0	0.6%	1.5	0.1%	1.0	0.1%	-1.1	-0.1%	-6.4	-0.6%	-23.5	-2.1%

Table 3 - Comparison of Lompoc Plain (Main Zone) Ground-Water Quality Results for EIR Alternatives

HCI Transport Model

Average Difference in TDS over the hydrologic period 10/1951 – 9/1982

Area	Well Location	Alt 1 – Alt 2 (mg/l)	Alt 3A – Alt 2 (mg/l)	Alt 3B – Alt 2 (mg/l)	Alt 3C – Alt 2 (mg/l)	Alt 4A – Alt 2 (mg/l)	Alt 4B – Alt 2 (mg/l)
West	26F1	1	<1	<1	<1	-3	2
	25D1	3	-2	-2	-2	-8	<1
Central	31A3	2	-2	<1	-2	26	20
	29N6	1	1	<1	1	16	10
East	28M2	5	-3	-2	-5	-17	3
	34B1	9	-4	-3	-7	10	-167
Lompoc City Wells [1]		10	-2	-1	-5	17/-224 [3]	-158

USGS Transport Model

Average Difference in TDS over the hydrologic period 1/1952 – 12/1982

Area	Well	Alt 1 – Alt 2 (mg/l)	Alt 3A – Alt 2 (mg/l)	Alt 3B – Alt 2 (mg/l)	Alt 3C – Alt 2 (mg/l)	Alt 4A – Alt 2 (mg/l)	Alt 4B – Alt 2 (mg/l)
West	26F1	16	-37	-41	-35	-91	21
	25D1	17	-39	-43	-38	-99	10
Central	31A3	<1	-4	-4	-4	-20	-4
	29N6	-4	<1	-1	-1	-31	-8
East	28M2	<1	-13	-12	-12	-45	-18
	34B1	11	3	2	2	9	-42
Lompoc City Wells [2]		7	2	1	-1	-6/-271 [3]	-24

[1] Weighted by pumping from each production well, includes contribution from other zones.
[2] Weighted by pumping from each production well, Main Zone aquifer only.
[3] Includes direct mixing with 1770 afy State Project water at an estimated TDS of 300 mg/l.

APPENDIX A

Summary of the HCI and USGS Flow and Transport Models

USGS Models

Flow (Lompoc Basin - Uplands and Plain)

- MODFLOW finite-difference
  Four layers
  Upper Aquifer - Shallow Zone
  Upper Aquifer - Middle Zone
  Upper Aquifer - Main Zone
  Lower Aquifer

- Uniform cell size (1320 x 1320 ft.)

- Two variable stress periods per year based on annual hydrologic conditions. Average - 139 days wet period and 266 day dry period.

- Includes stream routing, wells, no-flow, constant flow and variable flow boundaries, ET, areal recharge, irrigation return flow, tributary stream recharge

Transport

- Modified SUTRA, finite-element
  (Code modified to allow variable time steps to accommodate variable wet/dry periods and multiple sources/sinks per node)

- Single layer, 2D, w/ advection and dispersion. Requires specified flux and concentration for selected elements for each stress period

- Four rectangular elements per MODFLOW cell (nodal spacing 660 ft.)

HCI Models

Two Flow models, finite-element USGS published FEMFLOW3D

Lompoc Basin Flow Model (Lompoc Uplands and Lompoc Plain)

- Four Layers w/ triangular mesh, nodal spacing approximately 700 to 7,000 ft.

- Upper Aquifer - Shallow Zone
- Upper Aquifer - Middle Zone
- Upper Aquifer - Main Zone
- Lower Aquifer

- Includes stream routing, wells, no-flow, constant flow and variable flow boundaries, ET, areal recharge, irrigation return flow, tributary stream recharge

- Provides subsurface ground-water inflows to Lompoc Plain from Lompoc Upland basin

Lompoc Plain Flow Model

- Fine triangular mesh (nodal spacing 700 to 1,100 ft.)
- Seven layers, all representing the Upper Aquifer
    - Shallow Zone (represented as four layers)
    - Middle Zone (represented as two layers)
    - Main Zone (represented as one layer)

- Monthly stress periods
- Provides ground water flow input data for transport model
- SYRHM provides inflow at Lompoc narrows
- Independent stream flow correlations provide stream flow at margins of the Lompoc Plain.
- Includes stream routing, unsaturated flow, pumping wells, no-flow, constant flow and variable flow boundaries, ET, areal recharge, irrigation return flow, tributary stream recharge

HCI Transport model

- USGS TRAN-3D finite element code
- Fully 3D w/advection and dispersion.
- Calculates TDS for multiple aquifers and allows water extracted from each aquifer to increase or decrease over time with that of the aquifer.
- Same finite-element mesh as the Lompoc Plain flow model
- Salinity input data provided by SYRHM at Lompoc Narrows and independent stream flow/salinity correlations for tributaries to Lompoc plain.
- Ground water flow data provided by Lompoc Plain flow model
- Santa Ynez River inflow and TDS provided at the Narrows from results of the SYRHM at Narrows.

INTERFACING SYRHM AND GROUND-WATER FLOW AND TRANSPORT MODELS

USGS Flow and Transport Models

- Convert monthly SYRHM flow and water quality output at the Lompoc Narrows to two seasonal values for input to the USGS ground-water models.
- Use existing interfacing approach developed by the USGS for applying Santa Ynez River Flows and water quality to the Lompoc Basin Ground-water model.
- Due to its 2D format the USGS transport model requires specified flux and concentration for selected elements for each stress period.

HCI Flow and Transport Models

- Input monthly flow data generated by the SYRHM at the Lompoc Narrows directly into Basin flow model and use annual average flow, water level and TDS in the Plain flow and salinity models.
- Remaining input data have been generated during model development by HCI and Navigant.

Technical Memo Appendix

Alternative 1

SANTA YNEZ RIVER BELOW HILTON CREEK (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	37	35	36	38	58,315	127,856	17,819	5,057	364	258	113	414	210,341
1919	40	234	46	43	66	63	37	40	36	4,796	2,181	40	7,622
1920	42	269	46	33	77	217	109	52	40	4,558	2,048	3,345	10,835
1921	1,715	896	0	24	45	73	17	8	0	1,192	4,795	1,975	10,740
1922	1,600	769	497	284	936	12,175	7,489	603	249	115	40	1,336	26,093
1923	1,176	40	184	72	78	53	59	48	42	42	4,759	3,035	9,589
1924	3,036	2,493	42	33	23	59	25	23	20	4,459	1,372	1,734	13,319
1925	0	0	0	0	0	10	55	4	1,895	1,993	694	0	4,651
1926	0	0	2	2	152	50	806	92	37	715	2,596	2,279	6,732
1927	1,554	107	61	66	8,959	16,218	4,198	309	184	85	40	2,285	34,067
1928	41	41	44	44	156	106	49	43	41	4,498	3,036	3,034	11,132
1929	3,026	21	23	27	41	60	50	27	4,117	3,013	2,306	2,366	15,076
1930	1,621	0	0	0	1	103	7	2	0	2,771	946	0	5,451
1931	0	0	0	0	8	0	1	1,488	260	0	0	0	1,758
1932	0	0	320	133	835	253	105	65	44	826	2,829	1,303	6,712
1933	23	21	22	192	77	36	31	23	4,022	3,001	2,992	2,891	13,331
1934	1,239	0	0	175	77	29	2	0	4,102	2,842	2,794	2,122	13,384
1935	0	0	0	191	72	210	332	46	6	0	4,686	2,993	8,535
1936	1,992	327	0	0	515	97	84	8	0	0	3,139	0	6,163
1937	0	0	0	89	1,099	25,388	16,981	1,150	256	118	3,916	3,037	52,034
1938	40	1,055	47	45	30,962	187,315	15,955	2,303	293	199	82	41	238,336
1939	39	37	57	83	100	216	215	117	40	4,071	3,036	3,034	11,045
1940	2,247	709	41	67	121	107	71	46	38	4,105	2,418	2,276	12,244
1941	1,517	18	146	474	65,109	193,748	120,499	18,411	3,015	336	223	104	403,599
1942	66	67	475	423	409	2,820	6,359	367	263	122	50	1,600	13,022
1943	41	47	48	47,460	28,910	66,497	10,335	361	262	126	42	40	154,170
1944	41	39	64	85	23,323	36,014	4,741	372	262	115	42	626	65,725
1945	39	68	56	58	429	9,999	2,668	300	175	80	1,054	2,072	16,999
1946	41	39	111	53	60	213	5,644	261	110	3,757	3,037	3,035	16,361
1947	3,035	72	71	48	56	52	42	3,492	3,035	3,035	1,634	2,327	16,899
1948	1,534	371	14	14	11	12	5	827	1,086	0	0	0	3,874
1949	0	0	0	0	0	118	1	2,062	282	0	0	0	2,463
1950	0	0	7	0	71	6	0	3,134	183	0	0	0	3,401
1951	0	0	0	0	0	0	0	812	0	0	0	184	996
1952	0	0	7	1,448	125	5,997	13,404	836	280	1,757	2,040	1,679	27,573
1953	1,193	64	240	197	77	63	59	40	38	4,224	3,037	2,820	12,051
1954	612	40	31	88	86	216	91	39	44	4,647	3,018	2,417	11,328
1955	3,982	701	0	38	18	9	7	15	0	3,626	1,888	185	10,467
1956	181	0	647	834	125	59	96	48	7	8	2,728	538	5,271
1957	227	0	0	7	43	34	17	13	4,629	2,596	2,495	259	10,320
1958	254	303	0	50	715	1,070	40,777	9,189	339	202	118	930	53,947
1959	41	39	40	63	240	84	59	45	42	4,434	2,495	3,092	10,671
1960	1,745	937	41	48	85	41	51	22	20	2,541	18	5	5,554
1961	0	8	8	0	0	1	0	1,748	308	0	0	0	2,074
1962	0	293	39	53	2,647	593	280	223	113	1,935	1,754	40	7,970
1963	40	38	39	46	200	183	112	67	48	2,615	32	21	3,441
1964	21	20	20	20	17	19	18	1,809	333	0	0	0	2,276
1965	0	0	0	58	8	14	260	15	3,935	3,976	994	377	9,638
1966	0	260	263	333	181	109	53	55	44	947	4,865	3,018	10,128
1967	3,014	3,000	197	2,660	14,650	30,494	53,290	20,382	957	243	3,738	2,428	135,053
1968	40	650	46	48	54	83	58	39	3,706	40	2,238	2,101	9,105
1969	1,492	714	23	132,019	188,304	78,236	17,945	5,672	369	256	117	41	425,188
1970	40	48	51	74	77	2,927	275	211	106	3,912	3,037	1,610	12,367
1971	1,498	864	128	75	57	55	45	39	3,597	3,036	3,035	2,046	14,476
1972	2,702	759	126	58	49	40	38	3,444	2,762	22	2,264	2,304	14,569
1973	1,597	17	0	557	1,252	21,128	7,696	365	256	112	40	1,708	34,727
1974	947	40	44	497	210	3,751	345	267	148	79	1,625	2,027	9,980
1975	41	39	196	59	440	12,582	4,980	374	261	118	40	769	19,901
1976	40	38	39	39	101	60	52	42	4,246	3,036	39	37	7,769
1977	29	2,237	23	23	20	23	20	2,069	409	301	0	0	5,152
1978	0	0	0	574	25,077	145,537	35,263	7,491	373	283	130	46	214,773
1979	962	47	55	192	3,767	21,163	11,059	372	269	118	40	1,008	39,053
1980	40	38	46	155	73,453	40,858	7,021	866	311	194	80	1,268	124,329
1981	41	39	40	70	82	633	281	203	117	39	2,372	2,195	6,112
1982	881	40	41	50	44	107	219	66	38	4,112	3,037	3,034	11,671
1983	3,035	54	255	21,835	57,327	196,295	56,410	29,427	5,157	369	287	168	370,618
1984	195	225	14,698	4,836	1,698	347	262	158	78	3,439	3,037	955	29,927
1985	1,447	641	74	48	56	58	45	39	37	1,053	2,707	2,089	8,294
1986	23	17	16	31	654	6,892	4,020	314	186	80	766	1,542	14,541
1987	41	39	40	48	35	103	40	38	829	1,511	40	29	2,793
1988	21	19	20	38	22	82	40	2,048	4,242	2,573	2,648	1,064	12,815
1989	0	0	0	0	5	1	0	2,220	1,034	325	329	185	4,099
1990	0	0	0	0	0	0	0	1,335	0	468	304	291	2,398
1991	429	316	0	0	0	592	96	28	5,171	3,870	3,154	1,659	15,316
1992	331	204	8	34	917	319	162	89	59	46	4,471	3,024	9,663
1993	1,662	757	49	36,009	113,804	65,374	28,739	6,404	375	276	124	39	253,611
AVG	719	281	264	3,336	9,313	17,321	6,559	1,844	921	1,509	1,606	1,297	44,970
MEDIAN	41	40	40	53	85	108	96	217	256	352	1,629	1,285	11,230

Alternative 1

SANTA YNEZ RIVER AT 154 BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	59,081	129,135	18,332	5,210	449	233	67	319	212,826
1919	4	147	12	6	55	41	0	0	0	4,331	1,916	12	6,523
1920	9	177	13	1	91	414	155	23	1	4,198	1,965	3,019	10,067
1921	1,588	829	0	33	76	128	8	3	0	835	4,517	1,789	9,806
1922	1,464	703	1,285	704	2,416	12,635	7,695	662	231	80	6	1,077	28,957
1923	1,005	13	363	80	98	32	45	16	4	1	4,351	2,939	8,946
1924	2,931	2,394	8	2	0	57	0	0	0	4,000	1,139	1,541	12,072
1925	0	0	0	0	0	0	54	0	1,342	1,718	600	0	3,715
1926	0	0	0	0	255	51	1,913	118	5	530	2,216	2,088	7,176
1927	1,427	256	119	115	11,094	16,487	4,365	341	159	51	4	1,952	36,372
1928	12	9	10	8	269	146	19	5	2	4,123	2,939	2,923	10,465
1929	2,912	0	0	0	22	52	34	0	3,717	2,910	2,008	2,178	13,833
1930	1,495	0	0	0	0	183	1	0	0	2,155	816	0	4,650
1931	0	0	0	0	0	0	0	898	124	0	0	0	1,022
1932	0	0	604	181	1,882	472	131	42	3	614	2,429	1,151	7,507
1933	3	0	0	374	107	16	8	0	3,661	2,903	2,879	2,770	12,721
1934	989	0	0	369	137	34	0	0	3,690	2,738	2,466	1,952	12,375
1935	0	0	0	402	123	462	787	76	1	0	4,251	2,892	8,994
1936	1,732	267	0	0	1,259	201	167	4	0	0	2,549	0	6,181
1937	0	0	0	126	2,673	26,464	17,390	1,203	253	87	3,714	2,964	54,872
1938	8	847	26	17	32,203	190,924	16,303	2,278	308	181	41	6	243,143
1939	0	0	22	74	120	282	185	57	1	3,730	2,936	2,921	10,328
1940	1,957	632	13	66	202	159	74	14	0	3,774	2,327	1,991	11,208
1941	1,369	3	308	1,145	69,231	199,640	123,210	18,858	3,109	403	242	98	417,614
1942	62	61	981	640	479	2,988	6,458	439	266	93	26	1,335	13,826
1943	13	23	20	48,454	29,560	68,066	10,596	432	267	107	10	4	157,553
1944	1	0	35	80	24,136	36,791	4,876	456	263	78	9	487	67,214
1945	1	54	26	29	757	9,908	2,733	310	133	37	839	1,847	16,674
1946	15	6	163	29	46	247	5,517	244	72	3,558	2,958	2,936	15,790
1947	2,928	71	65	16	35	21	4	3,187	2,944	2,929	1,367	2,113	15,680
1948	1,404	319	0	0	0	0	0	590	788	0	0	0	3,100
1949	0	0	0	0	0	150	0	1,391	122	0	0	0	1,663
1950	0	0	0	0	65	0	0	2,348	30	0	0	0	2,443
1951	0	0	0	0	0	0	0	471	0	0	0	16	487
1952	0	0	0	3,466	153	7,633	12,759	818	233	1,546	1,894	1,553	30,056
1953	1,097	79	529	410	105	60	49	4	1	3,903	2,947	2,534	11,718
1954	544	12	2	122	107	424	117	2	6	4,279	2,923	2,316	10,853
1955	3,631	646	0	67	20	5	2	9	0	3,033	1,716	137	9,266
1956	118	0	1,604	2,137	286	118	203	84	2	2	2,259	451	7,263
1957	157	0	0	1	52	35	10	4	4,175	2,500	2,198	203	9,334
1958	182	220	0	79	1,794	2,758	43,285	9,574	439	196	81	802	59,411
1959	7	3	1	42	476	93	40	8	2	4,063	2,403	2,780	9,920
1960	1,612	868	17	27	116	8	40	0	0	2,089	0	0	4,777
1961	0	0	0	0	0	0	0	1,119	163	0	0	0	1,282
1962	0	76	22	40	6,628	1,282	374	218	65	1,661	1,584	15	11,964
1963	6	1	0	7	366	327	160	54	13	2,214	6	0	3,154
1964	0	0	0	0	0	0	0	1,229	227	0	0	0	1,456
1965	0	0	0	46	0	0	462	0	3,081	3,655	897	319	8,460
1966	0	609	602	757	359	170	34	32	10	761	4,568	2,938	10,841
1967	2,921	2,903	422	3,510	14,829	30,662	53,516	20,752	975	202	3,569	2,367	136,629
1968	9	531	20	20	37	94	38	0	3,388	5	1,913	1,924	7,978
1969	1,372	651	4	134,974	192,521	79,733	18,457	5,858	462	231	79	8	434,352
1970	2	14	17	61	75	3,002	231	147	50	3,648	2,951	1,384	11,583
1971	1,341	807	236	95	55	39	17	2	3,310	2,944	2,927	1,942	13,715
1972	2,369	685	240	52	34	6	2	3,188	2,687	0	1,940	2,110	13,311
1973	1,469	29	0	1,395	3,181	21,580	7,926	443	251	70	6	1,436	37,784
1974	845	11	16	1,051	224	3,758	382	254	101	31	1,359	1,839	9,871
1975	17	10	389	48	1,027	13,678	5,153	462	263	85	6	622	21,760
1976	3	0	0	0	122	30	17	0	3,862	2,938	2	0	6,975
1977	0	1,752	1	0	0	0	0	1,679	333	217	0	0	3,982
1978	0	0	0	1,220	27,960	149,427	36,325	7,738	478	303	112	19	223,581
1979	824	21	32	364	4,049	21,556	11,386	463	285	88	6	846	39,920
1980	4	1	9	254	75,277	42,110	7,187	982	348	166	33	1,038	127,409
1981	11	5	3	62	94	1,387	330	171	73	1	1,997	2,009	6,143
1982	806	13	10	27	17	152	433	57	0	3,793	2,946	2,928	11,181
1983	2,923	31	519	23,350	59,649	198,776	57,893	30,219	5,393	444	308	148	379,654
1984	202	186	14,682	4,948	1,755	387	268	128	39	3,236	2,955	822	29,608
1985	1,238	561	92	26	47	43	14	1	0	729	2,378	1,920	7,049
1986	5	0	0	19	1,582	7,669	4,036	347	161	39	631	1,297	15,787
1987	11	5	3	15	0	131	1	0	626	1,202	5	0	1,998
1988	0	0	0	7	0	73	10	1,547	4,030	2,503	2,386	939	11,494
1989	0	0	0	0	0	0	0	1,656	843	248	232	99	3,078
1990	0	0	0	0	0	0	0	770	0	238	129	126	1,262
1991	244	169	0	0	0	1,325	158	24	4,776	3,557	2,992	1,539	14,784
1992	279	148	6	50	2,325	717	313	123	46	11	4,145	2,935	11,098
1993	1,437	676	33	36,948	116,141	66,721	29,334	6,615	481	282	96	4	258,769
AVG	645	244	310	3,535	9,841	17,792	6,737	1,795	837	1,362	1,463	1,180	45,741
MEDIAN	13	12	5	44	121	177	157	195	162	353	1,363	1,058	11,140

Alternative 1

SANTA YNEZ RIVER ABOVE ALISAL BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	1	65,126	133,741	20,137	5,828	715	143	5	35	225,729
1919	0	6	9	6	58	42	0	3	0	2,997	871	0	3,994
1920	2	2	6	2	80	866	263	17	2	3,072	1,606	1,731	7,648
1921	949	544	0	48	151	297	19	12	0	161	3,490	997	6,668
1922	860	444	3,463	2,099	7,803	14,606	8,472	911	194	12	0	256	39,119
1923	356	0	708	99	163	30	60	15	6	6	3,108	2,546	7,096
1924	2,525	2,048	3	2	5	69	6	2	0	2,823	382	735	8,599
1925	0	0	0	0	0	7	76	3	355	788	198	0	1,427
1926	0	0	0	0	415	63	5,446	232	10	145	1,065	1,219	8,596
1927	838	586	238	261	19,709	17,615	4,983	466	104	11	0	782	45,592
1928	0	3	6	5	502	232	17	6	5	2,988	2,527	2,461	8,753
1929	2,454	0	2	6	30	61	43	7	2,692	2,528	953	1,289	10,065
1930	896	0	0	0	0	449	8	2	0	908	326	0	2,589
1931	0	0	0	0	4	0	0	7	0	0	0	0	11
1932	0	0	1,377	305	6,045	1,240	249	43	6	147	1,178	466	11,056
1933	0	0	0	799	164	18	12	2	2,768	2,546	2,434	2,285	11,028
1934	196	0	0	828	281	58	2	0	2,806	2,386	1,331	1,136	9,025
1935	0	0	0	969	268	1,335	2,428	225	11	0	3,093	2,506	10,834
1936	856	65	0	0	3,818	584	490	16	0	0	1,142	0	6,970
1937	0	0	0	184	8,260	31,297	18,640	1,419	258	19	2,931	2,647	65,655
1938	0	225	10	6	37,161	205,569	17,632	2,236	388	133	5	4	263,370
1939	0	0	31	86	160	501	174	15	3	2,746	2,543	2,478	8,736
1940	960	332	0	63	440	330	122	9	0	2,864	1,975	978	8,074
1941	727	0	665	3,220	82,908	222,330	133,826	20,186	3,344	544	229	64	468,042
1942	59	62	1,972	1,143	669	3,480	6,865	648	261	30	21	439	15,651
1943	0	13	12	53,414	31,737	74,499	11,442	654	292	57	5	4	172,128
1944	4	3	45	91	27,489	39,244	5,382	745	280	12	4	67	73,365
1945	0	55	27	31	1,961	10,067	3,057	376	30	0	169	921	16,695
1946	0	0	289	19	47	406	5,468	219	5	2,868	2,620	2,531	14,472
1947	2,513	62	58	11	31	19	6	2,467	2,660	2,567	508	1,189	12,091
1948	806	128	0	0	0	0	0	186	187	0	0	0	1,306
1949	0	0	0	0	0	142	0	173	0	0	0	0	314
1950	0	0	1	0	66	1	0	744	0	0	0	0	813
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	11,080	250	13,269	12,006	622	43	648	1,034	823	39,776
1953	585	56	999	966	219	101	66	0	0	2,993	2,572	1,430	9,987
1954	239	0	0	200	141	889	247	0	8	3,200	2,516	1,885	9,326
1955	2,239	379	0	80	28	13	9	23	0	1,619	896	0	5,286
1956	0	0	3,207	5,058	659	275	512	219	9	14	1,029	113	11,095
1957	0	0	0	3	66	53	23	15	3,005	2,130	1,086	1	6,382
1958	0	0	0	85	4,464	8,034	53,335	10,901	746	150	13	333	78,060
1959	0	0	0	43	983	132	42	10	6	2,961	2,021	1,571	7,771
1960	973	582	0	9	145	1	35	0	0	944	0	0	2,690
1961	0	5	5	0	0	0	0	80	0	0	0	0	89
1962	0	0	14	35	18,837	2,482	486	147	3	662	736	0	23,403
1963	0	0	0	4	409	408	164	39	10	970	0	0	2,004
1964	0	0	0	0	0	0	0	132	0	0	0	0	132
1965	0	0	0	44	2	2	939	6	1,283	1,878	149	6	4,311
1966	0	833	1,034	1,708	695	341	28	26	9	289	3,494	2,570	11,026
1967	2,527	2,532	1,185	6,137	15,975	31,567	54,697	22,416	1,046	67	2,917	2,097	143,162
1968	0	160	11	15	37	155	43	0	2,598	0	819	1,072	4,910
1969	791	402	0	149,334	211,984	86,557	20,163	6,591	769	154	17	4	476,766
1970	0	20	22	72	94	3,514	149	25	0	2,815	2,594	574	9,878
1971	689	584	571	163	65	44	12	0	2,652	2,634	2,525	1,552	11,492
1972	1,237	381	596	55	29	0	0	2,620	2,454	0	858	1,212	9,441
1973	867	31	0	3,508	9,842	23,284	8,684	717	239	1	0	480	47,652
1974	409	0	6	2,432	290	3,860	509	251	16	0	485	992	9,251
1975	0	0	605	34	2,369	16,644	5,679	751	248	17	0	138	26,485
1976	0	0	0	0	122	32	20	5	2,737	2,545	0	0	5,461
1977	0	475	0	0	0	0	0	527	41	0	0	0	1,044
1978	0	0	0	2,630	37,555	163,159	40,118	8,560	820	328	53	11	253,234
1979	335	16	30	713	4,882	22,790	12,572	759	318	17	0	277	42,708
1980	0	0	8	416	82,912	46,288	7,833	1,429	474	86	0	266	139,712
1981	0	0	0	54	110	3,440	534	145	23	0	844	1,141	6,291
1982	461	0	0	13	11	316	1,241	92	0	2,914	2,585	2,506	10,140
1983	2,494	22	1,509	27,745	66,565	210,702	63,192	33,455	6,186	607	324	77	412,878
1984	186	79	14,569	5,334	2,017	592	345	97	0	2,632	2,637	370	28,860
1985	531	280	95	13	45	40	10	0	0	76	1,218	1,116	3,424
1986	0	0	2	21	3,866	9,591	4,145	455	101	0	193	443	18,817
1987	0	0	0	8	0	118	2	0	148	327	0	0	603
1988	0	0	0	9	3	91	15	407	3,134	2,170	1,290	350	7,469
1989	0	0	0	0	6	0	0	615	274	11	0	0	906
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	3,114	239	13	3,317	2,040	1,888	830	11,441
1992	52	0	7	72	7,127	2,108	981	297	60	10	3,112	2,566	16,392
1993	655	370	12	40,793	124,277	72,411	31,755	7,497	873	294	35	0	278,972
AVG	398	155	440	4,245	11,745	19,548	7,449	1,813	671	943	982	744	49,135
MEDIAN	0	0	2	43	191	374	206	139	42	152	496	360	9,660

Alternative 1

SANTA YNEZ RIVER NEAR BUELLTON (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	74,190	135,400	22,006	6,651	1,131	143	0	0	239,522
1919	0	0	0	0	105	102	0	0	0	2,549	438	0	3,194
1920	0	0	0	0	250	1,441	616	40	0	2,602	1,387	1,045	7,380
1921	454	280	0	82	308	607	33	14	0	4	2,912	495	5,190
1922	403	211	6,477	3,984	13,116	16,866	9,431	1,250	212	1	0	41	51,991
1923	94	0	1,318	198	309	61	134	21	0	0	2,613	2,303	7,051
1924	2,276	1,839	0	0	0	202	0	0	0	2,401	96	315	7,128
1925	0	0	0	0	0	4	294	0	123	402	26	0	848
1926	0	0	0	0	1,132	210	8,843	532	10	46	566	670	12,009
1927	390	1,005	417	495	28,425	18,176	5,724	637	95	0	0	382	55,747
1928	0	0	0	0	810	480	30	0	0	2,551	2,285	2,193	8,350
1929	2,181	0	0	0	86	214	142	1	2,330	2,322	478	721	8,474
1930	430	0	0	0	0	1,019	3	0	0	476	94	0	2,023
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	2,863	926	9,048	2,746	537	133	0	23	651	106	17,036
1933	0	0	0	1,733	383	43	22	0	2,404	2,343	2,176	1,998	11,103
1934	0	0	0	1,748	527	147	0	0	2,410	2,169	741	564	8,306
1935	0	0	0	2,038	593	2,336	4,226	464	5	0	2,576	2,252	14,491
1936	392	0	0	0	6,604	1,169	773	20	0	0	609	0	9,568
1937	0	0	0	568	16,245	37,114	20,070	1,698	327	11	2,564	2,450	81,047
1938	0	22	0	0	44,470	215,106	19,264	2,164	558	193	0	0	281,777
1939	0	0	41	275	495	1,163	357	22	0	2,382	2,327	2,230	9,292
1940	485	131	0	124	903	655	249	7	0	2,474	1,770	495	7,293
1941	315	0	1,256	6,200	93,439	241,943	141,853	21,895	3,740	845	370	117	511,974
1942	107	123	3,650	2,009	1,008	4,267	7,470	936	324	19	1	151	20,065
1943	0	0	0	58,187	34,249	79,999	12,435	948	393	71	0	0	186,282
1944	0	0	70	262	31,235	41,655	5,976	1,131	370	1	0	0	80,699
1945	0	118	27	55	4,022	10,484	3,522	491	4	0	3	471	19,197
1946	0	0	680	36	143	477	5,891	258	0	2,517	2,410	2,291	14,702
1947	2,265	139	140	7	69	37	0	2,171	2,505	2,385	177	666	10,563
1948	380	8	0	0	0	0	0	63	22	0	0	0	473
1949	0	0	0	0	0	400	0	0	0	0	0	0	400
1950	0	0	0	0	134	0	0	223	0	0	0	0	357
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	18,807	739	22,423	13,049	1,012	33	430	713	416	57,622
1953	279	47	1,735	1,801	404	182	68	0	0	2,578	2,325	809	10,227
1954	42	0	0	325	278	1,695	519	0	0	2,678	2,236	1,595	9,368
1955	1,358	124	0	38	19	1	0	39	0	996	367	0	2,942
1956	0	0	5,806	8,027	1,171	494	820	444	0	1	528	0	17,292
1957	0	0	0	0	112	137	38	17	2,545	1,914	521	0	5,283
1958	0	0	0	151	8,466	15,286	64,910	12,362	1,173	125	0	161	102,633
1959	0	0	0	75	2,126	320	38	0	0	2,526	1,797	924	7,806
1960	473	309	0	0	197	0	35	0	0	488	0	0	1,504
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	33,532	5,165	1,044	253	0	329	320	0	40,642
1963	0	0	0	0	807	780	311	54	0	500	0	0	2,452
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	1,641	0	584	1,091	0	0	3,316
1966	0	1,321	1,790	3,158	1,213	617	4	26	0	104	2,890	2,292	13,414
1967	2,232	2,251	2,313	9,961	17,025	31,929	55,124	23,733	1,064	10	2,680	1,954	150,275
1968	0	33	0	11	102	391	122	0	2,285	0	423	580	3,947
1969	367	186	0	166,741	230,118	94,934	21,430	7,402	1,145	115	0	0	522,438
1970	0	18	16	232	321	4,622	117	0	0	2,470	2,386	217	10,398
1971	299	417	798	289	98	38	0	0	2,335	2,461	2,299	1,335	10,370
1972	687	162	1,069	96	50	0	0	2,325	2,314	0	417	670	7,789
1973	414	16	0	5,874	18,406	24,888	9,572	911	214	0	0	172	60,467
1974	190	0	0	4,686	482	4,242	703	304	0	0	165	513	11,284
1975	0	0	1,084	46	4,482	21,085	6,309	1,132	222	0	0	10	34,370
1976	0	0	0	0	336	65	24	0	2,380	2,342	0	0	5,148
1977	0	44	0	0	0	0	0	193	0	0	0	0	237
1978	0	0	0	4,598	51,499	180,945	44,773	9,628	1,181	445	87	0	293,155
1979	180	0	25	1,520	6,537	24,674	13,994	1,138	355	0	0	87	48,510
1980	0	0	0	1,000	93,701	51,402	8,584	1,853	571	47	0	46	157,204
1981	0	0	0	105	306	6,772	943	209	28	0	417	625	9,404
1982	210	0	0	0	5	677	2,538	174	0	2,534	2,361	2,254	10,752
1983	2,235	21	2,841	34,463	75,420	218,010	67,095	36,374	7,332	929	517	128	445,364
1984	375	90	15,229	5,734	2,295	826	380	53	0	2,324	2,448	164	29,916
1985	195	104	129	5	79	68	7	0	0	0	710	616	1,914
1986	0	0	0	28	7,410	12,645	4,322	496	100	0	49	124	25,173
1987	0	0	0	0	0	263	0	0	35	78	0	0	376
1988	0	0	0	0	0	469	75	181	2,738	1,974	751	48	6,236
1989	0	0	0	0	0	0	0	311	66	0	0	0	376
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	6,305	863	104	2,821	1,387	1,209	342	13,031
1992	0	0	0	172	13,887	4,057	1,845	542	129	0	2,624	2,322	25,577
1993	255	158	0	46,308	134,329	78,984	34,809	8,354	1,244	346	58	0	304,845
AVG	263	121	655	5,173	14,056	21,446	8,237	1,992	656	792	771	531	54,692
MEDIAN	0	0	0	50	443	666	369	119	25	110	343	126	10,298

Alternative 1

SANTA YNEZ RIVER ABOVE SALSIPUEDES CREEK CONFLUENCE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	83,122	135,248	24,076	7,811	1,652	126	0	0	252,036
1919	0	0	0	0	10	59	0	0	0	1,776	0	0	1,845
1920	0	0	0	0	166	1,339	829	43	0	1,901	1,055	197	5,528
1921	0	3	0	30	334	809	45	19	0	0	1,963	1	3,204
1922	0	0	8,681	5,865	17,590	19,342	10,741	1,796	304	0	0	0	64,319
1923	0	0	1,382	193	370	95	224	45	0	0	1,837	1,922	6,068
1924	1,885	1,520	0	0	0	250	0	0	0	1,796	0	0	5,452
1925	0	0	0	0	0	0	278	0	0	0	0	0	278
1926	0	0	0	0	1,129	131	9,982	791	8	0	27	40	12,108
1927	0	1,044	443	657	36,101	18,571	6,771	941	137	0	0	0	64,664
1928	0	0	0	0	601	522	23	0	0	1,876	1,901	1,764	6,686
1929	1,748	0	0	0	55	261	175	0	1,864	2,032	7	58	6,199
1930	0	0	0	0	0	1,339	0	0	0	12	0	0	1,351
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	3,510	903	9,351	4,290	801	247	0	0	61	0	19,164
1933	0	0	0	2,133	434	38	16	0	1,935	2,058	1,778	1,548	9,939
1934	0	0	0	2,158	553	185	0	0	1,914	1,866	85	0	6,762
1935	0	0	0	2,623	783	2,996	5,700	782	14	0	1,832	1,878	16,610
1936	0	0	0	0	8,400	1,770	953	50	0	0	32	0	11,205
1937	0	0	0	571	23,803	42,759	21,974	2,201	490	9	2,023	2,155	95,986
1938	0	0	0	0	51,734	221,210	21,368	2,264	854	271	0	0	297,700
1939	0	0	0	286	691	1,786	547	49	0	1,883	1,998	1,839	9,078
1940	6	0	0	84	1,227	930	383	19	0	1,945	1,465	9	6,068
1941	0	0	1,474	8,905	97,170	258,190	147,327	23,868	4,198	1,128	425	91	542,777
1942	72	94	4,528	2,666	1,290	4,927	8,201	1,305	414	2	0	0	23,499
1943	0	0	0	61,198	37,249	85,023	13,758	1,353	569	76	0	0	199,226
1944	0	0	0	254	33,100	44,095	6,837	1,665	531	0	0	0	86,482
1945	0	28	0	6	5,992	10,714	4,243	721	12	0	0	0	21,717
1946	0	0	793	5	172	265	6,387	353	0	2,043	2,095	1,913	14,027
1947	1,876	104	133	0	66	49	0	1,898	2,350	2,139	0	37	8,651
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	53	0	0	0	0	0	0	53
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	26,296	49	30,810	13,037	1,216	0	63	172	0	71,644
1953	0	0	1,747	2,368	587	293	56	0	0	2,011	1,958	107	9,126
1954	0	0	0	209	245	2,124	784	0	0	1,964	1,830	1,170	8,326
1955	308	0	0	0	0	0	0	8	0	184	0	0	500
1956	0	0	6,299	8,325	1,507	682	996	724	0	0	31	0	18,565
1957	0	0	0	0	0	63	0	0	1,835	1,585	0	0	3,483
1958	0	0	0	6	10,985	22,182	76,722	14,293	1,736	62	0	0	125,985
1959	0	0	0	7	2,844	444	1	0	0	1,882	1,452	142	6,773
1960	0	10	0	0	60	0	0	0	0	2	0	0	71
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	45,978	6,053	1,162	166	0	0	0	0	53,359
1963	0	0	0	0	366	500	153	0	0	0	0	0	1,019
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	782	0	0	0	0	0	782
1966	0	420	1,396	3,834	1,390	829	0	16	0	0	1,972	1,876	11,733
1967	1,791	1,837	3,318	13,508	18,237	32,593	55,821	25,259	1,107	0	2,259	1,710	157,441
1968	0	0	0	0	99	571	195	0	1,905	0	10	21	2,800
1969	0	0	0	186,432	249,457	105,369	22,335	8,357	1,548	50	0	0	573,547
1970	0	0	0	262	481	5,566	95	0	0	1,990	2,070	0	10,463
1971	0	117	679	333	92	18	0	0	1,977	2,229	1,954	1,001	8,401
1972	65	0	1,329	106	61	0	0	2,051	2,183	0	0	44	5,838
1973	0	0	0	6,660	26,773	26,090	10,795	1,132	191	0	0	0	71,641
1974	0	0	0	6,136	615	4,522	926	406	0	0	0	0	12,605
1975	0	0	899	1	5,792	24,589	7,091	1,651	169	0	0	0	40,191
1976	0	0	0	0	259	18	0	0	1,825	2,023	0	0	4,125
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	4,545	64,269	199,563	49,992	11,013	1,563	515	59	0	331,518
1979	0	0	0	1,939	7,850	26,452	15,844	1,648	373	0	0	0	54,107
1980	0	0	0	1,133	104,175	57,250	9,669	2,364	643	0	0	0	175,232
1981	0	0	0	8	311	9,501	1,361	299	36	0	0	18	11,535
1982	0	0	0	0	0	829	3,777	239	0	1,993	2,020	1,857	10,714
1983	1,829	0	3,939	40,153	84,257	223,520	69,676	39,083	8,724	1,237	649	119	473,188
1984	463	36	15,593	6,305	2,762	1,226	474	47	0	1,977	2,169	0	31,050
1985	0	0	17	0	42	49	3	0	0	0	60	18	188
1986	0	0	0	0	9,683	14,766	4,650	521	142	0	0	0	29,762
1987	0	0	0	0	0	107	0	0	0	0	0	0	107
1988	0	0	0	0	0	472	14	0	1,993	1,631	62	0	4,172
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	8,518	963	40	1,952	470	315	0	12,259
1992	0	0	0	96	20,267	6,166	2,951	894	249	0	1,939	1,971	34,532
1993	0	0	0	51,640	145,625	86,794	38,813	9,361	1,611	333	39	0	334,216
AVG	132	69	739	5,906	16,008	23,102	8,958	2,224	645	594	521	309	59,206
MEDIAN	0	0	0	5	457	829	511	44	0	0	0	0	9,533

Alternative 1

SANTA YNEZ RIVER AT LOMPOC NARROWS (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	54	88,983	143,888	25,767	8,357	2,064	309	76	68	269,566
1919	63	63	70	73	211	249	0	78	0	1,654	0	0	2,461
1920	36	39	49	54	411	2,268	1,236	133	81	1,815	1,017	121	7,260
1921	0	0	0	151	582	1,204	130	100	27	51	1,831	0	4,075
1922	0	0	11,940	7,364	22,128	21,255	11,598	2,016	401	88	0	0	76,790
1923	0	0	2,312	407	659	186	359	136	86	75	1,732	1,878	7,830
1924	1,835	1,476	73	77	78	526	91	83	79	1,713	0	0	6,033
1925	0	0	0	0	0	20	546	52	35	0	0	0	652
1926	0	0	3	11	1,924	489	14,612	1,205	103	81	2	2	18,432
1927	0	1,594	792	929	42,179	20,000	7,417	1,149	229	83	0	0	74,372
1928	0	34	43	52	1,278	929	111	83	77	1,782	1,854	1,707	7,951
1929	1,690	0	59	73	143	456	367	83	1,794	1,994	0	5	6,664
1930	0	0	0	0	21	1,715	75	68	0	0	0	0	1,879
1931	0	0	0	0	64	21	37	0	0	0	0	0	122
1932	0	0	5,135	1,327	15,561	5,272	1,232	446	88	28	19	0	29,109
1933	0	0	0	2,806	795	128	110	81	1,863	2,019	1,724	1,485	11,012
1934	0	0	0	2,959	988	375	85	32	1,843	1,827	34	0	8,144
1935	0	0	0	3,397	1,146	4,000	7,335	989	106	30	1,731	1,834	20,568
1936	0	0	0	46	10,678	2,291	1,398	147	37	0	0	0	14,598
1937	0	0	0	866	29,001	47,353	23,263	2,420	589	96	1,943	2,117	107,649
1938	0	0	63	68	56,453	235,116	22,663	2,364	959	359	78	70	318,194
1939	0	0	150	539	1,081	2,356	845	143	87	1,815	1,955	1,784	10,754
1940	0	0	212	1,617	1,335	603	108	33	1,861	1,423	0	7,191
1941	0	0	2,201	11,483	116,443	277,059	156,980	25,558	4,913	1,628	808	370	597,441
1942	349	372	7,925	4,345	2,201	6,753	9,329	1,818	709	184	167	55	34,206
1943	66	157	165	64,083	39,207	88,964	14,720	1,770	771	263	79	72	210,316
1944	69	70	265	628	37,238	46,624	7,478	2,088	732	89	76	0	95,358
1945	15	181	161	177	6,826	11,313	4,475	829	11	0	0	0	23,988
1946	0	0	845	71	249	1,041	6,655	450	90	1,979	2,054	1,861	15,296
1947	1,820	262	315	84	251	164	90	1,851	2,323	2,097	0	0	9,256
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	1,145	0	0	0	0	0	0	1,145
1950	0	0	0	0	366	1	0	0	0	0	0	0	367
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	32,834	311	39,508	13,330	1,249	44	11	91	0	87,378
1953	5	190	3,566	3,418	782	405	206	35	30	1,910	1,907	47	12,501
1954	0	0	0	303	526	3,469	980	0	73	1,851	1,777	1,115	10,093
1955	207	0	0	299	159	75	91	82	1	94	0	0	1,008
1956	0	0	12,417	15,483	2,609	1,188	1,736	1,024	87	78	2	1	34,624
1957	0	1	3	48	342	230	85	73	1,731	1,542	1	0	4,056
1958	1	0	0	239	16,273	29,107	85,182	15,177	2,151	244	88	68	148,527
1959	63	62	65	175	4,199	738	202	87	83	1,795	1,410	78	8,958
1960	0	0	7	57	611	79	300	73	0	0	0	0	1,127
1961	0	42	80	1	2	6	0	0	0	0	0	0	131
1962	1	0	110	432	64,597	9,795	1,783	461	100	66	0	0	77,346
1963	0	0	30	48	2,110	2,102	1,020	379	176	59	0	0	5,923
1964	1	1	2	3	5	6	7	0	0	0	0	0	24
1965	0	0	0	337	24	83	2,251	77	13	1	1	0	2,787
1966	1	3,054	3,699	6,141	2,768	1,349	173	206	86	25	1,846	1,826	21,173
1967	1,737	1,782	3,778	17,425	18,694	33,015	56,741	25,720	1,300	0	2,170	1,674	164,036
1968	0	19	68	73	173	743	287	0	1,826	0	1	0	3,191
1969	0	0	0	194,550	257,774	108,159	24,170	8,994	1,956	216	79	73	595,971
1970	69	73	166	437	665	6,302	189	0	0	1,895	2,024	0	11,819
1971	0	57	968	494	280	107	95	0	1,895	2,186	1,900	951	8,934
1972	15	0	1,523	181	141	1	1	1,967	2,152	0	0	0	5,979
1973	0	100	1	10,742	33,546	28,859	11,648	1,436	379	83	24	0	86,818
1974	11	10	53	8,742	921	5,426	1,331	603	90	30	12	0	17,226
1975	7	7	2,352	177	9,215	31,341	8,027	2,070	457	97	73	21	53,844
1976	60	60	64	68	815	212	197	82	1,761	1,986	0	0	5,305
1977	0	0	0	32	41	61	0	31	0	0	0	0	166
1978	0	0	0	8,836	79,463	211,493	54,042	11,971	1,969	798	234	84	368,889
1979	142	159	168	3,008	9,981	29,127	16,828	2,067	662	96	24	17	62,279
1980	14	13	68	1,768	112,821	61,432	10,416	2,781	935	164	26	12	190,451
1981	18	17	62	266	580	13,156	1,871	500	129	30	12	0	16,639
1982	0	4	42	136	64	1,008	4,397	332	35	1,920	1,979	1,804	11,723
1983	1,773	71	4,303	48,773	93,887	233,475	74,896	41,007	9,581	1,738	935	301	510,742
1984	742	313	16,959	6,834	3,084	1,444	677	144	40	1,925	2,130	0	34,292
1985	0	9	338	78	215	235	86	0	0	0	2	0	964
1986	0	0	26	99	14,420	20,294	5,068	820	238	0	0	0	40,965
1987	6	7	47	141	63	844	79	30	0	0	0	0	1,218
1988	0	0	14	107	48	509	103	55	1,898	1,589	16	0	4,339
1989	0	0	0	1	3	2	1	0	0	0	0	0	7
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	12,336	824	8	1,652	170	87	0	15,078
1992	0	0	4	82	24,778	7,500	3,284	1,098	340	79	1,839	1,924	40,929
1993	0	0	136	55,021	153,175	90,053	39,994	9,900	1,917	515	120	0	350,833
AVG	142	136	1,101	6,845	18,275	25,129	9,766	2,437	736	620	519	308	66,013
MEDIAN	0	0	48	177	805	1,342	834	143	90	88	22	0	11,368

Alternative 2

SANTA YNEZ RIVER BELOW HILTON CREEK (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	295	284	272	258	55,208	127,877	17,805	5,043	484	377	372	382	208,659
1919	226	546	209	214	186	182	224	225	234	4,380	1,456	1,512	9,594
1920	193	204	201	211	188	328	228	194	222	4,206	1,320	2,449	9,944
1921	1,650	904	130	140	162	191	135	138	162	169	4,911	2,159	10,850
1922	1,589	767	615	403	1,055	10,108	7,478	590	368	235	219	1,034	24,461
1923	1,304	732	304	191	197	185	179	203	218	228	4,491	3,036	11,269
1924	3,036	2,104	223	222	218	177	216	224	232	169	2,825	2,049	11,697
1925	1,095	127	140	149	157	143	171	156	166	2,005	2,581	130	7,019
1926	148	159	159	159	270	166	926	203	204	224	2,190	2,283	7,091
1927	1,554	225	171	169	5,701	16,214	4,190	429	333	360	387	1,634	31,367
1928	207	214	213	213	275	225	198	215	221	4,232	3,037	3,035	12,284
1929	3,026	233	231	221	186	179	171	220	3,800	3,002	2,404	3,182	16,855
1930	1,657	493	133	143	149	220	138	153	165	1,689	1,480	140	6,559
1931	157	167	172	174	155	170	167	1,515	266	158	178	192	3,472
1932	199	200	437	250	957	375	226	185	210	235	2,530	1,746	7,548
1933	196	144	153	306	195	194	202	222	3,720	2,994	2,993	167	11,486
1934	179	185	186	291	192	145	161	168	4,148	2,994	2,911	2,606	14,165
1935	723	134	145	308	188	327	450	163	138	164	4,494	2,994	10,228
1936	1,737	132	144	150	632	214	201	131	157	169	2,878	137	6,682
1937	154	195	168	205	1,220	19,306	16,967	1,136	375	350	3,858	3,037	46,971
1938	215	811	206	210	30,360	187,333	15,947	2,289	413	326	374	386	238,870
1939	226	233	197	203	220	337	307	207	223	3,838	3,037	2,546	11,573
1940	2,100	717	204	185	240	225	190	208	228	3,927	639	2,353	11,216
1941	1,510	137	265	593	64,306	193,769	120,502	18,398	3,000	455	342	327	403,604
1942	185	185	564	482	454	1,872	6,356	487	383	241	202	1,308	12,717
1943	205	198	201	46,718	28,916	66,499	10,326	481	382	336	378	389	155,028
1944	224	227	184	205	21,522	36,009	4,734	492	381	358	381	545	65,262
1945	232	187	200	194	523	8,500	2,657	420	295	211	800	2,262	16,480
1946	437	211	230	193	179	333	4,189	380	229	3,670	3,038	3,035	16,124
1947	3,035	189	189	215	190	203	219	3,428	3,037	3,027	3,026	2,564	19,322
1948	1,517	280	137	147	155	161	167	173	1,168	813	162	178	5,056
1949	187	191	190	184	184	234	173	2,066	291	153	173	188	4,214
1950	195	197	181	188	186	164	174	3,168	194	147	169	184	5,147
1951	193	195	194	26	25	25	24	847	25	24	23	213	1,813
1952	22	22	29	1,561	237	3,767	13,448	829	403	315	2,125	4,515	27,275
1953	179	182	359	315	195	181	177	219	226	4,091	2,694	2,695	11,512
1954	1,812	1,050	188	199	197	336	210	214	216	4,210	3,019	3,080	14,732
1955	1,892	469	130	155	134	131	139	130	166	2,653	2,877	185	9,062
1956	181	155	764	952	243	177	213	165	140	149	2,120	911	6,170
1957	227	153	156	144	159	150	133	138	4,309	2,143	3,047	417	11,175
1958	255	303	151	166	833	1,189	37,267	9,177	459	322	360	382	50,863
1959	223	228	227	182	359	203	179	212	222	4,206	2,397	2,820	11,457
1960	1,727	938	196	190	203	209	175	220	228	1,765	1,088	142	7,081
1961	159	152	152	168	167	165	167	1,752	315	155	175	189	3,717
1962	196	303	153	167	2,771	644	264	202	199	991	2,506	198	8,593
1963	217	228	227	213	320	303	231	187	207	1,755	782	220	4,889
1964	235	236	234	232	159	160	161	1,820	342	148	169	184	4,079
1965	192	195	193	172	164	147	378	135	3,974	3,859	638	377	10,422
1966	148	377	376	438	291	228	186	190	214	237	4,824	3,014	10,522
1967	3,001	2,993	315	827	8,748	30,493	53,297	20,368	944	363	3,713	362	125,423
1968	212	806	201	199	182	203	182	224	3,519	2,089	1,238	2,145	11,200
1969	1,490	713	197	131,566	188,328	78,232	17,940	5,659	488	376	361	381	425,728
1970	222	206	202	193	196	1,308	395	330	226	3,775	3,037	1,408	11,499
1971	1,509	863	247	194	176	182	201	220	3,434	3,037	3,036	2,111	15,211
1972	1,501	812	244	177	184	212	216	3,420	3,019	215	1,758	2,325	14,084
1973	1,596	135	132	675	1,371	20,176	7,685	485	376	363	383	1,074	34,450
1974	1,451	192	192	617	331	2,433	464	386	229	220	1,283	2,154	9,951
1975	195	205	315	178	559	11,594	4,975	494	381	237	219	614	19,966
1976	228	231	229	228	221	183	197	220	3,904	3,038	2,897	1,716	13,291
1977	208	221	223	222	222	220	224	1,781	747	306	162	179	4,715
1978	188	191	189	686	18,968	145,558	35,264	7,474	493	402	336	372	210,121
1979	207	211	198	311	3,267	21,171	11,047	492	388	350	383	894	38,921
1980	221	225	212	275	72,038	40,858	7,012	853	430	339	383	854	123,700
1981	428	222	222	189	201	754	373	294	207	231	1,843	2,224	7,185
1982	1,137	193	201	187	194	227	339	185	223	3,915	3,037	3,035	12,873
1983	3,035	204	373	19,044	57,332	196,321	56,413	29,414	5,143	489	407	332	368,507
1984	283	314	14,081	4,833	1,693	467	382	278	203	3,430	2,191	962	29,116
1985	1,448	642	192	193	175	179	206	222	234	248	2,767	2,111	8,617
1986	601	137	139	149	773	5,695	4,010	434	305	208	229	2,468	15,149
1987	200	210	213	200	217	223	215	223	229	1,376	1,005	225	4,536
1988	237	244	239	200	222	203	187	218	4,211	2,908	2,571	2,311	13,750
1989	1,018	127	139	144	138	149	155	160	856	2,224	707	187	6,005
1990	164	173	176	178	179	176	178	1,359	148	478	310	296	3,816
1991	433	319	177	179	180	710	213	144	4,821	2,218	3,025	1,758	14,179
1992	331	204	131	150	1,036	429	281	208	178	217	4,351	2,480	9,996
1993	1,578	759	186	34,200	113,825	65,378	28,726	6,388	495	395	349	386	252,666
AVG	797	380	403	3,363	9,110	17,162	6,586	1,869	967	1,399	1,724	1,382	45,143
MEDIAN	233	213	198	200	220	227	224	225	300	376	1,468	1,054	11,505

Alternative 2

SANTA YNEZ RIVER AT 154 BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	150	150	150	150	56,573	129,211	18,287	5,198	565	346	300	300	211,380
1919	150	443	150	150	170	155	150	150	150	4,102	1,273	1,352	8,394
1920	150	150	150	150	207	549	280	150	150	3,958	1,150	2,255	9,299
1921	1,523	835	90	129	180	240	96	90	90	90	4,591	1,956	9,910
1922	1,454	701	1,398	818	2,536	10,586	7,677	648	344	187	150	827	27,328
1923	1,127	652	488	192	211	150	154	150	150	150	4,210	2,955	10,589
1924	2,942	2,017	150	150	150	171	150	150	150	90	2,457	1,880	10,457
1925	984	90	90	90	90	90	187	90	90	1,698	2,363	90	5,951
1926	90	90	90	90	439	180	2,162	247	150	150	1,894	2,093	7,674
1927	1,428	366	218	208	7,893	16,455	4,358	458	300	300	300	1,396	33,679
1928	150	150	150	150	399	267	150	150	150	3,978	2,955	2,934	11,584
1929	2,920	150	150	150	150	172	150	150	3,563	2,922	2,309	2,851	15,637
1930	1,526	437	90	90	90	321	90	90	90	1,403	1,289	90	5,605
1931	90	90	90	90	90	90	90	1,259	200	90	90	90	2,359
1932	90	90	831	377	2,211	664	278	168	150	150	2,212	1,581	8,802
1933	150	90	90	504	223	150	150	150	3,496	2,916	2,894	90	10,904
1934	90	90	90	471	235	121	90	90	3,879	2,912	2,624	2,437	13,129
1935	659	90	90	550	245	605	933	185	90	90	4,206	2,912	10,654
1936	1,519	90	90	90	1,405	318	281	90	90	90	2,503	90	6,656
1937	90	115	90	265	2,916	20,599	17,333	1,190	368	300	3,673	2,966	49,906
1938	150	689	150	150	31,633	190,943	16,295	2,264	424	300	300	300	243,597
1939	150	150	150	201	252	430	298	152	150	3,597	2,951	2,449	10,930
1940	1,829	639	150	170	315	271	182	150	150	3,683	541	2,100	10,180
1941	1,373	101	422	1,269	68,473	199,661	123,213	18,845	3,093	518	354	300	417,622
1942	165	165	1,086	710	531	2,073	6,450	555	380	200	150	1,089	13,552
1943	150	150	150	47,827	29,566	68,068	10,587	550	382	300	300	300	158,329
1944	150	150	154	209	22,570	36,769	4,872	574	378	300	300	437	66,862
1945	150	161	150	150	887	8,510	2,720	425	244	150	670	1,990	16,206
1946	370	150	277	150	154	376	4,143	357	179	3,484	2,960	2,937	15,538
1947	2,929	166	163	150	150	150	150	3,215	2,962	2,933	2,914	2,246	18,126
1948	1,372	231	90	90	90	90	90	90	910	692	90	90	3,925
1949	90	90	90	90	90	327	90	1,768	229	90	90	90	3,134
1950	90	90	90	90	210	90	90	2,815	151	90	90	90	3,986
1951	90	90	90	0	0	0	0	564	0	0	0	29	864
1952	0	0	0	3,570	282	5,771	13,507	916	393	283	1,943	4,382	31,046
1953	150	172	627	514	207	162	151	150	150	3,847	2,618	2,431	11,179
1954	1,674	953	150	245	226	566	239	150	150	3,956	2,937	2,802	14,049
1955	1,763	417	90	166	110	90	90	92	90	2,316	2,678	144	8,045
1956	123	90	1,746	2,276	402	226	316	188	90	90	1,807	810	8,164
1957	163	90	90	90	162	139	96	90	4,047	2,076	2,774	360	10,176
1958	190	227	90	183	1,943	2,903	39,837	9,561	556	309	300	300	56,400
1959	150	150	150	151	615	210	150	150	150	3,952	2,321	2,547	10,696
1960	1,593	868	150	150	227	150	150	150	150	1,495	924	90	6,097
1961	90	90	90	90	90	90	90	1,477	248	90	90	90	2,624
1962	90	177	129	167	7,069	1,401	391	219	150	863	2,253	150	13,060
1963	150	150	150	150	513	467	286	168	150	1,500	688	150	4,521
1964	150	150	150	150	90	90	90	1,567	283	90	90	90	2,989
1965	90	90	90	173	90	90	704	90	3,614	3,715	585	311	9,642
1966	90	726	718	868	469	282	150	150	150	150	4,532	2,934	11,218
1967	2,909	2,895	528	1,736	8,920	30,610	53,542	20,730	963	315	3,549	300	126,998
1968	150	689	150	150	150	209	150	150	3,293	2,017	1,026	1,949	10,081
1969	1,365	650	150	134,580	192,545	79,729	18,452	5,845	579	345	300	300	434,839
1970	150	150	150	181	196	1,514	346	261	155	3,541	2,955	1,198	10,798
1971	1,348	806	345	202	159	150	150	150	3,217	2,956	2,935	1,835	14,252
1972	1,350	738	349	156	150	150	150	3,230	2,954	150	1,512	2,128	13,017
1973	1,468	129	90	1,530	3,319	20,660	7,909	559	365	300	300	887	37,515
1974	1,281	150	150	1,196	350	2,495	497	368	175	150	1,061	1,958	9,831
1975	150	150	510	155	1,160	12,741	5,144	578	377	193	150	496	21,803
1976	150	150	150	150	256	150	150	150	3,674	2,960	2,798	1,460	12,199
1977	150	150	150	150	150	150	150	1,545	670	234	90	90	3,679
1978	90	90	90	1,494	22,295	149,406	36,358	7,714	594	417	300	300	219,147
1979	150	150	150	482	3,591	21,575	11,373	580	400	300	300	767	39,818
1980	150	150	150	389	74,085	42,110	7,178	969	463	300	300	729	126,973
1981	337	150	150	171	208	1,538	432	266	158	150	1,566	2,037	7,162
1982	1,023	150	150	150	150	275	568	168	150	3,681	2,959	2,937	12,362
1983	2,929	150	639	20,626	59,615	198,840	57,897	30,206	5,379	560	422	300	377,562
1984	286	273	14,099	4,941	1,750	503	383	240	150	3,245	2,120	828	28,818
1985	1,239	562	196	150	151	150	150	150	150	150	2,394	1,934	7,376
1986	536	90	90	121	1,745	6,550	4,029	463	273	150	150	2,159	16,355
1987	150	150	150	150	150	262	150	150	150	1,130	884	150	3,626
1988	150	150	150	150	150	231	150	150	3,968	2,831	2,305	2,144	12,528
1989	914	90	90	90	90	90	90	90	707	1,940	617	121	4,928
1990	90	90	90	90	90	90	90	1,084	90	364	204	184	2,556
1991	299	205	90	90	90	1,569	299	126	4,566	2,029	2,841	1,631	13,835
1992	279	148	90	145	2,466	832	430	233	150	150	4,088	2,404	11,415
1993	1,367	679	150	35,173	116,161	66,726	29,322	6,598	598	396	300	300	257,770
AVG	701	318	416	3,548	9,658	17,642	6,763	1,856	902	1,289	1,581	1,246	45,920
MEDIAN	150	150	150	153	240	319	281	237	246	345	1,281	858	11,198

Alternative 2

SANTA YNEZ RIVER ABOVE ALISAL BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	1	62,825	133,834	20,087	5,816	823	230	72	46	223,733
1919	0	105	14	14	134	107	17	21	0	3,208	577	661	4,859
1920	9	4	19	11	253	1,229	478	89	19	3,166	505	1,394	7,176
1921	946	566	3	112	251	420	60	33	0	3	3,427	1,089	6,909
1922	847	441	3,570	2,209	7,927	12,575	8,446	898	289	60	0	167	37,429
1923	456	348	899	209	286	121	159	81	37	10	3,226	2,607	8,438
1924	2,569	1,713	8	13	28	176	44	25	3	0	1,206	1,064	6,850
1925	479	0	0	0	0	16	233	5	2	763	1,389	0	2,886
1926	0	0	1	1	718	166	6,060	392	49	7	878	1,224	9,496
1927	843	682	321	344	16,594	17,555	4,975	576	217	123	38	548	42,816
1928	0	3	7	11	734	398	76	40	21	3,158	2,603	2,515	9,567
1929	2,493	0	2	8	76	167	120	28	2,875	2,609	1,927	1,606	11,911
1930	894	215	0	0	0	653	27	4	0	581	526	0	2,901
1931	0	0	0	0	5	0	0	352	0	0	0	0	357
1932	0	0	1,570	463	6,833	1,638	454	155	36	0	1,087	812	13,048
1933	0	0	0	1,016	290	82	66	24	2,867	2,614	2,489	0	9,449
1934	0	0	0	742	272	67	2	0	2,979	2,552	1,460	1,556	9,630
1935	353	0	0	1,241	428	1,567	2,651	336	25	0	3,196	2,554	12,351
1936	728	0	0	0	3,999	699	602	44	0	0	1,250	0	7,321
1937	0	0	0	315	8,756	25,631	18,522	1,407	357	143	2,942	2,659	60,731
1938	0	296	27	27	36,716	205,592	17,624	2,222	492	222	74	42	263,335
1939	0	0	37	179	345	773	340	71	22	2,861	2,606	2,065	9,299
1940	898	341	15	138	568	450	219	64	11	2,935	195	1,131	6,968
1941	768	2	798	3,392	82,206	222,356	133,827	20,173	3,329	647	315	170	467,982
1942	85	93	2,159	1,254	743	2,624	6,862	758	360	85	24	340	15,386
1943	0	17	22	53,085	31,744	74,501	11,433	767	393	183	69	39	172,253
1944	4	4	59	188	26,558	39,231	5,380	858	380	133	60	89	72,943
1945	0	74	36	53	2,297	8,940	3,058	484	111	4	237	988	16,281
1946	108	0	439	70	137	593	4,293	327	61	2,850	2,633	2,541	14,053
1947	2,520	98	105	32	78	66	39	2,702	2,727	2,606	2,492	1,132	14,597
1948	734	59	0	0	0	0	0	0	281	272	0	0	1,345
1949	0	0	0	0	0	198	0	584	0	0	0	0	782
1950	0	0	1	0	74	1	0	1,116	0	0	0	0	1,193
1951	0	0	0	0	0	0	0	4	0	0	0	0	4
1952	0	0	0	11,177	318	11,462	13,003	1,002	253	104	1,052	3,592	41,964
1953	27	75	1,027	1,022	288	172	134	33	10	3,070	2,285	1,384	9,526
1954	1,027	553	41	433	330	1,180	427	43	39	3,172	2,582	1,684	11,512
1955	1,128	211	1	153	70	36	25	49	0	1,285	1,733	0	4,690
1956	0	0	3,450	5,278	786	382	632	315	21	15	802	371	12,053
1957	0	0	0	3	100	104	36	19	3,203	1,784	1,649	92	6,989
1958	0	1	0	164	4,765	8,281	49,967	10,873	856	236	92	41	75,276
1959	0	0	0	59	1,229	253	109	48	20	3,122	1,991	1,465	8,297
1960	969	586	30	60	250	49	114	28	5	711	301	0	3,103
1961	0	6	6	0	0	0	0	464	6	0	0	0	483
1962	0	0	14	39	19,342	3,155	738	263	35	453	1,276	0	25,314
1963	0	0	0	5	672	650	329	110	32	702	282	0	2,781
1964	0	0	0	0	0	0	0	600	35	0	0	0	634
1965	0	0	0	44	3	3	1,143	9	1,924	2,669	271	34	6,098
1966	0	1,021	1,222	1,894	834	464	111	96	40	0	3,450	2,564	11,696
1967	2,514	2,524	1,276	4,449	10,085	31,433	54,731	22,386	1,034	150	2,913	76	133,571
1968	0	296	28	43	104	289	130	23	2,709	1,761	340	1,092	6,815
1969	791	404	31	149,037	212,008	86,553	20,157	6,579	879	244	108	55	476,844
1970	0	22	30	156	235	2,422	277	125	20	2,830	2,622	466	9,205
1971	693	584	666	248	140	124	81	34	2,682	2,672	2,552	876	11,352
1972	712	450	711	131	105	45	41	2,806	2,751	1	652	1,250	9,655
1973	881	75	0	3,710	10,040	22,405	8,666	829	338	112	47	238	47,343
1974	603	12	35	2,759	453	2,753	630	360	63	1	347	1,101	9,118
1975	3	0	771	95	2,598	15,855	5,676	863	347	67	0	102	26,379
1976	0	0	0	0	252	69	54	19	2,968	2,649	2,395	547	8,953
1977	0	0	0	0	0	3	0	851	368	12	0	0	1,233
1978	0	0	0	2,935	32,043	163,771	40,040	8,556	931	424	154	66	248,919
1979	17	15	34	859	4,535	22,847	12,554	872	419	140	45	300	42,636
1980	0	0	9	638	82,057	46,290	7,824	1,417	578	180	51	285	139,329
1981	46	0	0	103	235	3,783	679	245	74	0	658	1,188	7,011
1982	521	17	21	64	68	516	1,490	205	19	2,983	2,634	2,542	11,080
1983	2,521	35	1,673	25,150	66,535	210,747	63,196	33,441	6,172	712	417	168	410,768
1984	255	140	14,093	5,324	2,012	705	454	193	45	2,682	1,846	374	28,123
1985	531	281	162	62	114	114	71	28	6	0	1,189	1,116	3,676
1986	248	0	3	50	4,234	8,654	4,160	567	191	7	0	1,022	19,135
1987	0	0	0	27	9	286	32	14	1	422	407	0	1,197
1988	0	0	0	14	4	306	66	13	3,158	2,499	1,257	1,319	8,637
1989	440	0	0	0	15	2	0	0	318	1,035	236	0	2,046
1990	0	0	0	0	0	0	0	163	0	0	0	0	163
1991	0	0	0	0	0	3,352	501	49	3,554	1,153	1,859	952	11,420
1992	64	0	10	144	7,382	2,259	1,114	404	131	24	3,173	2,082	16,786
1993	622	377	52	39,093	124,304	72,416	31,742	7,481	983	389	136	38	277,632
AVG	399	168	467	4,218	11,585	19,429	7,464	1,881	737	954	1,070	757	49,128
MEDIAN	4	1	8	82	304	554	383	225	92	233	551	356	9,599

Alternative 2

SANTA YNEZ RIVER NEAR BUELLTON (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	71,900	135,490	21,956	6,639	1,235	217	15	3	237,455
1919	0	8	0	0	170	156	0	0	0	2,766	224	259	3,583
1920	0	0	0	0	416	1,816	827	96	0	2,724	164	810	6,853
1921	472	306	0	134	401	723	62	27	0	0	2,839	559	5,523
1922	389	207	6,577	4,091	13,237	14,855	9,403	1,236	296	25	0	3	50,319
1923	158	165	1,518	296	422	134	220	69	10	0	2,744	2,369	8,104
1924	2,324	1,521	0	0	0	294	13	0	0	0	683	563	5,398
1925	144	0	0	0	0	12	444	0	0	375	825	0	1,798
1926	0	0	0	0	1,435	307	9,486	683	34	0	422	672	13,039
1927	393	1,090	489	570	25,342	18,116	5,716	738	189	65	0	216	52,923
1928	0	0	0	0	1,024	632	71	8	0	2,726	2,363	2,250	9,074
1929	2,223	0	0	0	120	304	206	9	2,514	2,405	1,696	950	10,429
1930	417	44	0	0	0	1,216	12	0	0	232	144	0	2,065
1931	0	0	0	0	0	0	0	64	0	0	0	0	64
1932	0	0	3,087	1,086	9,853	3,145	728	228	1	0	576	342	19,046
1933	0	0	0	1,944	497	91	58	0	2,513	2,416	2,235	0	9,754
1934	0	0	0	1,617	495	143	0	0	2,551	2,321	834	897	8,857
1935	108	0	0	2,330	754	2,583	4,455	570	13	0	2,689	2,304	15,805
1936	303	0	0	0	6,773	1,276	875	38	0	0	699	0	9,963
1937	0	0	0	681	16,742	31,495	19,950	1,685	415	94	2,580	2,464	76,107
1938	0	116	2	0	44,034	215,133	19,257	2,151	655	271	16	0	281,636
1939	0	0	47	359	665	1,424	508	62	0	2,504	2,393	1,837	9,798
1940	440	139	0	184	1,023	766	334	40	0	2,552	43	617	6,139
1941	349	0	1,382	6,374	92,746	241,974	141,857	21,883	3,725	943	447	204	511,884
1942	128	148	3,834	2,117	1,080	3,432	7,467	1,040	413	55	2	87	19,805
1943	0	0	0	57,862	34,256	80,001	12,426	1,056	487	174	13	0	186,274
1944	0	0	83	349	30,321	41,648	5,976	1,239	463	76	5	0	80,160
1945	0	137	35	73	4,353	9,380	3,525	591	54	0	77	529	18,754
1946	0	0	826	73	220	650	4,753	355	13	2,512	2,428	2,305	14,135
1947	2,276	169	178	18	104	71	11	2,401	2,573	2,427	2,264	611	13,102
1948	319	0	0	0	0	0	0	0	65	87	0	0	471
1949	0	0	0	0	0	450	0	222	0	0	0	0	672
1950	0	0	0	0	149	0	0	505	0	0	0	0	654
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	18,904	804	20,677	14,030	1,369	192	74	713	3,058	59,821
1953	0	49	1,735	1,835	461	238	118	0	0	2,650	2,048	768	9,903
1954	508	183	0	580	484	2,040	707	0	0	2,723	2,328	994	10,547
1955	568	35	0	94	49	13	2	64	0	747	1,051	0	2,623
1956	0	0	6,089	8,277	1,301	595	936	534	0	3	362	128	18,225
1957	0	0	0	0	142	181	50	21	2,748	1,588	987	0	5,716
1958	0	0	0	221	8,808	15,566	61,576	12,340	1,278	196	23	0	100,008
1959	0	0	0	85	2,356	426	86	6	0	2,689	1,773	844	8,264
1960	472	313	0	0	289	0	94	0	0	325	18	0	1,512
1961	0	0	0	0	0	0	0	88	0	0	0	0	88
1962	0	0	0	0	34,210	5,844	1,292	355	0	259	751	0	42,712
1963	0	0	0	0	1,047	1,007	459	109	3	308	59	0	2,992
1964	0	0	0	0	0	0	0	162	0	0	0	0	162
1965	0	0	0	7	0	0	1,875	0	1,143	1,834	50	0	4,910
1966	0	1,550	2,013	3,380	1,364	742	54	76	9	0	2,846	2,285	14,320
1967	2,219	2,242	2,396	8,310	11,209	31,779	55,142	23,695	1,050	65	2,675	8	140,792
1968	0	122	4	26	154	511	193	0	2,396	1,610	94	602	5,713
1969	371	189	0	166,472	230,146	94,931	21,426	7,389	1,250	192	48	6	522,421
1970	0	22	21	305	448	3,565	225	44	0	2,498	2,419	147	9,696
1971	305	418	886	363	157	97	36	0	2,371	2,505	2,332	425	9,894
1972	310	222	1,187	159	107	1	1	2,514	2,610	0	274	710	8,095
1973	431	41	0	6,080	18,608	24,021	9,557	1,018	302	33	0	30	60,121
1974	258	0	0	5,031	634	3,177	818	403	15	0	80	604	11,021
1975	0	0	1,238	89	4,713	20,311	6,308	1,240	310	15	0	0	34,224
1976	0	0	0	0	448	93	46	0	2,608	2,447	2,149	144	7,935
1977	0	0	0	0	0	0	0	449	164	0	0	0	614
1978	0	0	0	4,936	46,121	181,542	44,696	9,625	1,288	533	166	8	288,916
1979	0	0	25	1,652	6,195	24,725	13,974	1,244	447	66	0	108	48,435
1980	0	0	0	1,209	92,881	51,409	8,577	1,842	667	119	0	114	156,818
1981	0	0	0	143	419	7,114	1,082	297	63	0	280	663	10,061
1982	170	0	0	16	38	870	2,786	272	0	2,618	2,416	2,295	11,481
1983	2,266	30	3,006	31,905	75,391	218,055	67,099	36,361	7,318	1,029	602	204	443,264
1984	437	138	14,763	5,726	2,290	933	481	130	1	2,376	1,683	168	29,126
1985	197	106	182	31	133	126	44	0	0	0	686	616	2,122
1986	64	0	0	50	7,796	11,732	4,341	601	175	0	0	548	25,306
1987	0	0	0	0	0	411	0	0	0	138	164	0	713
1988	0	0	0	2	0	669	118	0	2,747	2,288	716	754	7,294
1989	111	0	0	0	7	0	0	0	146	594	46	0	903
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	6,595	1,115	139	3,031	656	1,182	432	13,150
1992	0	0	0	228	14,149	4,207	1,973	641	188	0	2,690	1,858	25,934
1993	233	163	1	44,638	134,358	78,989	34,798	8,339	1,350	432	137	0	303,437
AVG	255	130	679	5,144	13,898	21,328	8,246	2,040	712	810	832	518	54,591
MEDIAN	0	0	0	87	496	818	494	150	58	183	277	146	10,012

Alternative 2

SANTA YNEZ RIVER ABOVE SALSIPUEDES CREEK CONFLUENCE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	80,850	135,325	24,024	7,799	1,754	187	0	0	249,939
1919	0	0	0	0	40	98	0	0	0	1,988	0	0	2,126
1920	0	0	0	0	288	1,705	1,045	90	0	2,046	0	65	5,240
1921	0	4	0	47	395	904	63	26	0	0	1,898	14	3,350
1922	0	0	8,785	5,973	17,715	17,340	10,712	1,781	383	9	0	0	62,700
1923	0	0	1,612	290	491	166	315	90	3	0	1,982	1,996	6,946
1924	1,940	1,231	0	0	0	328	0	0	0	0	61	11	3,571
1925	0	0	0	0	0	0	440	0	0	0	69	0	508
1926	0	0	0	0	1,556	264	10,826	973	30	0	0	40	13,688
1927	0	1,116	504	727	33,062	18,503	6,761	1,040	221	22	0	0	61,957
1928	0	0	0	0	755	643	46	0	0	2,039	1,979	1,821	7,283
1929	1,791	0	0	0	76	335	231	0	2,051	2,119	1,344	159	8,106
1930	0	0	0	0	0	1,533	0	0	0	0	0	0	1,533
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	3,734	1,021	10,133	4,693	988	338	0	0	32	0	20,940
1933	0	0	0	2,377	552	78	44	0	2,071	2,142	1,844	0	9,108
1934	0	0	0	1,940	485	159	0	0	2,003	1,998	122	122	6,829
1935	0	0	0	2,980	966	3,284	5,968	896	22	0	1,949	1,934	17,999
1936	0	0	0	0	8,542	1,868	1,050	64	0	0	70	0	11,594
1937	0	0	0	666	24,331	37,186	21,845	2,186	574	61	2,047	2,171	91,066
1938	0	0	0	0	51,384	221,244	21,361	2,251	950	340	0	0	297,528
1939	0	0	0	354	848	2,046	694	83	0	2,009	2,067	1,477	9,578
1940	0	0	0	120	1,335	1,036	463	42	0	2,024	0	26	5,046
1941	0	0	1,566	9,057	96,468	258,219	147,331	23,855	4,183	1,222	494	156	542,552
1942	89	115	4,718	2,778	1,364	4,104	8,199	1,409	499	18	0	0	23,293
1943	0	0	0	60,873	37,238	85,019	13,749	1,460	660	158	0	0	199,158
1944	0	0	1	326	32,229	44,088	6,837	1,773	620	35	0	0	85,910
1945	0	39	0	14	6,333	9,644	4,247	818	47	0	0	4	21,147
1946	0	0	939	25	246	429	5,318	448	0	2,052	2,117	1,931	13,506
1947	1,889	124	162	1	94	76	5	2,131	2,422	2,185	1,912	39	11,039
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	83	0	0	0	0	0	0	83
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	26,393	136	29,064	14,017	1,647	65	3	192	2,207	73,725
1953	0	0	1,806	2,442	655	353	102	0	0	2,099	1,705	92	9,254
1954	6	0	0	494	496	2,593	1,029	0	0	2,086	1,945	176	8,825
1955	10	0	0	0	0	0	0	20	0	68	143	0	241
1956	0	0	6,582	8,765	1,682	804	1,133	829	0	0	0	0	19,795
1957	0	0	0	0	4	96	5	0	2,048	1,294	178	0	3,625
1958	0	0	0	50	11,487	22,547	73,440	14,271	1,840	118	0	0	123,753
1959	0	0	0	6	3,029	529	21	0	0	2,034	1,433	105	7,156
1960	0	10	0	0	114	0	6	0	0	0	0	0	130
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	46,656	6,733	1,380	247	0	4	36	0	55,055
1963	0	0	0	0	598	743	300	22	0	0	0	0	1,663
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	1,001	0	27	459	0	0	1,488
1966	0	791	1,823	4,261	1,617	996	5	65	0	0	1,971	1,881	13,411
1967	1,788	1,837	3,409	11,906	12,461	32,412	55,826	25,218	1,093	6	2,268	0	148,225
1968	0	0	0	0	127	669	252	0	2,009	1,391	0	19	4,467
1969	0	0	0	186,163	249,431	105,367	22,330	8,345	1,652	111	0	0	573,397
1970	0	0	0	329	603	4,561	188	6	0	2,033	2,107	0	9,826
1971	0	115	748	394	137	57	9	0	2,027	2,277	1,991	0	7,754
1972	0	0	1,401	143	97	0	0	2,227	2,472	0	0	44	6,384
1973	0	0	0	6,837	26,965	25,226	10,779	1,237	272	0	0	0	71,316
1974	0	0	0	6,449	750	3,494	1,032	497	0	0	0	8	12,231
1975	0	0	1,028	15	6,039	23,848	7,093	1,758	249	0	0	0	40,031
1976	0	0	0	0	342	33	1	0	2,053	2,132	1,746	0	6,307
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	4,883	58,891	200,483	50,017	11,043	1,682	606	118	0	327,724
1979	0	0	0	2,031	7,495	26,482	15,819	1,752	458	0	0	0	54,037
1980	0	0	0	1,327	103,355	57,299	9,669	2,356	738	34	0	0	174,778
1981	0	0	0	27	415	9,884	1,507	386	64	0	0	22	12,305
1982	0	0	0	0	0	991	4,018	326	0	2,077	2,076	1,898	11,385
1983	1,861	0	4,103	37,635	84,216	223,563	69,680	39,070	8,710	1,334	727	178	471,077
1984	520	68	15,156	6,301	2,759	1,333	573	119	0	2,028	1,440	0	30,297
1985	0	0	39	0	79	93	23	0	0	0	58	21	313
1986	0	0	0	0	10,106	13,894	4,673	623	209	0	0	15	29,520
1987	0	0	0	0	0	241	0	0	0	0	0	0	241
1988	0	0	0	0	0	681	53	0	2,020	1,932	54	53	4,794
1989	0	0	0	0	0	0	0	0	0	21	0	0	21
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	8,808	1,276	91	2,173	81	288	0	12,718
1992	0	0	0	133	20,562	6,322	3,082	992	303	0	2,004	1,536	34,934
1993	0	0	0	49,969	145,634	86,799	38,801	9,346	1,716	411	90	0	332,766
AVG	130	72	765	5,875	15,851	22,992	8,970	2,264	689	622	560	266	59,056
MEDIAN	0	0	0	15	575	993	634	87	13	20	0	0	9,702

Alternative 2

SANTA YNEZ RIVER AT LOMPOC NARROWS (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	54	86,711	143,964	25,715	8,345	2,165	368	76	68	267,468
1919	63	63	70	73	240	287	0	78	0	1,863	0	0	2,737
1920	37	40	49	54	528	2,635	1,454	180	82	1,961	0	13	7,034
1921	0	0	0	149	624	1,287	146	106	27	64	1,758	0	4,160
1922	0	0	12,044	7,476	22,255	19,253	11,569	2,002	479	96	0	0	75,176
1923	0	0	2,535	503	782	257	450	181	91	76	1,877	1,952	8,704
1924	1,891	1,191	73	77	78	602	91	84	79	0	11	0	4,178
1925	0	0	0	0	0	17	685	52	51	0	0	0	805
1926	0	0	8	17	2,364	628	15,479	1,387	124	81	0	0	20,089
1927	0	1,650	849	998	39,140	19,932	7,406	1,248	313	104	0	0	71,640
1928	0	35	44	52	1,428	1,050	134	84	78	1,945	1,932	1,764	8,547
1929	1,733	0	60	73	163	529	423	84	1,981	2,081	1,294	84	8,506
1930	0	0	0	0	32	1,939	80	72	0	0	0	0	2,123
1931	0	0	0	0	65	22	38	0	0	0	0	0	125
1932	0	0	5,359	1,445	16,343	5,677	1,419	536	88	29	3	0	30,899
1933	0	0	0	3,046	908	166	137	81	1,999	2,103	1,790	0	10,230
1934	0	0	0	2,702	911	346	83	31	1,928	1,958	61	52	8,073
1935	0	0	0	3,766	1,358	4,312	7,612	1,104	114	30	1,847	1,890	22,033
1936	0	0	0	47	10,822	2,390	1,494	161	37	0	19	0	14,969
1937	0	0	0	964	29,545	41,779	23,135	2,406	672	145	1,968	2,133	102,747
1938	0	0	64	68	56,104	235,150	22,656	2,351	1,054	427	78	70	318,022
1939	0	0	150	604	1,237	2,617	992	177	87	1,941	2,024	1,427	11,257
1940	0	0	0	241	1,723	1,440	682	131	33	1,941	0	0	6,190
1941	0	0	2,274	11,630	115,742	277,087	156,984	25,545	4,898	1,721	876	434	597,191
1942	366	393	8,117	4,458	2,274	5,930	9,326	1,921	794	200	167	55	34,002
1943	66	157	165	63,758	39,196	88,960	14,711	1,877	861	344	80	73	210,247
1944	70	70	267	699	36,369	46,617	7,479	2,196	821	123	77	0	94,787
1945	15	191	162	185	7,167	10,246	4,478	925	44	0	0	0	23,414
1946	0	0	985	92	323	1,208	5,598	543	90	1,989	2,076	1,878	14,780
1947	1,833	281	343	85	278	190	95	2,084	2,396	2,144	1,855	2	11,586
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	1,175	0	0	0	0	0	0	1,175
1950	0	0	0	0	366	1	0	0	0	0	0	0	367
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	32,930	399	37,762	14,311	1,680	101	18	105	1,977	89,282
1953	64	244	3,719	3,511	854	467	253	36	30	1,999	1,657	36	12,869
1954	0	0	0	562	776	3,954	1,227	0	75	1,975	1,892	102	10,565
1955	0	0	0	276	147	69	86	89	1	9	45	0	722
1956	0	0	12,699	15,956	2,790	1,314	1,875	1,130	87	79	0	1	35,931
1957	0	0	1	44	339	257	88	72	1,938	1,254	105	0	4,097
1958	1	0	0	303	16,775	29,529	81,895	15,156	2,254	298	88	68	146,366
1959	63	62	65	174	4,382	823	222	88	83	1,946	1,392	49	9,349
1960	0	0	6	56	660	79	306	73	0	0	0	0	1,181
1961	0	42	80	1	2	6	0	0	0	0	0	0	130
1962	1	0	110	432	65,275	10,472	2,001	542	100	80	5	0	79,018
1963	0	1	33	51	2,346	2,348	1,168	402	178	59	0	0	6,588
1964	1	1	2	3	5	6	8	0	0	0	0	0	25
1965	0	0	0	337	24	84	2,464	78	33	358	1	0	3,379
1966	1	3,425	4,209	6,591	2,999	1,518	179	254	86	26	1,847	1,831	22,965
1967	1,734	1,782	3,869	15,827	12,918	32,831	56,745	25,679	1,286	1	2,181	1	154,855
1968	0	15	62	68	194	834	341	0	1,927	1,355	1	0	4,798
1969	0	0	0	194,281	257,773	108,157	24,166	8,981	2,060	276	79	73	595,846
1970	69	73	166	502	785	5,304	280	3	0	1,938	2,061	0	11,181
1971	0	56	1,034	553	325	145	105	0	1,947	2,235	1,937	0	8,337
1972	0	0	1,533	206	169	1	1	2,132	2,438	0	0	0	6,479
1973	0	99	1	10,920	33,734	27,995	11,632	1,541	460	83	25	0	86,489
1974	2	11	55	9,059	1,056	4,401	1,436	694	90	30	12	0	16,846
1975	8	8	2,483	192	9,466	30,602	8,029	2,177	536	98	73	21	53,692
1976	60	60	64	68	896	227	198	82	1,986	2,095	1,693	0	7,431
1977	0	2	4	41	48	68	0	37	0	0	0	0	200
1978	0	0	0	9,174	74,085	212,436	54,067	12,001	2,088	888	291	85	365,113
1979	142	160	169	3,100	9,628	29,156	16,803	2,170	747	96	24	17	62,211
1980	14	13	68	1,958	112,006	61,482	10,417	2,774	1,030	196	27	20	190,004
1981	17	16	61	283	680	13,540	2,017	586	156	30	12	0	17,398
1982	0	5	43	137	65	1,167	4,640	419	36	2,006	2,035	1,846	12,398
1983	1,805	72	4,467	46,256	93,846	233,518	74,900	40,994	9,567	1,834	1,012	359	508,630
1984	799	345	16,526	6,830	3,081	1,550	776	216	41	1,976	1,407	0	33,546
1985	0	8	357	78	249	278	106	0	0	0	2	0	1,079
1986	0	0	27	100	14,842	19,425	5,091	921	303	0	0	0	40,711
1987	8	8	49	144	65	978	81	31	0	0	0	0	1,364
1988	0	0	14	108	48	707	141	70	1,925	1,888	12	5	4,919
1989	0	0	2	4	3	2	1	0	0	0	0	0	12
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	12,627	1,137	8	1,873	0	38	0	15,683
1992	0	0	2	88	25,074	7,609	3,413	1,195	394	79	1,904	1,494	41,251
1993	0	0	135	53,348	153,184	90,058	39,982	9,885	2,021	592	169	0	349,376
AVG	143	139	1,128	6,814	18,119	25,019	9,778	2,476	780	652	553	262	65,863
MEDIAN	0	0	49	189	902	1,479	1,065	181	95	96	32	0	11,422

Alternative 3A													
SANTA YNEZ RIVER BELOW HILTON CREEK (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	476	453	433	414	54,544	127,877	17,805	5,043	519	642	687	694	209,589
1919	478	446	368	1,273	1,296	1,294	352	361	375	3,823	441	2,228	12,734
1920	1,382	343	345	357	274	329	239	352	379	3,881	662	2,478	11,021
1921	1,637	914	197	163	162	183	196	206	229	235	4,835	2,026	10,985
1922	1,595	767	615	395	1,048	5,278	7,477	590	368	357	384	823	19,696
1923	1,317	736	303	1,301	1,308	1,283	312	345	363	377	4,259	3,037	14,940
1924	3,037	662	382	378	372	309	369	376	384	3,882	211	2,299	12,659
1925	1,394	313	204	214	221	208	171	221	230	1,399	2,790	396	7,762
1926	213	223	223	222	270	166	927	259	366	385	1,748	2,304	7,306
1927	1,553	225	171	169	1,635	16,206	4,190	429	332	360	387	1,652	27,310
1928	370	376	372	1,273	1,385	1,337	331	353	364	3,845	3,038	3,026	16,070
1929	3,017	401	394	380	343	310	326	372	3,552	3,002	1,484	2,411	15,991
1930	1,617	507	200	210	216	220	205	219	229	1,337	1,861	205	7,024
1931	223	233	237	238	219	231	229	1,518	266	226	246	259	4,125
1932	265	264	438	250	957	375	247	329	372	395	2,022	1,867	7,781
1933	196	212	221	306	279	357	361	213	225	945	2,927	886	7,126
1934	210	223	230	292	193	166	221	228	3,903	2,994	2,993	2,992	14,645
1935	2,991	244	245	307	188	326	449	163	213	236	4,523	2,994	12,878
1936	2,993	228	233	233	632	214	201	203	227	238	4,827	215	10,444
1937	231	239	241	205	1,220	15,126	16,965	1,136	615	662	694	760	38,094
1938	1,379	668	355	1,274	32,976	187,333	15,947	2,289	595	639	687	697	244,838
1939	465	457	350	1,314	1,331	1,378	274	346	367	3,578	3,037	3,035	15,933
1940	403	406	403	350	239	265	326	375	390	3,942	3,019	1,989	12,109
1941	1,524	191	260	588	58,179	193,769	120,502	18,398	3,000	540	600	642	398,193
1942	326	327	525	413	400	1,098	6,355	487	383	349	371	1,066	12,098
1943	370	361	361	46,196	28,916	66,499	10,326	532	607	649	691	700	156,206
1944	441	417	332	291	19,673	36,007	4,734	518	611	671	693	706	65,096
1945	505	331	354	347	498	6,763	2,657	420	355	381	528	2,272	15,410
1946	1,403	355	237	345	327	305	2,823	380	362	3,586	3,038	3,035	16,195
1947	3,035	343	339	375	348	358	372	3,430	3,037	3,028	3,017	2,379	20,060
1948	1,526	193	206	215	222	227	232	238	872	1,283	221	239	5,675
1949	249	253	251	244	244	1,956	210	1,808	291	218	240	254	6,219
1950	260	261	244	250	1,908	200	215	3,174	194	213	236	251	7,408
1951	26	25	25	24	23	23	22	842	24	23	22	213	1,291
1952	22	22	29	1,561	235	3,860	13,445	829	403	334	1,556	1,586	23,883
1953	1,460	302	360	2,042	275	314	325	368	376	3,841	3,038	2,753	15,454
1954	2,789	1,051	349	677	1,315	328	264	368	372	4,010	2,554	2,810	16,888
1955	1,857	743	195	155	178	198	205	194	230	2,132	3,111	474	9,671
1956	207	221	765	952	243	177	213	165	210	218	1,892	1,107	6,369
1957	228	214	217	205	160	155	190	203	4,189	779	2,943	798	10,283
1958	255	303	218	166	833	1,184	36,891	9,177	504	625	673	694	51,525
1959	469	453	399	332	2,084	274	322	357	369	3,883	3,038	2,182	14,163
1960	1,710	943	358	350	1,912	351	321	367	377	228	2,761	202	9,881
1961	221	216	215	230	228	226	227	1,754	315	222	243	256	4,353
1962	262	303	172	168	2,771	644	264	288	362	383	2,497	723	8,838
1963	375	386	383	367	320	303	240	328	367	938	1,476	376	5,859
1964	224	228	228	227	226	225	226	1,874	350	215	237	251	4,512
1965	258	260	257	173	229	211	378	199	3,976	3,084	1,095	377	10,497
1966	212	377	368	431	291	246	350	351	373	395	4,651	3,002	11,048
1967	2,993	2,993	315	756	3,207	30,487	53,299	20,367	944	659	3,669	2,417	122,106
1968	436	440	369	363	342	1,928	322	366	3,429	370	1,046	2,157	11,567
1969	1,483	715	358	128,901	188,328	78,232	17,940	5,659	510	642	675	692	424,134
1970	436	361	355	312	298	2,217	367	362	378	3,608	3,037	1,120	12,852
1971	1,527	864	247	301	328	342	359	376	3,428	3,038	3,036	2,100	15,946
1972	2,365	763	244	337	347	371	373	3,413	2,662	213	1,570	2,338	14,997
1973	1,595	158	198	667	1,328	16,553	7,684	527	620	677	696	704	31,408
1974	1,300	731	352	587	303	1,405	464	386	367	407	945	2,183	9,429
1975	812	363	315	333	2,284	8,914	4,974	494	381	354	384	607	20,213
1976	392	391	387	382	1,946	320	337	362	378	394	2,802	1,491	9,582
1977	358	374	375	374	374	371	375	382	1,181	1,641	206	228	6,239
1978	241	245	245	687	20,599	145,558	35,264	7,474	499	593	652	685	212,742
1979	375	367	353	312	1,959	21,171	11,048	512	595	663	696	806	38,856
1980	494	465	366	276	70,611	40,858	7,012	853	572	653	696	705	123,562
1981	943	427	376	319	289	2,448	276	318	354	418	1,231	2,267	9,667
1982	1,544	389	357	343	350	1,952	340	313	372	3,684	3,038	3,035	15,718
1983	400	374	374	15,870	57,329	196,324	56,412	29,414	5,143	530	592	648	363,410
1984	292	339	13,504	4,833	1,693	467	382	341	365	381	528	2,070	25,194
1985	1,366	651	299	350	330	335	360	375	388	404	2,013	2,160	9,030
1986	581	369	367	339	778	7,849	4,011	434	332	370	393	2,032	17,855
1987	576	370	371	357	371	1,949	352	364	374	393	1,734	375	7,585
1988	391	397	390	352	372	1,928	320	192	3,727	2,995	2,993	2,992	17,048
1989	242	247	247	241	226	231	231	891	1,109	2,211	893	215	6,984
1990	230	238	241	242	242	237	240	1,361	212	478	310	296	4,328
1991	434	319	249	248	247	711	214	169	4,702	2,995	2,200	3,974	16,461
1992	679	205	195	150	1,036	429	281	280	342	379	4,277	2,501	10,753
1993	1,465	766	349	29,046	113,825	65,378	28,726	6,388	497	608	664	698	248,411
AVG	942	433	482	3,370	9,114	17,179	6,610	1,912	937	1,307	1,713	1,449	45,450
MEDIAN	473	362	336	344	371	402	351	375	377	632	1,354	1,086	12,865

Alternative 3A													
SANTA YNEZ RIVER AT 154 BRIDGE (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	300	300	300	300	56,020	129,211	18,287	5,198	600	600	600	600	212,316
1919	389	366	300	1,160	1,251	1,248	300	300	300	3,613	360	1,983	11,570
1920	1,256	300	300	300	300	566	300	300	300	3,668	569	2,232	10,391
1921	1,501	843	150	150	181	234	150	150	150	150	4,539	1,833	10,031
1922	1,459	701	1,398	811	2,529	5,787	7,649	646	343	300	300	693	22,618
1923	1,107	648	484	1,247	1,288	1,224	300	300	300	300	4,029	2,962	14,188
1924	2,946	550	300	300	300	300	300	300	300	3,669	150	2,039	11,453
1925	1,259	262	150	150	150	150	194	150	150	1,152	2,547	336	6,650
1926	150	150	150	150	449	186	2,172	300	300	300	1,500	2,106	7,912
1927	1,425	366	218	208	3,884	16,387	4,361	458	300	300	300	1,413	29,619
1928	300	300	300	1,160	1,490	1,365	300	300	300	3,651	2,962	2,930	15,357
1929	2,914	300	300	300	300	300	300	300	3,358	2,928	1,271	2,208	14,780
1930	1,488	450	150	150	150	326	150	150	150	1,093	1,646	150	6,054
1931	150	150	150	150	150	150	150	1,290	205	150	150	150	2,994
1932	150	150	847	386	2,222	668	300	300	300	300	1,757	1,691	9,071
1933	150	150	150	509	300	300	300	150	150	795	2,617	802	6,373
1934	150	150	150	500	252	150	150	150	3,672	2,916	2,891	2,876	14,006
1935	2,872	150	150	526	231	591	922	180	150	150	4,242	2,914	13,077
1936	2,899	150	150	150	1,393	313	278	150	150	150	4,518	150	10,450
1937	150	150	150	268	2,921	16,446	17,307	1,191	600	600	600	649	41,032
1938	1,183	588	300	1,176	34,367	190,943	16,295	2,264	600	600	600	600	249,515
1939	377	365	300	1,264	1,342	1,474	300	300	300	3,390	2,958	2,936	15,307
1940	300	300	300	300	305	300	300	300	300	3,717	2,937	1,748	11,107
1941	1,376	150	418	1,264	62,358	199,661	123,213	18,845	3,093	600	600	600	412,179
1942	300	300	1,063	652	484	1,321	6,436	553	379	300	303	875	12,966
1943	300	300	300	47,355	29,566	68,068	10,587	600	600	600	600	600	159,475
1944	357	335	300	300	20,795	36,740	4,878	600	600	600	600	600	66,704
1945	405	300	300	300	884	6,822	2,714	423	300	306	421	1,994	15,169
1946	1,261	300	300	300	300	365	2,823	355	300	3,405	2,960	2,937	15,605
1947	2,929	300	300	300	300	300	300	3,251	2,969	2,938	2,908	2,075	18,869
1948	1,377	150	150	150	150	150	150	150	717	1,046	150	150	4,490
1949	150	150	150	150	150	1,959	150	1,605	236	150	150	150	5,150
1950	150	150	150	150	1,834	150	150	2,911	155	150	150	150	6,250
1951	0	0	0	0	0	0	0	496	0	0	0	29	525
1952	0	0	0	3,570	252	5,792	13,475	916	393	300	1,396	1,442	27,537
1953	1,348	300	647	2,205	300	300	300	300	300	3,641	2,964	2,661	15,265
1954	2,505	948	300	699	1,306	578	300	300	300	3,793	2,480	2,545	16,054
1955	1,724	680	150	168	150	150	150	150	150	1,844	2,894	416	8,628
1956	150	150	1,756	2,283	404	227	317	189	150	150	1,606	954	8,335
1957	174	150	150	150	170	150	150	150	3,953	689	2,699	728	9,313
1958	194	230	150	187	1,949	2,902	39,468	9,561	600	600	600	600	57,042
1959	383	367	320	300	2,299	300	300	300	300	3,680	2,960	1,947	13,455
1960	1,565	871	300	300	1,876	300	300	300	300	150	2,433	150	8,844
1961	150	150	150	150	150	150	150	1,510	252	150	150	150	3,261
1962	150	187	150	173	7,085	1,405	392	300	300	300	2,227	645	13,315
1963	300	300	300	300	528	478	300	300	300	806	1,260	300	5,472
1964	150	150	150	150	150	150	150	1,640	294	150	150	150	3,433
1965	150	150	150	183	150	150	719	150	3,649	2,954	1,000	321	9,726
1966	150	734	716	865	471	300	300	300	300	300	4,396	2,926	11,758
1967	2,904	2,897	530	1,669	3,439	30,525	53,575	20,716	963	600	3,513	2,357	123,688
1968	355	352	300	300	300	1,868	300	300	3,252	300	860	1,960	10,447
1969	1,358	652	300	131,943	192,545	79,729	18,452	5,845	600	600	600	600	433,224
1970	354	300	300	300	300	2,423	334	300	300	3,399	2,958	930	12,199
1971	1,356	804	345	300	300	300	300	300	3,237	2,961	2,939	2,002	15,143
1972	2,062	685	346	300	300	300	300	3,245	2,604	150	1,337	2,135	13,762
1973	1,466	150	150	1,526	3,279	17,051	7,897	600	600	600	600	600	34,520
1974	1,107	654	300	1,174	326	1,492	491	364	300	320	810	1,939	9,278
1975	731	300	518	300	2,849	10,137	5,135	577	376	300	300	496	22,018
1976	300	300	300	300	1,918	300	300	300	300	300	2,491	1,347	8,455
1977	300	300	300	300	300	300	300	300	1,000	1,463	150	150	5,163
1978	150	150	150	1,522	23,964	149,414	36,352	7,715	600	600	600	600	221,817
1979	310	300	300	498	2,331	21,563	11,374	600	600	600	600	696	39,772
1980	403	377	300	404	72,729	42,110	7,178	969	600	600	600	600	126,870
1981	826	346	301	300	300	3,207	360	300	300	328	1,021	2,067	9,657
1982	1,415	337	300	300	300	1,947	596	300	300	3,493	2,964	2,941	15,192
1983	300	300	645	17,487	59,578	198,875	57,879	30,215	5,377	600	600	600	372,457
1984	300	300	13,542	4,938	1,749	503	383	300	300	300	415	1,794	24,824
1985	1,219	581	300	300	300	300	300	300	300	300	1,721	1,967	7,888
1986	515	300	300	300	1,769	8,706	4,046	466	300	300	300	1,765	19,066
1987	499	300	300	300	300	1,931	300	300	300	300	1,477	300	6,606
1988	300	300	300	300	300	1,895	300	150	3,545	2,922	2,896	2,881	16,088
1989	150	150	150	150	150	150	150	754	915	2,002	805	150	5,676
1990	150	150	150	150	150	150	150	1,115	150	372	209	187	3,081
1991	302	207	150	150	150	1,583	304	150	4,460	2,920	2,111	3,622	16,108
1992	619	155	150	150	2,476	836	432	300	300	300	4,038	2,428	12,184
1993	1,264	684	300	30,053	116,161	66,726	29,322	6,598	600	600	600	600	253,508
AVG	837	368	491	3,552	9,663	17,655	6,790	1,903	877	1,206	1,574	1,313	46,229
MEDIAN	380	300	300	300	426	630	300	300	300	600	1,141	902	13,196

Alternative 3A													
SANTA YNEZ RIVER ABOVE ALISAL BRIDGE (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	9	13	29	61	62,433	134,076	20,082	5,815	855	439	288	253	224,353
1919	90	110	109	839	1,150	1,165	194	179	124	2,946	90	1,050	8,048
1920	695	129	158	152	405	1,350	547	229	133	2,994	231	1,264	8,288
1921	890	562	29	127	255	418	97	70	9	3	3,455	1,018	6,933
1922	856	443	3,574	2,204	7,922	7,814	8,397	893	287	134	50	252	32,825
1923	403	330	884	1,130	1,291	1,135	320	227	161	99	3,176	2,635	11,791
1924	2,590	214	93	116	147	311	176	150	107	2,976	0	1,047	7,926
1925	664	79	15	15	15	57	275	34	9	446	1,551	82	3,242
1926	0	0	2	2	832	214	6,203	462	160	83	659	1,242	9,857
1927	849	686	323	346	12,657	17,436	4,977	576	217	123	38	561	38,788
1928	49	59	90	816	1,847	1,498	250	193	149	3,000	2,639	2,534	13,123
1929	2,506	30	59	99	214	313	273	155	2,812	2,644	527	1,321	10,953
1930	903	235	25	23	28	691	72	37	5	419	812	0	3,250
1931	0	0	0	0	5	0	0	555	10	0	0	0	571
1932	0	0	1,584	578	7,057	1,698	497	271	142	54	827	905	13,613
1933	1	0	0	1,065	370	204	191	37	5	354	1,486	403	4,116
1934	0	0	0	996	399	138	29	10	3,004	2,604	2,469	2,398	12,046
1935	2,392	0	0	1,068	348	1,466	2,571	313	47	0	3,240	2,556	14,000
1936	2,514	0	0	0	3,906	671	582	76	12	0	3,399	0	11,160
1937	0	0	0	343	8,831	21,554	18,459	1,406	564	383	259	246	52,045
1938	482	299	145	911	39,747	205,644	17,624	2,222	655	472	296	254	268,752
1939	90	90	155	1,150	1,436	1,889	418	226	150	2,785	2,638	2,546	13,574
1940	19	21	38	172	505	436	292	161	96	2,987	2,592	856	8,177
1941	744	19	795	3,388	76,087	222,346	133,829	20,173	3,329	721	515	402	462,349
1942	178	194	2,201	1,230	713	1,908	6,844	756	359	152	90	236	14,862
1943	52	92	118	52,779	31,753	74,505	11,434	815	590	429	290	251	173,108
1944	90	90	185	317	25,065	39,221	5,390	884	580	375	277	224	72,699
1945	90	183	147	186	2,425	7,405	3,062	487	157	90	90	984	15,306
1946	660	108	534	212	291	639	3,094	332	153	2,803	2,639	2,546	14,012
1947	2,525	174	198	131	199	194	167	2,826	2,756	2,627	2,499	1,018	15,315
1948	733	14	12	12	13	14	11	3	333	363	0	0	1,509
1949	0	0	0	0	0	1,497	0	824	32	0	0	0	2,353
1950	0	0	1	0	1,091	2	0	1,724	1	0	0	0	2,820
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	11,177	300	11,471	13,068	1,090	297	144	700	741	38,989
1953	800	212	1,150	2,692	424	330	292	171	126	2,984	2,639	2,272	14,092
1954	1,442	509	140	828	1,321	1,232	502	168	147	3,085	2,158	1,481	13,015
1955	1,081	425	29	163	101	77	65	91	3	976	1,915	147	5,073
1956	0	0	3,559	5,350	805	393	643	321	53	25	692	329	12,170
1957	0	0	0	11	142	145	82	55	3,246	350	1,678	373	6,082
1958	2	8	0	193	4,849	8,330	49,638	10,872	898	479	315	250	75,833
1959	90	90	90	208	2,945	409	280	198	146	3,012	2,630	1,038	11,135
1960	926	584	132	174	1,762	196	265	161	115	0	1,283	0	5,598
1961	0	7	7	0	0	0	0	708	34	0	0	0	756
1962	0	0	18	44	19,361	3,365	806	362	151	77	1,247	292	25,722
1963	39	34	54	102	806	749	395	239	145	409	497	29	3,497
1964	0	0	0	0	0	0	0	841	73	0	0	0	914
1965	0	0	0	51	4	4	1,278	14	2,290	2,115	472	64	6,291
1966	0	1,095	1,274	1,935	857	492	238	219	147	57	3,430	2,576	12,319
1967	2,524	2,538	1,291	4,401	4,717	31,252	54,779	22,364	1,035	386	2,903	2,094	130,283
1968	90	90	115	148	230	1,824	293	160	2,778	91	250	1,099	7,167
1969	788	407	135	146,443	212,008	86,553	20,157	6,579	898	460	336	273	475,035
1970	90	113	143	296	372	3,398	301	178	128	2,762	2,638	293	10,712
1971	681	577	663	328	255	251	207	153	2,747	2,689	2,564	1,627	12,742
1972	1,032	377	684	231	217	160	159	2,853	2,417	2	529	1,239	9,899
1973	874	88	24	3,723	10,014	18,822	8,644	867	548	352	262	219	44,435
1974	427	350	139	2,780	445	1,803	621	355	153	90	356	1,007	8,526
1975	387	85	823	219	4,272	13,401	5,669	864	348	139	49	123	26,378
1976	22	29	52	78	1,789	254	227	170	109	52	1,393	688	4,863
1977	72	60	77	98	117	140	134	119	512	821	0	0	2,150
1978	0	0	0	3,196	34,220	163,875	40,032	8,558	937	582	380	281	252,062
1979	90	91	143	964	3,442	22,879	12,559	892	600	381	257	283	42,580
1980	90	90	104	749	80,947	46,298	7,826	1,418	703	424	266	223	139,136
1981	394	90	90	235	363	5,513	663	298	189	90	338	1,196	9,459
1982	842	150	136	193	203	2,117	1,594	342	137	2,882	2,655	2,558	13,810
1983	21	94	1,687	22,068	66,448	210,808	63,147	33,464	6,168	748	566	399	405,618
1984	282	170	13,603	5,319	2,011	705	454	246	158	90	90	845	23,973
1985	628	327	256	186	248	253	205	153	108	50	785	1,136	4,334
1986	234	78	109	193	4,375	10,862	4,218	580	218	94	32	809	21,801
1987	191	70	93	149	134	1,859	192	159	120	59	629	35	3,689
1988	17	17	39	131	114	1,926	271	64	3,008	2,642	2,507	2,436	13,173
1989	0	0	0	0	6	0	0	338	312	1,145	390	0	2,191
1990	0	0	0	0	0	0	0	315	0	15	0	0	330
1991	0	0	0	0	0	3,528	548	80	3,551	2,562	1,703	2,131	14,102
1992	293	0	24	155	7,416	2,266	1,116	463	246	107	3,177	2,114	17,376
1993	555	379	151	34,006	124,296	72,416	31,742	7,481	984	564	363	250	273,187
AVG	475	176	507	4,206	11,602	19,451	7,496	1,949	724	888	1,082	816	49,372
MEDIAN	90	86	91	201	759	1,291	436	314	159	378	521	401	12,245

Alternative 3A

SANTA YNEZ RIVER NEAR BUELLTON (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	4	71,531	135,748	21,957	6,641	1,267	403	174	140	237,863
1919	2	15	47	660	1,095	1,126	92	98	36	2,593	0	572	6,337
1920	311	13	66	48	602	1,984	912	219	48	2,620	64	716	7,604
1921	434	305	0	148	407	723	90	52	0	0	2,873	507	5,538
1922	397	209	6,582	4,086	13,233	10,150	9,350	1,229	293	77	0	90	45,695
1923	125	152	1,505	1,133	1,357	1,057	368	192	98	26	2,734	2,409	11,155
1924	2,355	59	11	32	56	419	108	63	24	2,604	0	557	6,287
1925	278	0	0	0	0	39	493	4	0	152	967	0	1,933
1926	0	0	0	0	1,551	354	9,642	749	114	17	270	694	13,392
1927	403	1,098	494	574	21,445	17,994	5,716	738	188	65	0	224	48,937
1928	0	0	10	595	2,107	1,674	218	120	64	2,632	2,420	2,287	12,128
1929	2,251	0	0	21	243	448	346	97	2,483	2,453	181	756	9,279
1930	442	61	0	0	0	1,268	40	0	0	130	354	0	2,294
1931	0	0	0	0	0	0	0	200	0	0	0	0	200
1932	0	0	3,121	1,195	10,087	3,209	768	329	62	0	388	419	19,578
1933	0	0	0	1,995	571	188	153	0	0	156	882	139	4,085
1934	0	0	0	1,894	628	211	0	0	2,605	2,383	2,194	2,087	12,000
1935	2,073	0	0	2,110	655	2,452	4,363	542	24	0	2,714	2,301	17,234
1936	2,251	0	0	0	6,650	1,244	853	58	0	0	2,806	0	13,863
1937	0	0	0	706	16,818	27,452	19,884	1,684	604	294	120	85	67,647
1938	170	126	70	725	47,097	215,244	19,273	2,157	811	497	182	131	286,484
1939	5	4	146	1,261	1,702	2,511	592	192	68	2,459	2,439	2,313	13,692
1940	0	0	0	189	937	743	391	107	16	2,597	2,368	405	7,754
1941	330	0	1,380	6,370	86,650	241,957	141,856	21,882	3,725	1,013	631	407	506,199
1942	206	233	3,880	2,097	1,053	2,738	7,450	1,039	412	105	35	30	19,279
1943	0	11	35	57,619	34,276	80,015	12,430	1,104	671	390	174	126	186,850
1944	12	12	193	471	28,872	41,661	5,994	1,268	649	277	156	75	79,640
1945	0	237	121	183	4,493	7,886	3,536	596	89	16	1	530	17,690
1946	291	4	947	195	360	702	3,601	364	76	2,475	2,441	2,315	13,770
1947	2,284	230	256	85	204	174	100	2,529	2,605	2,455	2,277	529	13,728
1948	322	0	0	0	0	0	0	0	157	87	0	0	565
1949	0	0	0	0	0	1,595	0	426	0	0	0	0	2,021
1950	0	0	0	0	953	0	0	1,047	0	0	0	0	2,001
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	18,904	806	20,721	14,107	1,454	230	104	429	340	57,095
1953	432	154	1,879	3,455	592	382	255	72	35	2,616	2,410	2,012	14,292
1954	821	151	12	937	1,396	2,103	782	65	63	2,674	1,932	848	11,783
1955	540	180	0	108	75	40	22	100	0	513	1,214	0	2,790
1956	0	0	6,241	8,379	1,329	608	949	542	7	8	289	36	18,387
1957	0	0	0	0	177	217	84	45	2,802	150	1,024	110	4,609
1958	0	0	0	258	8,935	15,645	61,264	12,345	1,321	409	188	110	100,475
1959	0	0	1	219	4,058	579	233	112	78	2,634	2,408	532	10,854
1960	452	317	13	60	1,683	86	224	60	24	0	711	0	3,630
1961	0	0	0	0	0	0	0	265	0	0	0	0	265
1962	0	0	0	0	34,328	6,063	1,361	445	63	3	725	75	43,064
1963	0	0	0	0	1,213	1,132	539	224	74	193	120	0	3,495
1964	0	0	0	0	0	0	0	347	0	0	0	0	347
1965	0	0	0	15	0	0	2,023	0	1,480	1,383	88	0	4,990
1966	0	1,651	2,089	3,441	1,396	772	153	175	79	0	2,859	2,308	14,923
1967	2,239	2,263	2,423	8,277	5,946	31,588	55,181	23,668	1,050	261	2,668	1,952	137,515
1968	6	2	54	101	262	1,955	340	65	2,478	10	48	617	5,938
1969	375	194	20	163,948	230,155	94,935	21,427	7,390	1,270	385	232	161	520,491
1970	12	89	103	435	579	4,528	251	86	43	2,445	2,446	49	11,066
1971	299	416	885	434	253	200	132	58	2,442	2,528	2,351	1,415	11,413
1972	538	162	1,154	237	196	69	72	2,566	2,286	0	190	702	8,172
1973	426	49	0	6,098	18,585	20,471	9,533	1,053	491	221	124	69	57,121
1974	138	158	51	5,091	633	2,270	813	401	77	10	159	536	10,337
1975	159	0	1,324	196	6,375	17,911	6,313	1,247	313	64	0	8	33,912
1976	0	0	0	0	1,882	253	185	79	25	0	836	262	3,523
1977	0	0	0	0	6	27	27	19	225	418	0	0	722
1978	0	0	0	5,313	48,439	181,690	44,708	9,635	1,296	681	362	160	292,282
1979	17	23	107	1,768	5,143	24,774	13,989	1,266	615	264	115	106	48,186
1980	0	0	11	1,351	91,878	51,440	8,587	1,846	788	328	131	77	156,438
1981	192	0	4	272	547	8,839	1,078	351	157	10	79	683	12,212
1982	415	19	22	112	147	2,399	2,910	403	46	2,559	2,452	2,323	13,808
1983	0	60	3,007	28,834	75,292	218,105	67,046	36,382	7,313	1,063	740	405	438,246
1984	463	163	14,282	5,722	2,290	933	481	175	71	14	2	427	25,023
1985	270	142	261	120	245	243	149	60	25	0	390	647	2,553
1986	59	0	13	163	7,976	13,928	4,408	617	200	19	0	397	27,782
1987	35	0	1	61	36	1,894	102	60	30	0	262	0	2,482
1988	0	0	0	71	29	2,209	308	12	2,658	2,447	2,264	2,161	12,160
1989	0	0	0	0	0	0	0	158	78	676	145	0	1,057
1990	0	0	0	0	0	0	0	39	0	0	0	0	39
1991	0	0	0	0	0	6,785	1,164	165	3,037	2,314	1,442	1,282	16,189
1992	56	0	0	233	14,177	4,212	1,975	695	285	32	2,704	1,892	26,262
1993	190	166	50	39,614	134,347	78,988	34,797	8,338	1,351	593	329	124	298,889
AVG	304	120	696	5,113	13,908	21,342	8,270	2,090	685	750	851	575	54,704
MEDIAN	12	0	7	208	1,003	1,635	565	244	84	175	266	192	12,186

Alternative 3A													
SANTA YNEZ RIVER ABOVE SALSIPUEDES CREEK CONFLUENCE (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	80,487	135,580	24,024	7,800	1,786	348	30	0	250,056
1919	0	0	0	313	851	1,027	19	41	0	2,047	0	13	4,312
1920	0	0	0	0	574	2,051	1,229	226	0	2,055	0	43	6,179
1921	0	4	0	55	402	905	83	42	0	0	1,933	3	3,427
1922	0	0	8,785	5,967	17,710	12,652	10,653	1,773	379	39	0	0	57,957
1923	0	0	1,612	1,019	1,374	1,037	481	214	70	0	2,029	2,052	9,888
1924	1,983	0	0	0	0	427	45	2	0	2,025	0	12	4,494
1925	0	0	0	0	0	0	506	0	0	0	118	0	624
1926	0	0	0	0	1,652	300	10,989	1,037	86	0	0	38	14,102
1927	0	1,109	500	725	29,185	18,364	6,754	1,037	220	21	0	0	57,915
1928	0	0	0	189	1,799	1,677	196	69	1	2,085	2,076	1,891	9,983
1929	1,845	0	0	0	172	482	368	47	2,075	2,184	0	54	7,227
1930	0	0	0	0	0	1,556	1	0	0	0	0	0	1,557
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	3,768	1,145	10,425	4,778	1,034	434	7	0	0	0	21,591
1933	0	0	0	2,423	615	149	115	0	0	0	120	0	3,422
1934	0	0	0	2,192	604	219	0	0	2,074	2,065	1,766	1,599	10,520
1935	1,576	0	0	2,749	862	3,138	5,858	864	27	0	1,967	1,930	18,972
1936	1,863	0	0	0	8,456	1,845	1,032	81	0	0	1,918	0	15,196
1937	0	0	0	733	24,519	33,192	21,776	2,184	755	219	0	0	83,377
1938	0	0	0	383	54,520	221,395	21,376	2,256	1,102	545	44	0	301,622
1939	0	0	26	1,176	1,883	3,183	818	216	19	2,027	2,133	1,939	13,420
1940	0	0	0	79	1,176	962	486	82	0	2,042	2,026	0	6,854
1941	0	0	1,570	9,061	90,398	258,186	147,329	23,854	4,183	1,290	660	322	536,853
1942	151	186	4,789	2,770	1,344	3,421	8,184	1,408	499	50	0	0	22,801
1943	0	0	0	60,630	37,280	85,041	13,754	1,508	840	347	40	0	199,439
1944	0	0	65	469	30,954	44,129	6,859	1,803	802	191	16	0	85,287
1945	0	113	16	98	6,586	8,235	4,277	830	78	0	0	3	20,236
1946	0	0	1,101	115	392	505	4,244	466	33	2,039	2,137	1,947	12,979
1947	1,902	167	224	32	178	165	67	2,287	2,467	2,222	1,933	15	11,659
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	842	0	0	0	0	0	0	842
1950	0	0	0	0	194	0	0	52	0	0	0	0	246
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	26,393	284	29,109	14,453	1,804	112	24	67	0	72,246
1953	9	6	1,953	3,997	797	500	229	22	0	2,119	2,064	1,610	13,307
1954	113	0	0	790	1,309	2,707	1,125	8	0	2,102	1,594	115	9,865
1955	4	0	0	0	0	0	0	52	0	5	233	0	294
1956	0	0	6,734	8,898	1,718	822	1,150	840	0	0	0	0	20,161
1957	0	0	0	0	7	108	13	0	2,095	0	171	0	2,395
1958	0	0	0	69	11,627	22,638	73,134	14,276	1,882	297	26	0	123,949
1959	0	0	0	84	4,726	712	146	40	25	2,079	2,060	7	9,880
1960	0	10	0	0	1,259	0	109	0	0	0	15	0	1,393
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	46,774	6,951	1,596	379	0	0	43	0	55,743
1963	0	0	0	0	757	881	384	100	0	0	0	0	2,122
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	1,176	0	200	282	0	0	1,659
1966	0	892	1,922	4,351	1,660	1,031	73	150	36	0	2,013	1,912	14,040
1967	1,814	1,864	3,448	11,887	7,262	32,194	55,852	25,187	1,092	145	2,276	1,716	144,738
1968	0	0	0	12	233	2,045	415	9	2,160	0	0	18	4,892
1969	0	0	0	183,639	249,428	105,370	22,331	8,346	1,671	279	85	18	571,167
1970	0	6	9	491	773	5,582	229	41	1	2,031	2,150	0	11,313
1971	0	112	745	450	214	138	75	5	2,126	2,312	2,019	1,085	9,281
1972	16	0	1,399	210	172	17	27	2,321	2,170	0	0	41	6,374
1973	0	0	0	6,855	26,943	21,690	10,750	1,270	449	106	0	0	68,063
1974	0	0	0	6,635	779	2,650	1,037	500	35	0	0	2	11,638
1975	0	0	1,152	85	7,725	21,559	7,112	1,769	254	1	0	0	39,658
1976	0	0	0	0	1,542	163	96	1	0	0	83	0	1,884
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	5,260	61,209	200,739	50,029	11,053	1,690	744	270	2	330,996
1979	0	0	2	2,220	6,550	26,576	15,845	1,777	620	122	0	0	53,711
1980	0	0	0	1,494	102,352	57,398	9,693	2,366	859	198	1	0	174,361
1981	0	0	0	125	574	11,692	1,538	451	147	0	0	18	14,545
1982	0	0	0	0	17	2,469	4,268	476	0	2,089	2,132	1,943	13,394
1983	0	0	4,008	34,485	84,069	223,603	69,627	39,090	8,706	1,367	853	342	466,151
1984	551	88	14,703	6,300	2,760	1,334	574	162	35	0	0	0	26,507
1985	0	0	74	12	162	189	103	3	0	0	0	23	566
1986	0	0	0	14	10,313	16,080	4,753	643	234	0	0	0	32,035
1987	0	0	0	0	0	1,503	9	0	0	0	0	0	1,513
1988	0	0	0	0	0	2,054	231	0	2,069	2,125	1,847	1,696	10,021
1989	0	0	0	0	0	0	0	0	0	33	0	0	33
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	8,998	1,327	110	2,191	1,924	1,029	218	15,795
1992	0	0	0	145	20,630	6,335	3,086	1,045	393	0	2,031	1,573	35,237
1993	0	0	0	45,039	145,570	86,798	38,800	9,345	1,717	558	236	0	328,063
AVG	156	60	771	5,819	15,852	23,001	8,999	2,293	664	589	582	318	59,106
MEDIAN	0	0	0	92	857	1,616	696	156	35	23	16	0	11,649

Alternative 3A													
SANTA YNEZ RIVER AT LOMPOC NARROWS (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	54	86,348	144,220	25,716	8,346	2,196	527	104	69	267,581
1919	64	64	70	366	1,037	1,212	13	126	0	1,945	0	0	4,897
1920	24	47	56	59	812	2,993	1,642	315	84	1,974	0	2	8,010
1921	0	0	0	153	629	1,288	165	121	27	64	1,793	0	4,239
1922	0	0	12,044	7,462	22,248	14,566	11,509	1,993	475	125	0	0	70,422
1923	0	0	2,536	1,217	1,661	1,124	621	307	157	79	1,931	2,009	11,643
1924	1,935	0	66	71	74	692	132	84	79	1,937	0	0	5,070
1925	0	0	0	0	0	22	761	56	55	0	22	0	915
1926	0	0	13	23	2,480	668	15,651	1,451	179	82	0	0	20,546
1927	0	1,642	846	996	35,263	19,792	7,400	1,245	311	103	0	0	67,597
1928	0	35	44	215	2,466	2,087	286	156	83	2,002	2,031	1,835	11,241
1929	1,789	0	61	74	254	674	560	130	2,011	2,147	0	3	7,703
1930	0	0	0	0	21	1,923	77	69	0	0	0	0	2,090
1931	0	0	0	0	62	20	37	0	0	0	0	0	119
1932	0	0	5,392	1,568	16,635	5,757	1,464	632	95	29	0	0	31,573
1933	0	0	0	3,092	956	230	202	81	0	0	37	0	4,600
1934	0	0	0	2,944	994	393	79	29	1,988	2,023	1,706	1,529	11,685
1935	1,505	0	0	3,594	1,259	4,167	7,502	1,072	119	30	1,864	1,886	23,000
1936	1,813	0	0	56	10,782	2,364	1,475	178	37	0	1,784	0	18,489
1937	0	0	0	1,072	29,774	37,785	23,066	2,403	852	299	0	0	95,252
1938	0	0	43	391	59,210	235,301	22,671	2,356	1,206	629	120	72	322,000
1939	0	0	175	1,408	2,273	3,763	1,120	310	107	1,964	2,090	1,886	15,097
1940	0	0	207	1,568	1,365	704	169	33	1,959	1,980	0		7,984
1941	0	0	2,293	11,641	109,672	277,054	156,982	25,544	4,898	1,788	1,041	597	591,509
1942	428	463	8,191	4,450	2,254	5,248	9,312	1,921	794	231	167	55	33,514
1943	66	157	165	63,516	39,237	88,981	14,715	1,925	1,041	530	118	74	210,524
1944	70	70	328	842	35,100	46,658	7,500	2,226	1,001	274	93	0	94,163
1945	16	261	179	267	7,428	8,840	4,507	937	73	0	0	0	22,508
1946	0	0	1,137	173	467	1,291	4,536	561	122	1,976	2,095	1,894	14,253
1947	1,846	321	403	114	362	279	156	2,243	2,442	2,182	1,877	0	12,226
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	1,935	0	0	0	0	0	0	1,935
1950	0	0	0	0	560	1	0	0	0	0	0	0	561
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	32,930	547	37,806	14,746	1,837	145	35	36	0	88,083
1953	7	194	3,768	5,040	994	611	379	57	31	2,021	2,014	1,551	16,666
1954	48	0	0	871	1,593	4,104	1,329	3	78	1,999	1,546	53	11,625
1955	0	0	0	270	144	67	84	115	1	0	92	0	775
1956	0	0	12,851	16,073	2,828	1,332	1,893	1,141	87	79	0	1	36,286
1957	0	0	1	44	342	268	95	73	1,985	1	87	0	2,896
1958	1	0	0	309	16,915	29,604	81,589	15,161	2,296	474	113	69	146,531
1959	64	63	66	248	6,073	1,009	348	128	109	1,995	2,014	0	12,116
1960	0	0	3	49	1,748	84	412	77	0	0	0	0	2,373
1961	0	48	85	2	3	8	0	0	0	0	0	0	146
1962	1	0	114	436	65,394	10,696	2,218	674	100	76	9	0	79,718
1963	0	1	34	52	2,503	2,487	1,253	480	178	71	0	0	7,059
1964	0	0	1	3	4	6	7	0	0	0	0	0	22
1965	0	0	0	337	23	83	2,632	79	183	209	1	0	3,546
1966	1	3,525	4,306	6,681	3,042	1,553	246	338	121	26	1,889	1,863	23,591
1967	1,761	1,809	3,909	15,808	7,722	32,610	56,772	25,648	1,284	129	2,196	1,683	151,330
1968	0	20	69	85	301	2,200	511	4	2,094	0	1	0	5,285
1969	0	0	0	191,757	257,748	108,160	24,167	8,982	2,079	441	160	91	593,585
1970	70	80	176	661	956	6,327	322	35	0	1,941	2,105	0	12,673
1971	0	54	1,031	609	399	223	170	1	2,052	2,272	1,966	1,034	9,812
1972	0	0	1,574	276	246	8	18	2,249	2,143	0	0	0	6,515
1973	0	102	1	10,937	33,721	24,458	11,603	1,574	635	184	25	0	83,240
1974	3	11	55	9,247	1,086	3,559	1,440	696	124	30	20	0	16,272
1975	7	7	2,596	259	11,148	28,321	8,047	2,188	542	98	73	21	53,306
1976	60	60	64	68	2,074	359	295	86	0	0	18	0	3,086
1977	0	0	0	28	38	59	0	46	0	0	0	0	171
1978	0	0	0	9,551	76,402	212,643	54,079	12,010	2,096	1,024	439	88	368,332
1979	143	160	171	3,289	8,686	29,248	16,829	2,195	908	213	25	18	61,886
1980	14	14	69	2,124	111,007	61,581	10,440	2,784	1,150	357	28	21	189,589
1981	17	16	61	376	838	15,352	2,049	651	238	31	13	0	19,642
1982	0	5	43	137	79	2,619	4,909	570	37	2,022	2,092	1,891	14,403
1983	0	62	4,339	43,096	93,699	233,558	74,847	41,014	9,563	1,867	1,137	520	503,702
1984	830	366	16,077	6,829	3,082	1,551	776	258	74	0	0	0	29,844
1985	0	1	361	79	317	365	179	0	0	0	0	0	1,303
1986	0	0	19	99	15,049	21,582	5,169	940	328	0	0	0	43,187
1987	6	7	47	141	64	2,214	93	33	0	0	0	0	2,604
1988	0	0	16	112	50	2,035	323	79	1,996	2,084	1,790	1,631	10,116
1989	0	0	5	8	3	2	1	0	0	0	0	0	19
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	12,816	1,187	11	1,891	1,742	903	54	18,605
1992	0	0	17	148	25,141	7,745	3,428	1,251	484	80	1,932	1,530	41,758
1993	0	0	135	48,420	153,120	90,057	39,982	9,884	2,023	737	309	0	344,668
AVG	166	127	1,133	6,757	18,119	25,027	9,808	2,504	757	620	577	316	65,912
MEDIAN	0	0	45	269	1,413	2,144	1,154	308	121	90	27	0	13,463

Alternative 3B													
SANTA YNEZ RIVER BELOW HILTON CREEK (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	476	453	433	414	51,309	127,900	17,791	5,025	519	642	687	694	206,344
1919	478	447	368	1,273	1,296	1,294	352	361	375	3,823	441	2,229	12,736
1920	1,382	343	345	357	274	329	239	352	379	3,881	662	2,478	11,020
1921	1,637	914	197	163	162	183	196	206	229	235	4,835	2,026	10,985
1922	1,595	767	615	395	1,048	4,903	7,463	573	368	358	384	828	19,297
1923	1,316	736	303	1,301	1,308	1,283	312	345	363	377	4,259	3,037	14,939
1924	3,037	662	382	378	372	309	369	376	384	3,882	211	2,299	12,659
1925	1,394	313	204	214	221	208	171	221	230	1,399	2,790	396	7,762
1926	213	223	223	222	270	166	927	259	366	385	1,748	2,304	7,306
1927	1,553	225	171	169	1,635	15,151	4,179	429	333	360	387	1,661	26,252
1928	370	376	372	1,273	1,385	1,337	331	353	364	3,845	3,038	3,035	16,078
1929	3,027	401	394	380	343	310	326	372	3,552	3,002	1,483	2,411	16,000
1930	1,617	507	200	210	216	220	205	219	229	1,337	1,861	205	7,024
1931	223	233	237	238	219	231	229	1,518	266	226	246	259	4,125
1932	265	264	438	250	957	375	247	329	372	395	2,022	1,867	7,781
1933	358	210	219	306	277	356	360	378	3,550	2,995	2,993	237	12,238
1934	248	252	251	291	193	175	228	233	4,031	2,994	2,709	3,974	15,577
1935	915	199	211	309	189	327	450	163	208	232	4,451	2,994	10,647
1936	1,682	199	211	217	633	214	201	199	223	236	2,640	382	7,036
1937	220	230	234	205	1,220	13,405	16,950	1,118	614	662	694	763	36,317
1938	1,379	668	355	1,274	32,883	187,357	15,936	2,270	595	639	687	697	244,739
1939	465	457	350	1,314	1,331	1,378	274	346	367	3,578	3,037	3,035	15,933
1940	403	406	403	350	239	265	326	375	390	3,942	3,019	1,989	12,109
1941	1,524	191	260	588	57,886	193,797	120,506	18,381	2,979	540	600	642	397,894
1942	326	327	525	453	400	980	6,351	487	383	349	371	1,067	12,018
1943	370	361	361	46,098	28,923	66,500	10,315	532	607	649	691	700	156,105
1944	441	417	332	291	19,578	36,002	4,724	518	611	671	693	706	64,985
1945	505	331	354	347	498	6,646	2,642	420	355	381	528	2,274	15,282
1946	1,403	355	237	345	327	305	2,701	380	362	3,589	3,038	3,035	16,076
1947	3,035	343	339	375	348	358	372	3,430	3,037	3,028	3,017	2,173	19,854
1948	2,768	195	207	217	223	228	233	238	787	1,367	220	238	6,922
1949	248	252	251	244	244	1,956	210	1,807	291	218	240	254	6,216
1950	260	261	244	250	1,908	200	215	3,174	194	213	236	251	7,408
1951	259	26	25	25	24	24	23	844	24	23	22	213	1,532
1952	22	22	29	1,561	236	1,647	12,392	810	403	335	1,575	4,500	23,531
1953	341	320	359	2,040	279	318	328	369	378	3,875	2,882	2,283	13,772
1954	1,791	1,053	348	677	1,316	328	264	368	372	3,996	2,397	2,805	15,715
1955	1,855	738	195	155	178	198	205	194	230	2,135	3,111	470	9,665
1956	207	221	765	952	243	177	213	165	210	218	1,892	1,107	6,369
1957	228	214	217	205	160	155	190	203	4,189	779	2,943	798	10,283
1958	255	303	218	166	833	1,184	35,205	9,161	504	625	673	694	49,823
1959	469	453	399	332	2,084	274	322	357	369	3,883	3,038	2,183	14,165
1960	1,710	943	358	350	1,920	350	321	367	377	228	2,747	203	9,875
1961	221	216	215	230	228	226	227	1,754	315	222	243	256	4,354
1962	262	303	172	168	2,771	644	264	288	362	383	2,499	721	8,839
1963	375	386	383	367	320	303	240	328	367	939	1,476	376	5,859
1964	391	224	225	225	224	224	225	1,874	350	215	237	251	4,664
1965	258	260	257	173	229	211	378	199	3,976	3,020	1,126	377	10,464
1966	212	377	368	431	291	246	350	351	373	395	4,649	3,002	11,045
1967	2,993	2,993	315	756	1,472	30,488	53,308	20,348	926	659	3,673	2,894	120,825
1968	431	437	368	362	342	1,928	322	366	3,429	370	1,038	2,158	11,549
1969	1,482	715	358	128,268	188,359	78,226	17,932	5,643	510	642	675	692	423,502
1970	436	361	355	312	298	2,217	367	362	378	3,608	3,037	1,120	12,852
1971	1,527	864	247	301	328	342	359	376	3,428	3,038	3,036	2,147	15,993
1972	2,355	764	244	337	347	371	373	3,413	2,673	213	1,569	2,338	14,997
1973	1,595	158	198	667	1,328	16,068	7,670	527	620	677	696	704	30,909
1974	1,303	731	352	587	303	1,288	464	386	367	408	952	2,182	9,322
1975	832	363	315	333	2,284	8,789	4,967	494	381	354	384	607	20,102
1976	392	391	387	382	1,946	320	337	362	378	394	2,802	1,491	9,582
1977	358	374	375	374	374	371	375	382	1,186	1,632	206	228	6,235
1978	241	245	245	695	20,261	145,589	35,262	7,453	499	593	652	685	212,420
1979	375	367	353	312	1,879	21,180	11,032	512	595	663	696	834	38,798
1980	491	464	365	276	70,483	40,858	7,000	836	572	653	696	705	123,401
1981	943	427	376	319	289	2,448	276	318	354	418	1,231	2,267	9,667
1982	1,544	389	357	343	350	1,952	340	313	372	3,684	3,038	3,035	15,718
1983	400	374	374	15,562	57,339	196,355	56,417	29,397	5,124	530	593	648	363,112
1984	292	339	13,457	4,829	1,686	467	382	341	365	381	528	2,071	25,137
1985	1,366	651	299	350	330	335	360	375	388	404	2,013	2,160	9,030
1986	584	369	367	339	778	7,566	3,997	434	332	371	393	2,036	17,566
1987	583	369	371	357	371	1,949	352	364	374	393	1,734	376	7,591
1988	391	397	390	352	372	1,928	320	355	3,682	2,995	2,993	2,992	17,167
1989	242	247	247	241	226	231	231	858	1,111	2,211	1,005	205	7,054
1990	223	233	236	238	240	236	239	1,362	212	478	310	296	4,303
1991	434	319	249	248	247	711	214	169	4,692	2,995	2,242	3,974	16,494
1992	693	205	195	150	1,036	429	281	280	342	379	4,274	2,510	10,774
1993	1,460	757	349	26,587	113,851	65,385	28,709	6,367	497	608	664	698	245,932
AVG	894	433	480	3,324	9,036	17,095	6,571	1,913	980	1,335	1,678	1,493	45,232
MEDIAN	467	362	336	344	371	402	351	376	378	632	1,353	1,087	12,794

Alternative 3B													
SANTA YNEZ RIVER AT 154 BRIDGE (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	300	300	300	300	52,797	129,234	18,272	5,180	600	600	600	600	209,083
1919	389	367	300	1,160	1,251	1,248	300	300	300	3,613	360	1,983	11,572
1920	1,255	300	300	300	300	566	300	300	300	3,668	569	2,231	10,390
1921	1,501	843	150	150	181	234	150	150	150	150	4,539	1,833	10,031
1922	1,459	701	1,398	811	2,529	5,416	7,634	630	343	300	300	697	22,218
1923	1,106	648	484	1,247	1,288	1,224	300	300	300	300	4,029	2,962	14,187
1924	2,946	550	300	300	300	300	300	300	300	3,669	150	2,039	11,454
1925	1,259	262	150	150	150	150	194	150	150	1,152	2,547	336	6,650
1926	150	150	150	150	449	186	2,172	300	300	300	1,500	2,106	7,912
1927	1,425	366	218	208	3,884	15,335	4,346	457	300	300	300	1,421	28,561
1928	300	300	300	1,160	1,490	1,365	300	300	300	3,651	2,962	2,939	15,366
1929	2,923	300	300	300	300	300	300	300	3,358	2,928	1,271	2,208	14,788
1930	1,488	450	150	150	150	326	150	150	150	1,093	1,646	150	6,054
1931	150	150	150	150	150	150	150	1,290	205	150	150	150	2,994
1932	150	150	847	386	2,222	668	300	300	300	300	1,757	1,691	9,071
1933	300	150	150	511	300	300	300	300	3,359	2,921	2,897	150	11,638
1934	150	150	150	482	241	150	150	150	3,787	2,915	2,609	3,616	14,551
1935	848	150	150	556	248	608	935	186	150	150	4,179	2,914	11,076
1936	1,469	150	150	150	1,413	321	284	150	150	150	2,297	312	6,996
1937	150	150	150	273	2,928	14,744	17,281	1,173	600	600	600	651	39,299
1938	1,183	588	300	1,176	34,274	190,967	16,284	2,246	600	600	600	600	249,416
1939	377	365	300	1,264	1,342	1,474	300	300	300	3,390	2,958	2,936	15,307
1940	300	300	300	300	305	300	300	300	300	3,717	2,937	1,748	11,107
1941	1,376	150	418	1,264	62,066	199,689	123,216	18,828	3,073	600	600	600	411,881
1942	300	300	1,063	690	485	1,207	6,430	553	379	300	304	876	12,886
1943	300	300	300	47,257	29,574	68,069	10,575	600	600	600	600	600	159,375
1944	357	335	300	300	20,700	36,734	4,868	600	600	600	600	600	66,593
1945	405	300	300	300	884	6,706	2,699	423	300	306	421	1,996	15,040
1946	1,261	300	300	300	300	365	2,703	354	300	3,407	2,960	2,937	15,486
1947	2,929	300	300	300	300	300	300	3,251	2,969	2,938	2,908	2,066	18,860
1948	2,430	150	150	150	150	150	150	150	638	1,121	150	150	5,539
1949	150	150	150	150	150	1,960	150	1,604	236	150	150	150	5,150
1950	150	150	150	150	1,834	150	150	2,911	155	150	150	150	6,250
1951	150	0	0	0	0	0	0	523	0	0	0	29	703
1952	0	0	0	3,570	265	3,698	12,354	893	391	300	1,412	4,352	27,236
1953	300	300	632	2,186	300	300	300	300	300	3,672	2,810	2,043	13,442
1954	1,647	954	300	699	1,307	579	300	300	300	3,779	2,324	2,539	15,027
1955	1,722	676	150	168	150	150	150	150	150	1,848	2,894	413	8,621
1956	150	150	1,756	2,283	404	227	317	189	150	150	1,606	954	8,335
1957	174	150	150	150	170	150	150	150	3,953	689	2,699	727	9,313
1958	194	230	150	187	1,949	2,902	37,786	9,542	600	600	600	600	55,341
1959	383	367	320	300	2,299	300	300	300	300	3,680	2,960	1,948	13,457
1960	1,565	871	300	300	1,885	300	300	300	300	150	2,419	150	8,839
1961	150	150	150	150	150	150	150	1,510	252	150	150	150	3,261
1962	150	187	150	173	7,085	1,405	392	300	300	300	2,230	643	13,316
1963	300	300	300	300	528	478	300	300	300	807	1,260	300	5,472
1964	300	150	150	150	150	150	150	1,642	294	150	150	150	3,585
1965	150	150	150	183	150	150	719	150	3,649	2,891	1,030	321	9,693
1966	150	734	716	865	471	300	300	300	300	300	4,394	2,926	11,756
1967	2,904	2,897	530	1,669	1,738	30,482	53,599	20,691	946	600	3,517	2,831	122,404
1968	351	350	300	300	300	1,868	300	300	3,252	300	853	1,960	10,434
1969	1,358	652	300	131,311	192,576	79,723	18,445	5,828	600	600	600	600	432,593
1970	354	300	300	300	300	2,423	334	300	300	3,399	2,958	930	12,199
1971	1,356	804	345	300	300	300	300	300	3,237	2,961	2,939	2,049	15,190
1972	2,053	686	346	300	300	300	300	3,245	2,614	150	1,336	2,135	13,764
1973	1,466	150	150	1,526	3,279	16,569	7,881	600	600	600	600	600	34,021
1974	1,110	653	300	1,174	326	1,378	490	363	300	321	817	1,939	9,171
1975	750	300	518	300	2,849	10,013	5,127	577	376	300	300	496	21,907
1976	300	300	300	300	1,918	300	300	300	300	300	2,490	1,347	8,455
1977	300	300	300	300	300	300	300	300	1,004	1,454	150	150	5,159
1978	150	150	150	1,529	23,629	149,441	36,354	7,693	600	600	600	600	221,495
1979	310	300	300	498	2,253	21,570	11,359	600	600	600	600	722	39,713
1980	401	376	300	404	72,601	42,110	7,167	953	600	600	600	600	126,712
1981	826	346	301	300	300	3,207	360	300	300	328	1,021	2,067	9,657
1982	1,415	337	300	300	300	1,947	596	300	300	3,493	2,964	2,941	15,192
1983	300	300	645	17,181	59,585	198,910	57,881	30,200	5,358	600	600	600	372,159
1984	300	300	13,494	4,934	1,742	503	383	300	300	300	415	1,795	24,766
1985	1,219	581	300	300	300	300	300	300	300	300	1,721	1,967	7,888
1986	518	300	300	300	1,769	8,426	4,031	466	300	300	300	1,769	18,777
1987	505	300	300	300	300	1,931	300	300	300	300	1,476	300	6,612
1988	300	300	300	300	300	1,895	300	300	3,510	2,923	2,897	2,881	16,206
1989	150	150	150	150	150	150	150	723	915	2,002	877	150	5,717
1990	150	150	150	150	150	150	150	1,117	150	372	209	187	3,085
1991	302	207	150	150	150	1,583	304	150	4,450	2,920	2,153	3,622	16,141
1992	633	155	150	150	2,476	836	432	300	300	300	4,036	2,436	12,205
1993	1,259	675	300	27,603	116,172	66,746	29,298	6,578	600	600	600	600	251,031
AVG	786	368	490	3,506	9,586	17,572	6,749	1,904	918	1,234	1,542	1,354	46,011
MEDIAN	367	300	300	300	426	638	300	300	300	600	1,145	903	13,101

Alternative 3B

SANTA YNEZ RIVER ABOVE ALISAL BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	9	13	29	61	59,197	134,099	20,067	5,796	855	439	288	253	221,108
1919	90	111	109	840	1,150	1,165	194	179	124	2,946	90	1,051	8,049
1920	694	129	158	152	405	1,350	547	229	133	2,994	231	1,264	8,287
1921	890	562	29	127	255	418	97	70	9	3	3,455	1,018	6,933
1922	856	443	3,574	2,204	7,922	7,446	8,379	877	286	134	49	254	32,425
1923	403	330	884	1,130	1,291	1,135	320	227	161	99	3,176	2,635	11,791
1924	2,590	214	93	116	147	311	176	150	107	2,976	0	1,047	7,926
1925	664	79	15	15	15	57	275	34	9	446	1,551	82	3,242
1926	0	0	2	2	832	214	6,203	462	160	83	659	1,242	9,857
1927	849	686	323	346	12,657	16,391	4,960	575	216	123	38	566	37,730
1928	49	59	90	816	1,847	1,498	250	193	149	3,000	2,639	2,543	13,133
1929	2,515	30	59	99	214	313	273	155	2,812	2,644	527	1,321	10,962
1930	903	235	25	23	28	691	72	37	5	419	812	0	3,249
1931	0	0	0	0	5	0	0	555	10	0	0	0	571
1932	0	0	1,584	578	7,057	1,698	497	271	142	54	827	905	13,613
1933	70	0	0	1,085	380	210	196	143	2,826	2,639	2,508	0	10,057
1934	0	0	0	821	312	98	9	0	3,011	2,580	2,187	2,189	11,207
1935	495	3	2	1,274	444	1,587	2,666	341	57	0	3,220	2,565	12,655
1936	702	6	5	9	4,074	722	618	87	18	0	1,162	43	7,446
1937	0	0	0	380	8,923	19,918	18,430	1,390	565	384	259	247	50,497
1938	482	299	145	911	39,655	205,669	17,613	2,204	655	472	296	254	268,656
1939	90	90	155	1,150	1,436	1,889	418	226	150	2,785	2,638	2,546	13,574
1940	19	21	38	172	505	436	292	161	96	2,987	2,592	856	8,177
1941	744	19	795	3,388	75,795	222,374	133,833	20,156	3,309	720	515	402	462,051
1942	178	194	2,201	1,265	715	1,799	6,836	756	359	152	90	237	14,782
1943	52	92	118	52,681	31,761	74,506	11,422	815	590	429	290	251	173,007
1944	90	90	185	317	24,970	39,215	5,381	884	580	375	277	224	72,588
1945	90	183	147	186	2,425	7,292	3,047	486	157	90	90	985	15,178
1946	660	108	534	212	291	639	2,978	331	152	2,804	2,639	2,546	13,894
1947	2,524	174	198	131	199	194	167	2,826	2,756	2,627	2,499	1,660	15,956
1948	1,277	7	6	7	9	10	8	1	263	398	0	0	1,987
1949	0	0	0	0	0	1,491	0	818	31	0	0	0	2,341
1950	0	0	1	0	1,091	2	0	1,718	1	0	0	0	2,815
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	11,177	307	9,508	11,951	1,059	291	141	708	3,569	38,713
1953	117	166	1,072	2,608	406	317	282	164	121	3,001	2,488	1,107	11,849
1954	993	550	150	843	1,334	1,239	505	170	149	3,076	2,011	1,474	12,494
1955	1,078	421	29	163	101	77	65	91	3	979	1,915	144	5,066
1956	0	0	3,559	5,350	805	393	643	321	53	25	692	329	12,170
1957	0	0	0	11	142	145	82	55	3,246	350	1,678	373	6,082
1958	2	8	0	193	4,849	8,330	47,962	10,848	897	478	315	250	74,133
1959	90	90	90	208	2,944	409	280	198	146	3,013	2,630	1,038	11,136
1960	926	584	132	174	1,770	196	265	161	115	0	1,272	0	5,596
1961	0	7	7	0	0	0	0	707	34	0	0	0	755
1962	0	0	18	44	19,361	3,364	806	362	151	77	1,249	291	25,722
1963	39	34	54	102	805	749	395	239	145	409	497	29	3,497
1964	11	0	0	0	0	0	0	888	81	0	0	0	980
1965	0	0	0	53	4	4	1,292	15	2,308	2,067	496	65	6,303
1966	0	1,098	1,276	1,937	858	493	239	220	147	57	3,428	2,576	12,327
1967	2,525	2,538	1,291	4,401	3,066	31,158	54,811	22,333	1,018	386	2,907	2,550	128,984
1968	90	90	116	149	231	1,826	293	160	2,779	91	245	1,098	7,169
1969	787	406	135	145,810	212,039	86,547	20,150	6,562	898	460	336	273	474,403
1970	90	113	143	296	372	3,398	301	178	128	2,762	2,638	293	10,712
1971	681	577	663	328	255	251	207	153	2,747	2,689	2,564	1,670	12,785
1972	1,026	377	684	231	217	160	159	2,853	2,428	2	528	1,239	9,904
1973	874	88	24	3,723	10,014	18,342	8,627	867	547	351	262	219	43,937
1974	429	350	139	2,780	445	1,694	619	354	153	90	360	1,007	8,420
1975	402	86	824	219	4,272	13,279	5,661	864	348	139	49	123	26,267
1976	22	29	52	78	1,789	254	227	170	109	52	1,393	688	4,863
1977	72	60	77	98	117	140	134	119	515	815	0	0	2,147
1978	0	0	0	3,202	33,887	163,900	40,035	8,535	937	582	380	281	251,739
1979	90	91	143	964	3,368	22,883	12,544	892	600	381	257	303	42,514
1980	90	90	104	749	80,820	46,297	7,814	1,402	703	423	266	223	138,982
1981	394	90	90	235	363	5,513	663	298	189	90	338	1,196	9,459
1982	842	150	136	193	203	2,117	1,594	342	137	2,882	2,655	2,558	13,810
1983	21	94	1,687	21,767	66,449	210,846	63,146	33,450	6,149	748	566	399	405,320
1984	282	170	13,556	5,314	2,004	705	454	246	158	90	90	845	23,915
1985	628	327	256	186	248	253	205	153	108	50	785	1,136	4,334
1986	237	78	109	193	4,375	10,586	4,201	579	218	94	32	811	21,512
1987	195	70	93	149	134	1,859	193	159	120	59	629	35	3,695
1988	17	17	39	131	114	1,927	271	173	2,993	2,647	2,511	2,438	13,278
1989	0	0	0	0	6	0	0	315	311	1,144	305	0	2,081
1990	0	0	0	0	0	0	0	351	0	21	0	0	372
1991	0	0	0	0	0	3,538	558	84	3,557	2,566	1,745	2,141	14,189
1992	305	1	25	156	7,421	2,268	1,117	463	246	107	3,176	2,122	17,408
1993	552	372	150	31,561	124,297	72,438	31,717	7,461	984	564	363	250	270,710
AVG	420	176	506	4,162	11,529	19,372	7,456	1,950	760	918	1,057	846	49,151
MEDIAN	90	87	91	201	760	1,295	436	318	161	385	521	386	12,009

Alternative 3B

SANTA YNEZ RIVER NEAR BUELLTON (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	4	68,310	135,767	21,941	6,622	1,266	402	174	140	234,627
1919	2	16	47	660	1,095	1,126	92	98	36	2,593	0	572	6,338
1920	311	13	66	48	602	1,984	912	219	48	2,620	64	716	7,604
1921	434	305	0	148	407	723	90	52	0	0	2,873	507	5,538
1922	397	209	6,582	4,086	13,233	9,787	9,332	1,214	292	76	0	92	45,299
1923	125	152	1,505	1,133	1,357	1,057	368	191	98	26	2,734	2,409	11,155
1924	2,355	59	11	32	56	419	108	63	24	2,604	0	557	6,287
1925	278	0	0	0	0	39	493	4	0	152	967	0	1,933
1926	0	0	0	0	1,551	354	9,642	749	114	17	270	694	13,392
1927	403	1,098	494	574	21,445	16,960	5,698	736	188	64	0	227	47,886
1928	0	0	10	596	2,107	1,674	218	120	64	2,632	2,420	2,295	12,136
1929	2,259	0	0	21	243	448	346	97	2,483	2,453	181	756	9,287
1930	442	61	0	0	0	1,268	40	0	0	130	354	0	2,294
1931	0	0	0	0	0	0	0	200	0	0	0	0	200
1932	0	0	3,121	1,195	10,087	3,209	768	329	62	0	388	419	19,578
1933	0	0	0	2,023	583	195	158	58	2,495	2,450	2,262	0	10,225
1934	0	0	0	1,698	534	169	0	0	2,588	2,352	1,915	1,366	10,623
1935	199	0	0	2,352	765	2,597	4,468	573	31	0	2,711	2,315	16,013
1936	284	0	0	0	6,848	1,298	891	69	0	0	632	0	10,021
1937	0	0	0	742	16,918	25,833	19,855	1,668	605	294	121	86	66,121
1938	171	126	71	725	47,006	215,268	19,262	2,139	811	497	182	131	286,389
1939	5	4	146	1,261	1,702	2,511	592	192	68	2,459	2,439	2,313	13,692
1940	0	0	0	189	937	743	391	107	16	2,597	2,368	405	7,754
1941	330	0	1,380	6,370	86,359	241,984	141,859	21,865	3,705	1,012	631	407	505,902
1942	206	233	3,880	2,131	1,055	2,632	7,442	1,039	412	105	35	31	19,200
1943	0	11	35	57,522	34,283	80,016	12,418	1,104	671	390	174	126	186,750
1944	12	12	193	471	28,778	41,655	5,984	1,268	649	277	156	75	79,530
1945	0	237	121	183	4,493	7,775	3,521	596	89	16	1	531	17,563
1946	291	4	947	195	360	702	3,488	362	76	2,475	2,441	2,315	13,656
1947	2,284	230	256	85	203	174	100	2,529	2,605	2,455	2,277	1,437	14,635
1948	718	0	0	0	0	0	0	0	102	103	0	0	923
1949	0	0	0	0	0	1,586	0	418	0	0	0	0	2,005
1950	0	0	0	0	952	0	0	1,042	0	0	0	0	1,994
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	18,904	812	18,798	12,998	1,422	224	101	431	3,027	56,718
1953	27	110	1,784	3,354	571	368	244	65	31	2,622	2,259	572	12,009
1954	493	187	19	959	1,416	2,114	788	67	65	2,672	1,793	846	11,418
1955	540	177	0	108	75	40	22	100	0	516	1,215	0	2,794
1956	0	0	6,241	8,379	1,329	608	949	542	7	8	289	36	18,387
1957	0	0	0	0	177	217	84	45	2,802	150	1,024	110	4,609
1958	0	0	0	258	8,935	15,645	59,596	12,320	1,320	408	188	110	98,781
1959	0	0	1	219	4,058	578	233	112	78	2,634	2,408	533	10,854
1960	452	317	13	60	1,690	86	224	60	24	0	702	0	3,629
1961	0	0	0	0	0	0	0	264	0	0	0	0	264
1962	0	0	0	0	34,328	6,062	1,361	445	62	3	726	75	43,064
1963	0	0	0	0	1,213	1,132	539	224	74	194	120	0	3,495
1964	0	0	0	0	0	0	0	383	0	0	0	0	383
1965	0	0	0	17	0	0	2,039	0	1,499	1,345	102	0	5,001
1966	0	1,656	2,093	3,444	1,398	772	153	175	80	0	2,858	2,308	14,937
1967	2,239	2,264	2,424	8,278	4,337	31,489	55,206	23,635	1,034	260	2,670	2,396	136,231
1968	6	2	54	102	263	1,957	340	65	2,479	10	45	616	5,941
1969	375	194	20	163,317	230,185	94,929	21,420	7,373	1,270	384	232	161	519,859
1970	12	89	103	435	579	4,528	251	86	43	2,445	2,446	49	11,066
1971	299	416	885	434	253	200	132	58	2,442	2,528	2,351	1,457	11,454
1972	534	162	1,154	237	196	69	72	2,566	2,296	0	190	702	8,178
1973	426	49	0	6,098	18,585	19,996	9,515	1,053	491	221	124	69	56,627
1974	139	158	51	5,091	633	2,165	811	400	76	10	162	536	10,233
1975	171	0	1,326	197	6,376	17,791	6,306	1,247	313	64	0	9	33,798
1976	0	0	0	0	1,882	253	185	79	25	0	836	262	3,523
1977	0	0	0	0	6	27	27	19	227	413	0	0	720
1978	0	0	0	5,318	48,109	181,713	44,710	9,613	1,296	681	362	160	291,961
1979	17	23	107	1,768	5,070	24,778	13,974	1,266	615	263	115	120	48,117
1980	0	0	11	1,352	91,753	51,440	8,576	1,831	787	328	131	77	156,286
1981	192	0	4	272	547	8,839	1,078	351	157	10	79	683	12,211
1982	415	19	22	112	147	2,399	2,910	403	46	2,559	2,452	2,323	13,808
1983	0	60	3,007	28,535	75,293	218,142	67,045	36,367	7,294	1,063	740	405	437,950
1984	463	163	14,237	5,717	2,284	933	481	175	71	14	2	427	24,966
1985	270	142	261	120	245	243	149	60	25	0	390	647	2,553
1986	61	0	13	163	7,977	13,655	4,392	616	200	19	0	399	27,495
1987	38	0	2	61	36	1,895	102	60	30	0	262	0	2,486
1988	0	0	0	71	29	2,209	308	83	2,649	2,454	2,269	2,166	12,237
1989	0	0	0	0	0	0	0	141	77	675	29	0	923
1990	0	0	0	0	0	0	0	58	0	0	0	0	58
1991	0	0	0	0	0	6,800	1,175	169	3,044	2,319	1,482	1,293	16,282
1992	64	0	0	236	14,185	4,215	1,977	695	286	33	2,704	1,900	26,293
1993	188	161	50	37,189	134,343	79,008	34,771	8,318	1,351	593	329	124	296,425
AVG	249	120	694	5,069	13,837	21,264	8,232	2,089	717	780	833	599	54,481
MEDIAN	12	0	7	208	1,003	1,630	565	244	94	207	266	194	12,072

Alternative 3B													
SANTA YNEZ RIVER ABOVE SALSIPUEDES CREEK CONFLUENCE (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	77,294	135,579	24,007	7,780	1,785	348	29	0	246,823
1919	0	0	0	312	851	1,027	19	41	0	2,047	0	13	4,311
1920	0	0	0	0	574	2,051	1,229	226	0	2,055	0	43	6,178
1921	0	4	0	55	402	905	83	42	0	0	1,933	3	3,427
1922	0	0	8,785	5,967	17,710	12,290	10,634	1,757	379	39	0	0	57,561
1923	0	0	1,612	1,019	1,374	1,037	481	214	70	0	2,029	2,052	9,889
1924	1,983	0	0	0	0	427	45	2	0	2,025	0	12	4,494
1925	0	0	0	0	0	0	506	0	0	0	118	0	624
1926	0	0	0	0	1,652	300	10,989	1,037	86	0	0	38	14,102
1927	0	1,109	500	725	29,185	17,334	6,735	1,036	219	21	0	0	56,863
1928	0	0	0	189	1,799	1,677	196	69	1	2,085	2,076	1,898	9,991
1929	1,853	0	0	0	172	482	368	47	2,075	2,184	0	54	7,235
1930	0	0	0	0	0	1,556	1	0	0	0	0	0	1,557
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	3,768	1,145	10,425	4,778	1,034	434	7	0	0	0	21,591
1933	0	0	0	2,448	626	155	119	4	2,087	2,186	1,879	0	9,504
1934	0	0	0	2,025	524	183	0	0	2,048	2,032	1,505	335	8,651
1935	0	0	0	3,027	986	3,309	5,989	902	35	0	1,974	1,947	18,168
1936	0	0	0	0	8,611	1,889	1,064	89	0	0	42	0	11,695
1937	0	0	0	706	24,499	31,556	21,737	2,167	754	218	0	0	81,637
1938	0	0	0	383	54,428	221,418	21,366	2,238	1,102	545	44	0	301,525
1939	0	0	26	1,176	1,883	3,183	818	216	19	2,027	2,133	1,939	13,420
1940	0	0	0	79	1,176	962	486	82	0	2,042	2,026	0	6,854
1941	0	0	1,570	9,061	90,107	258,212	147,333	23,837	4,164	1,290	660	322	536,556
1942	150	186	4,789	2,803	1,345	3,316	8,176	1,408	499	50	0	0	22,722
1943	0	0	0	60,532	37,287	85,042	13,742	1,508	840	347	40	0	199,339
1944	0	0	65	469	30,861	44,122	6,849	1,803	801	191	16	0	85,177
1945	0	113	16	98	6,586	8,125	4,261	830	78	0	0	3	20,109
1946	0	0	1,101	115	392	505	4,135	464	33	2,039	2,136	1,946	12,866
1947	1,902	167	224	32	178	165	67	2,287	2,467	2,222	1,933	1,089	12,732
1948	71	0	0	0	0	0	0	0	0	0	0	0	71
1949	0	0	0	0	0	848	0	0	0	0	0	0	848
1950	0	0	0	0	196	0	0	52	0	0	0	0	248
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	26,393	288	27,185	13,389	1,765	105	21	65	2,185	71,395
1953	0	0	1,877	3,905	778	486	220	18	0	2,122	1,921	23	11,349
1954	2	0	0	801	1,321	2,713	1,128	9	1	2,099	1,464	112	9,650
1955	4	0	0	0	0	0	0	51	0	5	232	0	293
1956	0	0	6,734	8,896	1,718	822	1,150	840	0	0	0	0	20,159
1957	0	0	0	0	7	108	13	0	2,095	0	171	0	2,395
1958	0	0	0	69	11,627	22,638	71,471	14,250	1,881	296	26	0	122,258
1959	0	0	0	84	4,725	712	146	40	25	2,080	2,060	7	9,878
1960	0	10	0	0	1,265	0	109	0	0	0	13	0	1,398
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	46,774	6,951	1,595	379	0	0	43	0	55,741
1963	0	0	0	0	757	881	383	100	0	0	0	0	2,121
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	1,196	0	215	266	0	0	1,677
1966	0	899	1,929	4,357	1,663	1,033	73	151	36	0	2,013	1,913	14,068
1967	1,815	1,864	3,449	11,887	5,676	32,082	55,872	25,153	1,076	144	2,278	2,141	143,438
1968	0	0	0	14	236	2,050	417	9	2,162	0	0	17	4,906
1969	0	0	0	183,008	249,459	105,364	22,324	8,329	1,671	279	85	18	570,536
1970	0	6	9	491	773	5,582	229	41	1	2,031	2,150	0	11,313
1971	0	112	745	450	214	138	75	5	2,126	2,312	2,019	1,123	9,319
1972	15	0	1,399	210	172	17	27	2,321	2,180	0	0	41	6,383
1973	0	0	0	6,855	26,943	21,217	10,732	1,270	449	106	0	0	67,570
1974	0	0	0	6,635	779	2,549	1,034	499	35	0	0	2	11,533
1975	0	0	1,156	87	7,729	21,442	7,104	1,769	254	1	0	0	39,542
1976	0	0	0	0	1,542	163	96	1	0	0	83	0	1,884
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	5,265	60,879	200,761	50,031	11,031	1,690	744	270	2	330,673
1979	0	0	2	2,220	6,479	26,579	15,830	1,777	620	122	0	0	53,628
1980	0	0	0	1,498	102,227	57,402	9,682	2,351	859	198	1	0	174,218
1981	0	0	0	125	574	11,693	1,538	451	147	0	0	18	14,546
1982	0	0	0	0	17	2,469	4,268	476	0	2,089	2,132	1,943	13,394
1983	0	0	4,008	34,189	84,067	223,641	69,626	39,076	8,687	1,367	853	342	465,855
1984	551	88	14,658	6,295	2,753	1,333	574	162	35	0	0	0	26,449
1985	0	0	74	12	162	189	103	3	0	0	0	23	566
1986	0	0	0	14	10,314	15,811	4,735	642	234	0	0	0	31,748
1987	0	0	0	0	0	1,505	9	0	0	0	0	0	1,514
1988	0	0	0	0	0	2,054	231	0	2,081	2,138	1,857	1,704	10,065
1989	0	0	0	0	0	0	0	0	0	33	0	0	33
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	9,013	1,323	109	2,191	1,926	1,063	223	15,847
1992	0	0	0	147	20,642	6,338	3,088	1,046	393	0	2,031	1,580	35,267
1993	0	0	0	42,641	145,535	86,817	38,774	9,325	1,717	558	236	0	325,603
AVG	110	60	770	5,775	15,779	22,923	8,961	2,290	691	618	574	330	58,881
MEDIAN	0	0	0	92	919	1,617	696	156	36	27	15	0	11,441

Alternative 3B

SANTA YNEZ RIVER AT LOMPOC NARROWS (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	54	83,154	144,219	25,699	8,326	2,196	526	104	69	264,348
1919	64	64	70	366	1,037	1,212	13	126	0	1,945	0	0	4,896
1920	24	47	56	60	812	2,993	1,642	315	84	1,974	0	2	8,010
1921	0	0	0	153	629	1,288	165	121	27	64	1,793	0	4,239
1922	0	0	12,044	7,462	22,248	14,205	11,491	1,977	475	125	0	0	70,026
1923	0	0	2,536	1,217	1,661	1,124	621	307	157	79	1,931	2,009	11,644
1924	1,935	0	66	71	74	692	132	84	79	1,937	0	0	5,070
1925	0	0	0	0	0	22	761	56	55	0	22	0	915
1926	0	0	13	23	2,480	668	15,651	1,451	179	82	0	0	20,546
1927	0	1,642	846	996	35,263	18,762	7,381	1,243	311	103	0	0	66,545
1928	0	35	44	215	2,466	2,088	286	156	83	2,002	2,031	1,843	11,249
1929	1,797	0	61	74	254	675	560	130	2,011	2,147	0	3	7,711
1930	0	0	0	0	21	1,923	77	69	0	0	0	0	2,090
1931	0	0	0	0	62	20	37	0	0	0	0	0	119
1932	0	0	5,392	1,568	16,635	5,757	1,464	632	95	29	0	0	31,573
1933	0	0	0	3,117	966	236	207	85	2,014	2,147	1,825	0	10,597
1934	0	0	0	2,784	951	371	84	32	1,973	1,991	1,449	227	9,862
1935	0	0	0	3,840	1,381	4,340	7,634	1,110	127	30	1,872	1,903	22,235
1936	0	0	0	47	10,891	2,411	1,509	185	37	0	3	0	15,083
1937	0	0	0	995	29,711	36,149	23,027	2,386	851	299	0	0	93,418
1938	0	0	43	391	59,118	235,324	22,660	2,339	1,206	629	120	72	321,902
1939	0	0	175	1,408	2,273	3,763	1,120	310	107	1,964	2,090	1,886	15,097
1940	0	0	207	1,568	1,365	704	169	33	1,959	1,980	0	0	7,984
1941	0	0	2,293	11,641	109,381	277,081	156,986	25,527	4,878	1,788	1,041	596	591,211
1942	428	463	8,191	4,483	2,256	5,143	9,304	1,920	793	231	167	55	33,435
1943	66	157	165	63,418	39,245	88,982	14,704	1,925	1,041	530	118	74	210,424
1944	70	70	328	842	35,007	46,651	7,490	2,226	1,001	274	93	0	94,053
1945	16	260	179	267	7,428	8,730	4,492	936	73	0	0	0	22,381
1946	0	0	1,137	173	467	1,291	4,427	559	121	1,976	2,095	1,893	14,141
1947	1,846	321	403	114	362	279	156	2,243	2,442	2,182	1,877	1,035	13,259
1948	18	0	0	0	0	0	0	0	0	0	0	0	18
1949	0	0	0	0	0	1,940	0	0	0	0	0	0	1,940
1950	0	0	0	0	562	1	0	0	0	0	0	0	563
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	32,930	551	35,882	13,682	1,798	168	45	48	1,969	87,072
1953	65	245	3,791	4,968	978	600	370	53	31	2,025	1,872	0	14,999
1954	0	0	0	831	1,577	4,094	1,330	4	77	1,994	1,417	51	11,375
1955	0	0	0	269	144	67	84	115	1	0	92	0	771
1956	0	0	12,851	16,071	2,828	1,332	1,893	1,141	87	79	0	1	36,283
1957	0	0	1	44	342	268	95	73	1,985	1	87	0	2,896
1958	1	0	0	309	16,915	29,604	79,926	15,135	2,294	473	113	69	144,839
1959	64	63	66	248	6,072	1,009	347	128	109	1,996	2,014	0	12,114
1960	0	0	3	49	1,755	84	412	77	0	0	0	0	2,380
1961	0	48	85	2	3	8	0	0	0	0	0	0	145
1962	1	0	114	436	65,393	10,695	2,216	674	100	76	9	0	79,715
1963	0	1	34	52	2,503	2,487	1,252	480	178	71	0	0	7,059
1964	0	0	1	3	4	6	7	0	0	0	0	0	22
1965	0	0	0	337	23	83	2,651	79	196	195	1	0	3,565
1966	1	3,533	4,313	6,687	3,045	1,555	246	339	121	26	1,889	1,863	23,618
1967	1,761	1,810	3,909	15,809	6,137	32,496	56,792	25,614	1,268	128	2,198	2,104	150,028
1968	0	20	69	86	304	2,206	512	4	2,097	0	1	0	5,301
1969	0	0	0	191,126	257,779	108,154	24,160	8,965	2,079	441	160	91	592,955
1970	70	80	176	661	956	6,327	322	35	0	1,941	2,105	0	12,673
1971	0	54	1,031	609	399	223	170	1	2,052	2,272	1,966	1,072	9,849
1972	0	0	1,574	276	246	8	18	2,249	2,153	0	0	0	6,525
1973	0	102	1	10,937	33,721	23,985	11,584	1,573	635	184	25	0	82,747
1974	3	11	55	9,247	1,086	3,458	1,438	695	123	30	20	0	16,166
1975	7	7	2,600	260	11,152	28,204	8,039	2,188	541	98	73	21	53,191
1976	60	60	64	68	2,074	359	295	86	0	0	18	0	3,086
1977	0	0	0	28	38	59	0	46	0	0	0	0	171
1978	0	0	0	9,556	76,072	212,665	54,081	11,988	2,096	1,024	439	88	368,009
1979	143	160	171	3,289	8,616	29,251	16,814	2,195	908	213	25	18	61,803
1980	14	14	69	2,128	110,882	61,584	10,430	2,769	1,150	357	28	21	189,446
1981	17	16	61	376	838	15,352	2,049	651	238	31	13	0	19,643
1982	0	5	43	137	79	2,619	4,909	570	37	2,022	2,092	1,891	14,403
1983	0	62	4,339	42,800	93,697	233,596	74,845	41,000	9,544	1,867	1,137	520	503,406
1984	830	366	16,032	6,824	3,075	1,551	776	258	74	0	0	0	29,787
1985	0	1	361	79	317	365	179	0	0	0	0	0	1,303
1986	0	0	19	99	15,050	21,313	5,151	939	328	0	0	0	42,900
1987	6	7	47	141	64	2,215	93	33	0	0	0	0	2,605
1988	0	0	16	112	50	2,036	323	79	2,007	2,098	1,800	1,639	10,159
1989	0	0	5	8	3	2	1	0	0	0	0	0	19
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	12,831	1,184	11	1,891	1,744	936	58	18,654
1992	0	0	18	150	25,154	7,750	3,430	1,252	485	80	1,932	1,538	41,790
1993	0	0	135	46,022	153,086	90,076	39,956	9,864	2,023	737	309	0	342,208
AVG	122	128	1,133	6,711	18,044	24,949	9,770	2,501	783	648	571	325	65,688
MEDIAN	0	0	45	268	1,474	2,147	1,152	308	125	101	25	0	13,700

Alternative 3C

SANTA YNEZ RIVER BELOW HILTON CREEK (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	476	453	433	414	47,567	127,927	17,774	5,003	519	642	687	694	202,591
1919	478	448	368	1,273	1,296	1,294	352	361	375	3,823	441	2,229	12,738
1920	1,381	343	345	357	274	329	240	352	379	3,881	662	2,485	11,027
1921	1,638	906	197	163	162	183	196	206	229	235	4,836	2,026	10,979
1922	1,595	767	615	395	1,055	4,456	7,448	554	368	358	384	833	18,827
1923	1,316	736	303	1,301	1,308	1,283	312	345	363	377	4,259	3,037	14,939
1924	3,037	662	382	378	372	309	369	376	384	3,882	211	2,299	12,659
1925	1,394	313	204	214	221	208	171	221	230	1,399	2,790	396	7,762
1926	213	223	223	222	270	166	927	259	366	385	1,748	2,304	7,306
1927	1,553	225	171	169	1,607	13,983	4,166	429	333	361	387	1,671	25,055
1928	370	376	372	1,273	1,385	1,337	331	353	364	3,845	3,038	3,035	16,078
1929	3,027	401	394	380	343	310	326	372	3,552	3,002	1,483	2,411	16,000
1930	1,617	507	200	210	216	220	205	219	229	1,337	1,861	205	7,024
1931	223	233	237	238	219	231	229	1,518	266	226	246	259	4,125
1932	265	264	438	250	957	375	247	329	372	395	2,022	1,863	7,777
1933	358	374	215	306	275	354	359	377	3,530	2,995	2,993	237	12,374
1934	248	252	251	291	193	175	228	233	4,026	2,994	2,680	3,974	15,544
1935	910	199	211	309	189	327	450	163	208	232	4,451	2,994	10,642
1936	1,682	199	211	217	633	214	201	199	223	236	2,640	383	7,038
1937	220	230	234	205	1,220	10,621	16,933	1,097	614	662	694	4,251	36,981
1938	3,032	388	367	1,273	27,925	187,383	15,924	2,249	595	639	687	697	241,160
1939	465	457	350	1,314	1,331	1,378	274	346	367	3,579	3,037	1,317	14,216
1940	1,513	625	365	324	240	252	316	368	385	3,810	2,718	1,804	12,721
1941	1,539	352	265	593	58,457	193,829	120,510	18,361	2,956	540	600	642	398,644
1942	326	327	565	453	400	856	6,346	487	383	350	371	1,069	11,931
1943	370	361	361	45,993	28,932	66,502	10,302	532	607	649	691	700	155,998
1944	441	417	332	291	19,477	35,996	4,713	518	611	671	693	706	64,867
1945	505	331	354	347	498	6,516	2,626	420	355	382	529	2,277	15,139
1946	1,402	355	237	345	327	305	2,564	380	363	3,591	3,038	3,035	15,942
1947	3,035	343	339	375	348	358	372	3,430	3,037	3,037	3,026	2,378	20,078
1948	1,526	354	367	210	218	225	230	236	672	1,471	219	237	5,966
1949	248	252	251	244	244	1,956	210	1,805	291	218	240	254	6,212
1950	260	261	244	250	1,908	200	215	3,174	194	213	236	251	7,408
1951	259	260	26	25	25	24	24	846	24	23	22	213	1,773
1952	22	22	29	1,561	237	1,588	8,625	788	403	340	1,848	4,503	19,965
1953	340	320	359	2,040	279	318	328	369	378	3,876	3,038	2,263	13,907
1954	1,792	1,053	348	677	1,316	328	264	368	372	3,996	2,715	2,754	15,983
1955	1,851	743	195	155	178	198	205	194	230	2,132	3,111	473	9,665
1956	207	221	765	952	243	177	213	165	210	218	1,891	1,107	6,369
1957	228	214	217	205	160	155	190	203	4,189	779	2,943	799	10,283
1958	255	303	218	166	833	1,184	32,604	9,142	504	626	673	694	47,203
1959	469	453	399	332	2,084	274	322	357	369	3,884	3,038	2,185	14,168
1960	1,710	943	358	350	1,920	350	321	367	377	396	2,749	202	10,044
1961	221	215	215	229	228	226	227	1,754	315	222	243	256	4,351
1962	262	303	172	168	2,771	644	264	288	362	383	2,465	747	8,830
1963	375	386	383	367	320	303	240	328	367	918	1,495	376	5,857
1964	391	391	387	217	219	220	222	1,875	350	215	236	251	4,973
1965	258	259	257	173	229	211	378	199	3,976	2,881	1,196	377	10,395
1966	211	377	368	431	283	246	350	351	373	395	4,645	3,002	11,033
1967	2,993	2,993	315	756	495	29,298	53,316	20,328	906	659	3,677	3,037	118,773
1968	429	435	368	362	342	1,928	322	366	3,429	370	1,038	2,158	11,546
1969	1,482	715	358	127,904	188,394	78,219	17,924	5,623	510	642	675	692	423,139
1970	436	361	355	312	298	2,217	367	362	378	3,608	3,037	1,120	12,852
1971	1,527	864	247	301	328	342	359	376	3,428	3,038	3,036	2,162	16,008
1972	2,352	764	244	337	347	371	373	3,413	2,676	378	1,404	2,347	15,007
1973	1,596	158	198	667	1,328	15,541	7,653	528	620	677	696	704	30,367
1974	1,304	731	352	587	303	1,163	464	386	368	409	960	2,182	9,206
1975	1,016	361	316	332	2,284	8,491	4,959	494	381	354	384	607	19,977
1976	392	391	387	382	1,946	320	337	362	378	394	2,799	1,492	9,581
1977	358	374	375	374	374	371	375	382	1,185	1,633	206	228	6,235
1978	241	245	245	695	19,883	145,625	35,260	7,428	499	594	652	685	212,052
1979	375	367	353	312	1,795	21,191	11,015	512	595	663	696	911	38,784
1980	486	460	365	276	70,305	40,857	6,987	817	573	653	696	705	123,181
1981	942	427	376	319	289	2,448	276	318	354	418	1,231	2,267	9,666
1982	1,544	429	356	343	349	1,952	340	313	372	3,681	3,038	3,035	15,754
1983	400	374	374	15,167	57,350	196,391	56,423	29,377	5,102	530	593	648	362,728
1984	292	339	13,406	4,824	1,679	467	382	341	365	381	528	2,071	25,074
1985	1,366	651	299	350	330	335	360	375	388	404	2,013	2,160	9,030
1986	588	369	367	339	778	7,248	3,981	434	332	371	393	2,041	17,241
1987	591	369	371	356	371	1,949	352	364	374	393	1,734	376	7,598
1988	391	397	390	352	372	1,928	320	355	3,682	2,995	2,993	2,992	17,167
1989	242	247	247	241	226	231	231	858	1,111	2,211	1,005	205	7,054
1990	223	233	236	238	240	236	239	1,362	212	478	310	296	4,303
1991	434	319	249	248	247	711	214	169	4,692	2,995	2,325	3,974	16,577
1992	672	205	195	150	1,036	429	281	280	342	379	4,275	2,531	10,774
1993	1,448	757	349	23,286	113,879	65,394	28,690	6,342	497	607	664	698	242,612
AVG	916	444	484	3,269	8,907	17,002	6,482	1,910	978	1,337	1,684	1,519	44,932
MEDIAN	473	368	346	341	371	402	351	376	378	632	1,318	1,113	12,795

Alternative 3C													
SANTA YNEZ RIVER AT 154 BRIDGE (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	300	300	300	300	49,070	129,261	18,256	5,158	600	600	600	600	205,344
1919	389	368	300	1,160	1,251	1,248	300	300	300	3,614	360	1,984	11,574
1920	1,254	300	300	300	300	566	300	300	300	3,668	570	2,239	10,397
1921	1,502	836	150	150	181	234	150	150	150	150	4,540	1,833	10,025
1922	1,459	701	1,398	811	2,536	4,973	7,615	611	343	300	300	702	21,749
1923	1,106	648	484	1,247	1,288	1,224	300	300	300	300	4,029	2,962	14,187
1924	2,946	550	300	300	300	300	300	300	300	3,669	150	2,039	11,454
1925	1,259	262	150	150	150	150	194	150	150	1,152	2,547	336	6,650
1926	150	150	150	150	449	186	2,172	300	300	300	1,500	2,106	7,912
1927	1,425	366	218	208	3,857	14,172	4,330	457	300	300	300	1,431	27,364
1928	300	300	300	1,160	1,490	1,365	300	300	300	3,651	2,962	2,939	15,366
1929	2,923	300	300	300	300	300	300	300	3,358	2,928	1,271	2,208	14,788
1930	1,488	450	150	150	150	326	150	150	150	1,093	1,646	150	6,054
1931	150	150	150	150	150	150	150	1,290	205	150	150	150	2,994
1932	150	150	847	386	2,222	668	300	300	300	300	1,757	1,687	9,066
1933	300	300	150	514	300	300	300	300	3,341	2,921	2,897	150	11,773
1934	150	150	150	482	241	150	150	150	3,783	2,915	2,581	3,616	14,518
1935	844	150	150	556	248	608	935	186	150	150	4,179	2,914	11,071
1936	1,469	150	150	150	1,413	321	284	150	150	150	2,297	313	6,998
1937	150	150	150	273	2,928	11,977	17,244	1,153	600	600	600	4,047	39,871
1938	2,966	312	300	1,162	29,310	190,977	16,282	2,225	600	600	600	600	245,934
1939	377	365	300	1,264	1,342	1,474	300	300	300	3,390	2,958	1,115	13,486
1940	1,348	556	300	300	322	300	300	300	300	3,595	2,639	1,570	11,829
1941	1,385	300	425	1,271	62,642	199,720	123,221	18,808	3,050	600	600	600	412,623
1942	300	300	1,101	691	485	1,087	6,423	553	379	300	304	878	12,800
1943	300	300	300	47,153	29,583	68,071	10,562	600	600	600	600	600	159,269
1944	357	335	300	300	20,599	36,727	4,856	600	600	600	600	600	66,475
1945	405	300	300	300	884	6,578	2,682	423	300	306	422	1,999	14,898
1946	1,260	300	300	300	300	365	2,569	353	300	3,409	2,959	2,937	15,352
1947	2,929	300	300	300	300	300	300	3,251	2,969	2,947	2,917	2,074	18,886
1948	1,377	300	300	150	150	150	150	150	533	1,216	150	150	4,776
1949	150	150	150	150	150	1,960	150	1,602	236	150	150	150	5,148
1950	150	150	150	150	1,834	150	150	2,911	155	150	150	150	6,250
1951	150	150	0	0	0	0	0	553	0	0	0	29	882
1952	0	0	0	3,570	277	3,665	8,642	857	384	300	1,666	4,360	23,721
1953	300	300	632	2,186	300	300	300	300	300	3,672	2,964	2,026	13,579
1954	1,647	954	300	699	1,307	579	300	300	300	3,779	2,639	2,492	15,295
1955	1,717	680	150	168	150	150	150	150	150	1,845	2,894	416	8,620
1956	150	150	1,756	2,283	404	227	317	189	150	150	1,605	954	8,335
1957	174	150	150	150	170	150	150	150	3,953	689	2,699	728	9,313
1958	194	230	150	187	1,949	2,902	35,192	9,517	600	600	600	600	52,722
1959	383	367	320	300	2,299	300	300	300	300	3,681	2,960	1,949	13,459
1960	1,565	871	300	300	1,885	300	300	300	300	300	2,435	150	9,005
1961	150	150	150	150	150	150	150	1,510	252	150	150	150	3,262
1962	150	187	150	173	7,085	1,405	392	300	300	300	2,197	667	13,307
1963	300	300	300	300	528	478	300	300	300	788	1,277	300	5,470
1964	300	300	300	150	150	150	150	1,649	295	150	150	150	3,894
1965	150	150	150	183	150	150	719	150	3,649	2,755	1,096	321	9,624
1966	150	735	717	865	463	300	300	300	300	300	4,389	2,926	11,744
1967	2,904	2,897	530	1,669	794	29,253	53,618	20,666	927	600	3,521	2,972	120,351
1968	350	349	300	300	300	1,869	300	300	3,252	300	852	1,959	10,431
1969	1,358	652	300	130,947	192,612	79,716	18,437	5,809	600	600	600	600	432,230
1970	354	300	300	300	300	2,423	334	300	300	3,399	2,958	930	12,199
1971	1,356	804	345	300	300	300	300	300	3,237	2,961	2,939	2,063	15,204
1972	2,050	686	346	300	300	300	300	3,245	2,618	300	1,189	2,141	13,774
1973	1,466	150	150	1,526	3,279	16,043	7,863	600	600	600	600	600	33,478
1974	1,111	653	300	1,174	326	1,256	488	363	300	321	824	1,938	9,055
1975	929	300	519	300	2,850	9,718	5,118	577	376	300	300	496	21,782
1976	300	300	300	300	1,918	300	300	300	300	300	2,488	1,348	8,454
1977	300	300	300	300	300	300	300	300	1,003	1,455	150	150	5,159
1978	150	150	150	1,529	23,253	149,472	36,355	7,668	600	600	600	600	221,127
1979	310	300	300	498	2,171	21,579	11,342	600	600	600	600	796	39,695
1980	397	373	300	404	72,424	42,109	7,154	934	600	600	600	600	126,495
1981	825	346	301	300	300	3,207	360	300	300	328	1,020	2,067	9,656
1982	1,415	375	300	300	300	1,948	596	300	300	3,490	2,964	2,941	15,228
1983	300	300	645	16,789	59,592	198,950	57,882	30,182	5,336	600	600	600	371,776
1984	300	300	13,444	4,929	1,735	503	383	300	300	300	415	1,795	24,703
1985	1,219	581	300	300	300	300	300	300	300	300	1,721	1,967	7,888
1986	522	300	300	300	1,769	8,110	4,014	466	300	300	300	1,773	18,452
1987	513	300	300	300	300	1,931	300	300	300	300	1,476	300	6,619
1988	300	300	300	300	300	1,895	300	300	3,510	2,923	2,897	2,881	16,206
1989	150	150	150	150	150	150	150	723	915	2,002	877	150	5,717
1990	150	150	150	150	150	150	150	1,117	150	372	209	187	3,085
1991	302	207	150	150	150	1,583	304	150	4,450	2,920	2,235	3,623	16,224
1992	613	155	150	150	2,476	836	432	300	300	300	4,037	2,457	12,205
1993	1,248	675	300	24,314	116,174	66,778	29,266	6,556	600	600	600	600	247,711
AVG	812	378	494	3,452	9,458	17,481	6,662	1,901	916	1,236	1,547	1,376	45,711
MEDIAN	380	300	300	300	426	638	300	300	300	600	1,143	942	13,054

Alternative 3C

SANTA YNEZ RIVER ABOVE ALISAL BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	9	13	29	61	55,454	134,126	20,051	5,775	855	439	288	253	217,353
1919	90	111	109	840	1,150	1,165	194	179	124	2,946	90	1,051	8,051
1920	694	129	158	152	405	1,350	547	229	133	2,994	231	1,270	8,293
1921	892	556	29	127	255	418	97	70	9	3	3,455	1,018	6,928
1922	856	443	3,574	2,204	7,929	7,007	8,359	858	286	134	49	258	31,956
1923	403	330	884	1,130	1,291	1,135	320	227	161	99	3,176	2,635	11,791
1924	2,590	214	93	116	147	311	176	150	107	2,976	0	1,047	7,926
1925	664	79	15	15	15	57	275	34	9	446	1,551	82	3,242
1926	0	0	2	2	832	214	6,203	462	160	83	658	1,242	9,857
1927	849	686	323	346	12,630	15,234	4,940	573	216	122	38	573	36,531
1928	50	60	90	817	1,847	1,498	250	193	149	3,001	2,639	2,543	13,134
1929	2,515	30	59	99	214	313	273	155	2,812	2,644	527	1,321	10,962
1930	903	235	25	23	28	691	72	37	5	419	812	0	3,249
1931	0	0	0	0	5	0	0	555	10	0	0	0	571
1932	0	0	1,584	578	7,057	1,698	497	271	142	54	827	902	13,609
1933	70	59	1	1,110	391	218	201	147	2,818	2,642	2,510	0	10,169
1934	0	0	0	824	314	98	10	0	3,009	2,581	2,161	2,188	11,184
1935	492	3	2	1,275	444	1,587	2,666	341	57	0	3,220	2,565	12,651
1936	702	6	5	9	4,074	722	618	87	18	0	1,162	44	7,447
1937	0	0	0	380	8,924	17,182	18,369	1,370	564	383	259	3,212	50,642
1938	2,684	90	131	878	34,664	205,662	17,613	2,183	655	472	296	254	265,583
1939	90	90	155	1,150	1,436	1,889	418	226	150	2,785	2,638	418	11,445
1940	693	298	118	252	603	495	331	186	114	2,919	2,317	727	9,054
1941	743	114	814	3,411	76,394	222,410	133,836	20,136	3,286	720	515	402	462,782
1942	178	194	2,236	1,266	716	1,685	6,827	755	359	152	90	238	14,695
1943	52	92	118	52,577	31,769	74,508	11,409	815	590	429	290	251	172,901
1944	90	90	185	317	24,870	39,208	5,369	884	580	375	277	224	72,470
1945	90	183	147	186	2,425	7,166	3,029	486	157	90	90	987	15,035
1946	660	108	534	212	291	639	2,849	329	152	2,805	2,639	2,546	13,762
1947	2,524	174	198	131	199	194	166	2,826	2,756	2,636	2,508	1,018	15,330
1948	733	105	109	20	20	21	16	7	206	484	0	0	1,720
1949	0	0	0	0	0	1,512	0	833	34	0	0	0	2,378
1950	0	0	1	0	1,092	3	0	1,730	2	0	0	0	2,828
1951	0	0	0	0	0	0	0	2	0	0	0	0	2
1952	0	0	0	11,177	315	9,481	8,509	987	268	132	882	3,589	35,340
1953	118	167	1,073	2,609	406	317	282	164	121	3,001	2,636	1,095	11,991
1954	993	550	150	842	1,334	1,239	505	170	149	3,076	2,311	1,443	12,763
1955	1,073	424	29	163	101	77	65	91	3	976	1,915	146	5,063
1956	0	0	3,559	5,350	805	393	643	321	53	25	692	329	12,170
1957	0	0	0	11	142	145	82	55	3,246	350	1,678	374	6,082
1958	2	8	0	193	4,849	8,330	45,379	10,816	897	478	315	250	71,516
1959	90	90	90	208	2,944	409	280	198	146	3,013	2,630	1,039	11,137
1960	926	584	132	174	1,770	196	265	161	115	51	1,332	0	5,707
1961	0	7	7	0	0	0	0	722	37	0	0	0	772
1962	0	0	19	45	19,361	3,372	809	364	152	77	1,225	309	25,733
1963	39	34	54	103	806	750	395	239	146	394	509	29	3,498
1964	11	14	31	0	0	1	2	979	97	0	0	0	1,134
1965	0	0	0	59	4	4	1,318	18	2,342	1,963	550	68	6,326
1966	0	1,103	1,280	1,941	853	494	240	220	147	57	3,425	2,577	12,337
1967	2,525	2,538	1,291	4,401	2,161	29,897	54,827	22,307	1,000	385	2,910	2,686	126,929
1968	90	90	117	150	232	1,827	293	160	2,779	91	245	1,098	7,170
1969	787	406	135	145,446	212,075	86,540	20,142	6,543	898	460	336	273	474,041
1970	90	113	143	296	372	3,398	301	178	128	2,762	2,638	293	10,712
1971	681	577	663	328	255	251	207	153	2,747	2,689	2,564	1,683	12,798
1972	1,025	377	684	231	217	160	159	2,853	2,431	74	449	1,245	9,905
1973	876	88	24	3,724	10,015	17,820	8,607	867	547	351	261	219	43,401
1974	429	350	139	2,780	445	1,577	617	353	152	90	366	1,007	8,305
1975	549	90	832	222	4,280	12,992	5,651	864	348	139	49	123	26,138
1976	22	29	52	78	1,789	254	227	170	109	52	1,391	689	4,862
1977	72	60	77	98	117	140	134	119	514	815	0	0	2,147
1978	0	0	0	3,202	33,513	163,928	40,037	8,510	937	582	380	281	251,371
1979	90	91	143	964	3,289	22,889	12,527	892	600	381	257	358	42,479
1980	90	90	105	751	80,647	46,297	7,801	1,384	703	423	266	223	138,781
1981	393	90	90	235	363	5,513	663	298	189	90	337	1,196	9,458
1982	842	180	137	195	204	2,119	1,595	343	137	2,880	2,655	2,558	13,844
1983	21	94	1,687	21,380	66,448	210,891	63,143	33,434	6,127	748	565	399	404,937
1984	282	170	13,507	5,308	1,997	705	454	246	158	90	90	846	23,852
1985	628	327	256	186	248	253	205	153	108	50	785	1,136	4,334
1986	240	79	109	193	4,375	10,275	4,181	578	218	94	32	814	21,187
1987	201	71	93	149	134	1,860	193	159	120	59	629	35	3,702
1988	17	17	39	131	114	1,927	271	173	2,993	2,647	2,511	2,438	13,278
1989	0	0	0	0	6	0	0	315	311	1,144	304	0	2,081
1990	0	0	0	0	0	0	0	351	0	21	0	0	372
1991	0	0	0	0	0	3,538	558	84	3,557	2,566	1,822	2,145	14,269
1992	290	0	25	156	7,420	2,267	1,117	463	246	107	3,176	2,142	17,410
1993	544	372	150	28,283	124,285	72,473	31,684	7,439	984	564	363	250	267,392
AVG	452	181	509	4,109	11,402	19,282	7,373	1,947	758	918	1,063	851	48,845
MEDIAN	90	90	99	210	760	1,295	436	318	161	384	521	400	11,891

Alternative 3C													
SANTA YNEZ RIVER NEAR BUELLTON (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	4	64,586	135,789	21,923	6,600	1,266	402	174	140	230,884
1919	2	16	47	660	1,095	1,126	92	98	36	2,594	0	572	6,338
1920	310	13	66	48	602	1,984	912	219	48	2,620	64	721	7,608
1921	435	300	0	148	407	722	90	52	0	0	2,873	507	5,534
1922	397	209	6,582	4,086	13,240	9,354	9,311	1,196	291	76	0	94	44,835
1923	125	152	1,505	1,133	1,357	1,057	368	191	98	26	2,734	2,409	11,154
1924	2,354	59	11	32	56	419	108	63	24	2,604	0	557	6,287
1925	278	0	0	0	0	39	493	4	0	152	967	0	1,933
1926	0	0	0	0	1,551	354	9,642	749	114	17	270	694	13,392
1927	403	1,098	494	574	21,419	15,815	5,677	735	187	64	0	232	46,696
1928	0	0	10	596	2,107	1,674	218	120	64	2,632	2,420	2,295	12,136
1929	2,259	0	0	21	243	448	346	97	2,483	2,453	181	756	9,287
1930	442	61	0	0	0	1,268	40	0	0	130	354	0	2,294
1931	0	0	0	0	0	0	0	200	0	0	0	0	200
1932	0	0	3,121	1,195	10,087	3,209	768	329	62	0	388	416	19,575
1933	0	0	0	2,055	596	203	164	62	2,490	2,454	2,266	0	10,289
1934	0	0	0	1,702	536	170	0	0	2,587	2,352	1,891	1,366	10,605
1935	197	0	0	2,352	765	2,597	4,468	574	31	0	2,711	2,315	16,011
1936	284	0	0	0	6,848	1,298	891	69	0	0	632	0	10,021
1937	0	0	0	742	16,918	23,123	19,791	1,647	603	294	120	2,765	66,002
1938	2,476	3	63	697	42,050	215,259	19,261	2,118	811	497	182	131	283,546
1939	5	4	146	1,261	1,702	2,511	592	192	68	2,459	2,439	118	11,497
1940	307	114	15	288	1,063	814	437	134	29	2,562	2,113	321	8,198
1941	335	4	1,413	6,411	86,972	242,036	141,869	21,847	3,684	1,013	631	407	506,623
1942	206	233	3,914	2,132	1,056	2,521	7,432	1,038	412	105	35	31	19,116
1943	0	11	35	57,418	34,291	80,017	12,406	1,104	671	390	174	126	186,643
1944	12	12	193	471	28,679	41,648	5,973	1,268	649	277	156	75	79,413
1945	0	237	121	183	4,493	7,651	3,504	595	89	16	1	533	17,422
1946	291	4	947	195	360	702	3,362	361	75	2,476	2,440	2,314	13,527
1947	2,284	230	256	85	203	174	100	2,529	2,605	2,463	2,285	529	13,742
1948	322	0	5	0	0	0	0	0	69	173	0	0	569
1949	0	0	0	0	0	1,617	0	437	0	0	0	0	2,054
1950	0	0	0	0	957	0	0	1,056	0	0	0	0	2,012
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	18,904	819	18,774	9,621	1,351	203	91	566	3,045	53,375
1953	28	110	1,785	3,355	571	368	244	65	31	2,622	2,402	564	12,147
1954	493	187	19	959	1,416	2,114	788	67	65	2,671	2,082	822	11,684
1955	536	180	0	108	75	40	22	100	0	514	1,215	0	2,791
1956	0	0	6,242	8,379	1,329	608	949	542	7	8	288	36	18,389
1957	0	0	0	0	177	217	84	45	2,802	150	1,024	110	4,609
1958	0	0	0	258	8,935	15,645	57,026	12,287	1,318	408	188	110	96,175
1959	0	0	1	219	4,057	578	233	112	78	2,634	2,408	534	10,853
1960	452	317	13	60	1,690	86	224	60	24	0	759	0	3,686
1961	0	0	0	0	0	0	0	278	0	0	0	0	278
1962	0	0	0	1	34,340	6,072	1,365	447	63	4	707	86	43,084
1963	0	0	0	0	1,215	1,134	539	224	74	182	127	0	3,495
1964	0	0	0	0	0	0	0	457	0	0	0	0	457
1965	0	0	0	21	0	0	2,071	1	1,536	1,262	135	0	5,026
1966	0	1,666	2,101	3,451	1,395	774	154	176	80	0	2,857	2,309	14,962
1967	2,239	2,264	2,424	8,278	3,458	30,232	55,217	23,606	1,015	259	2,673	2,529	134,197
1968	6	2	55	102	263	1,957	341	65	2,479	10	45	616	5,942
1969	374	194	20	162,953	230,220	94,922	21,411	7,355	1,270	384	232	161	519,496
1970	12	89	103	435	579	4,528	251	86	43	2,445	2,446	49	11,066
1971	299	416	885	434	253	200	132	58	2,442	2,528	2,351	1,469	11,467
1972	533	162	1,154	237	196	69	72	2,566	2,299	3	141	713	8,145
1973	431	50	0	6,103	18,588	19,480	9,497	1,052	491	221	124	69	56,106
1974	140	158	51	5,091	633	2,054	809	398	76	10	166	535	10,120
1975	284	0	1,337	201	6,386	17,509	6,297	1,247	313	64	0	8	33,646
1976	0	0	0	0	1,883	253	185	79	25	0	835	263	3,523
1977	0	0	0	0	6	27	27	19	227	413	0	0	720
1978	0	0	0	5,319	47,739	181,740	44,712	9,588	1,296	681	362	160	291,595
1979	17	23	107	1,768	4,993	24,783	13,957	1,266	615	263	115	161	48,068
1980	0	0	12	1,355	91,583	51,440	8,564	1,813	787	328	131	77	156,090
1981	192	0	4	272	547	8,839	1,078	351	157	10	78	683	12,211
1982	415	35	23	114	148	2,402	2,911	403	46	2,557	2,452	2,323	13,830
1983	0	60	3,007	28,152	75,291	218,186	67,042	36,352	7,273	1,063	740	404	437,570
1984	462	163	14,188	5,712	2,276	933	481	175	71	14	2	427	24,904
1985	270	142	261	120	245	243	149	60	25	0	390	647	2,553
1986	62	0	13	164	7,977	13,348	4,373	616	200	19	0	401	27,172
1987	41	0	2	62	36	1,895	102	60	30	0	262	0	2,490
1988	0	0	0	71	29	2,209	308	83	2,648	2,454	2,269	2,166	12,237
1989	0	0	0	0	0	0	0	141	77	675	29	0	922
1990	0	0	0	0	0	0	0	58	0	0	0	0	58
1991	0	0	0	0	0	6,800	1,175	169	3,044	2,319	1,554	1,297	16,359
1992	55	0	0	235	14,183	4,214	1,976	695	286	32	2,704	1,919	26,300
1993	183	160	50	33,939	134,323	79,039	34,736	8,296	1,351	593	329	124	293,122
AVG	280	120	695	5,017	13,712	21,175	8,149	2,086	716	779	838	595	54,163
MEDIAN	15	0	10	227	1,059	1,645	566	251	85	201	266	196	11,910

Alternative 3C

SANTA YNEZ RIVER ABOVE SALSIPUEDES CREEK CONFLUENCE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	73,601	135,576	23,988	7,758	1,784	347	29	0	243,084
1919	0	0	0	312	851	1,027	19	41	0	2,047	0	13	4,311
1920	0	0	0	0	574	2,051	1,229	226	0	2,055	0	45	6,180
1921	0	3	0	55	402	905	83	42	0	0	1,933	3	3,426
1922	0	0	8,785	5,967	17,716	11,859	10,613	1,739	378	39	0	0	57,095
1923	0	0	1,613	1,019	1,374	1,037	481	214	70	0	2,029	2,052	9,889
1924	1,983	0	0	0	0	427	45	2	0	2,025	0	12	4,494
1925	0	0	0	0	0	0	506	0	0	0	118	0	624
1926	0	0	0	0	1,652	300	10,989	1,037	86	0	0	38	14,102
1927	0	1,109	500	725	29,159	16,194	6,713	1,033	218	21	0	0	55,672
1928	0	0	0	190	1,800	1,678	196	69	1	2,085	2,076	1,898	9,992
1929	1,853	0	0	0	172	482	368	47	2,075	2,184	0	54	7,235
1930	0	0	0	0	0	1,556	1	0	0	0	0	0	1,557
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	3,768	1,145	10,425	4,778	1,034	434	7	0	0	0	21,591
1933	0	0	0	2,475	637	161	123	6	2,085	2,190	1,883	0	9,561
1934	0	0	0	2,029	526	184	0	0	2,048	2,033	1,483	335	8,637
1935	0	0	0	3,026	986	3,309	5,989	902	35	0	1,974	1,947	18,166
1936	0	0	0	0	8,611	1,889	1,064	89	0	0	42	0	11,695
1937	0	0	0	706	24,500	28,861	21,666	2,144	752	217	0	2,047	80,894
1938	2,160	0	0	445	49,837	221,425	21,363	2,218	1,102	545	44	0	299,138
1939	0	0	26	1,176	1,883	3,183	818	216	19	2,028	2,132	0	11,480
1940	0	0	0	162	1,333	1,057	545	111	0	2,036	1,793	0	7,037
1941	0	0	1,590	9,092	90,711	258,265	147,343	23,819	4,142	1,290	660	322	537,233
1942	151	186	4,822	2,805	1,346	3,206	8,166	1,407	499	50	0	0	22,637
1943	0	0	0	60,429	37,295	85,044	13,729	1,508	840	347	40	0	199,232
1944	0	0	65	469	30,763	44,114	6,838	1,803	801	191	16	0	85,060
1945	0	113	16	98	6,586	8,002	4,244	829	78	0	0	3	19,968
1946	0	0	1,101	115	392	505	4,012	462	32	2,039	2,136	1,946	12,739
1947	1,901	166	224	31	178	165	67	2,287	2,466	2,230	1,941	15	11,672
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	860	0	0	0	0	0	0	860
1950	0	0	0	0	198	0	0	57	0	0	0	0	255
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	26,393	293	27,161	10,153	1,664	81	12	122	2,198	68,077
1953	0	0	1,877	3,906	778	486	220	18	0	2,122	2,056	21	11,483
1954	2	0	0	801	1,321	2,713	1,129	9	1	2,099	1,734	103	9,912
1955	3	0	0	0	0	0	0	52	0	5	232	0	292
1956	0	0	6,735	8,897	1,718	822	1,150	840	0	0	0	0	20,161
1957	0	0	0	0	7	108	13	0	2,095	0	171	0	2,395
1958	0	0	0	69	11,627	22,638	68,907	14,215	1,879	295	26	0	119,655
1959	0	0	0	84	4,723	712	146	40	25	2,080	2,060	8	9,876
1960	0	10	0	0	1,266	0	109	0	0	0	30	0	1,415
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	46,786	6,960	1,607	384	0	0	38	0	55,775
1963	0	0	0	0	761	884	385	101	0	0	0	0	2,132
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	1,238	0	246	232	0	0	1,716
1966	0	916	1,945	4,371	1,663	1,036	75	152	37	0	2,013	1,914	14,122
1967	1,816	1,865	3,450	11,889	4,813	30,822	55,877	25,123	1,058	144	2,280	2,269	141,403
1968	0	0	0	14	236	2,051	417	10	2,163	0	0	17	4,909
1969	0	0	0	182,644	249,494	105,357	22,316	8,310	1,671	279	85	18	570,174
1970	0	6	9	491	773	5,582	229	41	1	2,031	2,150	0	11,313
1971	0	112	745	450	214	138	75	5	2,126	2,312	2,019	1,135	9,331
1972	15	0	1,399	210	172	17	27	2,321	2,183	0	0	40	6,385
1973	0	0	0	6,849	26,938	20,702	10,711	1,269	449	106	0	0	67,024
1974	0	0	0	6,635	779	2,441	1,031	497	34	0	0	2	11,419
1975	0	0	1,192	97	7,768	21,182	7,099	1,771	255	1	0	0	39,365
1976	0	0	0	0	1,543	163	96	1	0	0	82	0	1,885
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	5,265	60,509	200,789	50,033	11,006	1,690	744	270	2	330,308
1979	0	0	2	2,220	6,404	26,582	15,813	1,777	619	122	0	0	53,539
1980	0	0	0	1,510	102,058	57,413	9,672	2,335	860	199	1	0	174,047
1981	0	0	0	125	574	11,693	1,538	451	147	0	0	18	14,547
1982	0	0	0	0	19	2,476	4,273	477	0	2,089	2,133	1,943	13,409
1983	0	0	4,009	33,811	84,063	223,684	69,623	39,061	8,665	1,367	853	342	465,477
1984	551	88	14,610	6,289	2,746	1,333	574	162	35	0	0	0	26,388
1985	0	0	74	12	162	189	103	3	0	0	0	23	566
1986	0	0	0	14	10,315	15,507	4,715	640	233	0	0	0	31,425
1987	0	0	0	0	0	1,506	10	0	0	0	0	0	1,515
1988	0	0	0	0	0	2,054	231	0	2,081	2,139	1,857	1,704	10,066
1989	0	0	0	0	0	0	0	0	0	33	0	0	33
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	9,013	1,323	109	2,191	1,926	1,128	227	15,916
1992	0	0	0	147	20,640	6,337	3,088	1,046	393	0	2,031	1,598	35,280
1993	0	0	0	39,432	145,473	86,849	38,739	9,303	1,717	558	236	0	322,305
AVG	137	60	770	5,725	15,660	22,835	8,881	2,285	690	617	578	320	58,560
MEDIAN	0	0	0	106	918	1,617	696	157	36	27	21	0	11,450

Alternative 3C

SANTA YNEZ RIVER AT LOMPOC NARROWS (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	54	79,462	144,216	25,679	8,304	2,195	526	103	69	260,609
1919	64	64	70	366	1,037	1,212	13	126	0	1,945	0	0	4,896
1920	24	47	56	60	812	2,993	1,642	315	84	1,974	0	3	8,010
1921	0	0	0	153	629	1,288	165	121	27	64	1,793	0	4,239
1922	0	0	12,044	7,462	22,254	13,773	11,469	1,960	474	124	0	0	69,561
1923	0	0	2,537	1,217	1,661	1,124	621	307	157	79	1,931	2,009	11,644
1924	1,935	0	66	71	74	692	132	84	79	1,937	0	0	5,070
1925	0	0	0	0	0	22	761	56	55	0	22	0	915
1926	0	0	13	23	2,480	668	15,651	1,451	179	82	0	0	20,546
1927	0	1,642	846	996	35,236	17,622	7,359	1,241	310	103	0	0	65,354
1928	0	35	44	215	2,466	2,088	286	156	83	2,002	2,031	1,843	11,250
1929	1,797	0	61	74	254	675	560	130	2,011	2,147	0	3	7,712
1930	0	0	0	0	21	1,923	77	69	0	0	0	0	2,090
1931	0	0	0	0	62	20	37	0	0	0	0	0	119
1932	0	0	5,392	1,568	16,635	5,757	1,464	632	95	29	0	0	31,573
1933	0	0	0	3,144	978	242	211	87	2,012	2,151	1,829	0	10,654
1934	0	0	0	2,788	953	372	84	32	1,973	1,992	1,427	227	9,847
1935	0	0	0	3,839	1,381	4,339	7,634	1,110	127	30	1,872	1,903	22,233
1936	0	0	0	47	10,891	2,411	1,509	185	37	0	3	0	15,083
1937	0	0	0	995	29,711	33,454	22,956	2,364	849	297	0	1,931	92,558
1938	2,119	0	72	497	54,611	235,332	22,658	2,318	1,206	629	120	72	319,633
1939	0	0	175	1,408	2,273	3,763	1,120	310	107	1,964	2,090	0	13,211
1940	0	0	0	263	1,705	1,455	761	197	33	1,953	1,748	0	8,116
1941	0	0	2,310	11,671	109,985	277,133	156,996	25,509	4,857	1,788	1,041	597	591,887
1942	428	463	8,224	4,485	2,257	5,033	9,294	1,919	793	231	167	55	33,350
1943	66	157	165	63,315	39,253	88,984	14,691	1,925	1,041	530	118	74	210,318
1944	70	70	328	842	34,909	46,643	7,479	2,226	1,001	274	93	0	93,935
1945	16	260	179	267	7,428	8,608	4,474	935	73	0	0	0	22,241
1946	0	0	1,137	173	467	1,291	4,304	557	121	1,976	2,094	1,893	14,014
1947	1,845	321	403	114	362	279	156	2,243	2,442	2,190	1,885	0	12,239
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	1,952	0	0	0	0	0	0	1,952
1950	0	0	0	0	564	1	0	0	0	0	0	0	565
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	32,930	556	35,859	10,446	1,697	123	27	68	1,967	83,672
1953	64	244	3,788	4,968	978	599	370	53	31	2,025	2,006	0	15,128
1954	0	0	0	830	1,576	4,094	1,330	4	77	1,994	1,685	45	11,636
1955	0	0	0	269	144	67	84	115	1	0	92	0	771
1956	0	0	12,852	16,072	2,828	1,332	1,893	1,141	87	79	0	1	36,284
1957	0	0	1	44	342	268	95	73	1,985	1	87	0	2,896
1958	1	0	0	309	16,915	29,604	77,362	15,099	2,292	472	112	69	142,237
1959	64	63	66	248	6,071	1,009	347	128	108	1,996	2,013	0	12,112
1960	0	0	3	49	1,755	84	412	77	0	0	0	0	2,380
1961	0	51	88	2	4	9	0	0	0	0	0	0	154
1962	1	0	116	439	65,405	10,707	2,229	679	100	76	6	0	79,759
1963	0	1	34	52	2,506	2,490	1,254	481	178	71	0	0	7,068
1964	0	0	1	3	4	6	7	0	0	0	0	0	22
1965	0	0	0	337	23	83	2,692	79	224	166	1	0	3,605
1966	1	3,550	4,327	6,701	3,045	1,558	248	340	122	26	1,889	1,864	23,671
1967	1,762	1,810	3,911	15,810	5,274	31,236	56,796	25,584	1,250	127	2,200	2,231	147,992
1968	0	20	69	86	305	2,208	513	4	2,098	0	1	0	5,305
1969	0	0	0	190,763	257,814	108,147	24,152	8,947	2,079	441	160	91	592,593
1970	70	80	176	661	956	6,326	322	35	0	1,941	2,105	0	12,673
1971	0	54	1,031	609	399	223	170	1	2,052	2,272	1,966	1,083	9,861
1972	0	0	1,574	276	246	8	18	2,249	2,156	0	0	0	6,527
1973	0	101	1	10,932	33,715	23,470	11,564	1,573	635	184	25	0	82,200
1974	3	11	55	9,247	1,086	3,350	1,434	693	123	30	20	0	16,052
1975	7	7	2,635	270	11,192	27,944	8,035	2,189	542	98	73	21	53,013
1976	60	60	64	68	2,076	359	295	86	0	0	18	0	3,087
1977	0	0	0	28	37	59	0	46	0	0	0	0	171
1978	0	0	0	9,557	75,702	212,692	54,083	11,964	2,096	1,024	439	88	367,644
1979	143	160	171	3,289	8,541	29,254	16,797	2,195	907	213	25	18	61,714
1980	14	14	69	2,140	110,713	61,595	10,420	2,753	1,151	357	28	21	189,274
1981	17	16	61	376	838	15,353	2,049	651	238	31	13	0	19,644
1982	0	5	43	137	80	2,626	4,914	571	37	2,021	2,092	1,892	14,418
1983	0	62	4,340	42,422	93,693	233,639	74,842	40,984	9,522	1,867	1,137	520	503,028
1984	830	366	15,983	6,818	3,068	1,551	776	258	74	0	0	0	29,725
1985	0	1	361	79	317	365	179	0	0	0	0	0	1,303
1986	0	0	19	99	15,051	21,010	5,131	938	327	0	0	0	42,577
1987	6	7	47	141	64	2,216	93	33	0	0	0	0	2,607
1988	0	0	16	112	50	2,036	323	79	2,007	2,098	1,800	1,639	10,160
1989	0	0	5	8	3	2	1	0	0	0	0	0	19
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	12,831	1,184	11	1,891	1,744	998	61	18,720
1992	0	0	18	151	25,152	7,751	3,430	1,252	485	80	1,932	1,556	41,806
1993	0	0	136	42,813	153,023	90,107	39,920	9,842	2,022	737	308	0	338,910
AVG	150	128	1,134	6,661	17,926	24,862	9,690	2,497	782	648	575	314	65,366
MEDIAN	0	0	51	270	1,479	2,148	1,152	308	123	101	25	0	12,942

Alternative 4A&B

SANTA YNEZ RIVER BELOW HILTON CREEK (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	476	453	433	414	47,036	127,808	17,636	4,812	520	642	687	694	201,613
1919	478	461	367	1,273	1,296	1,294	352	361	375	446	1,767	2,261	10,730
1920	1,460	341	343	356	273	329	239	352	379	394	2,127	2,417	9,009
1921	1,643	910	196	163	162	183	196	206	229	235	2,814	2,258	9,194
1922	1,587	771	615	395	1,048	3,604	7,310	478	368	358	384	843	17,760
1923	1,315	736	303	1,301	1,308	1,283	312	345	363	377	810	2,159	10,611
1924	1,395	641	357	361	359	300	363	372	381	392	1,874	2,097	8,891
1925	1,415	643	199	210	218	206	171	220	229	1,197	2,804	583	8,096
1926	211	222	222	222	270	166	927	258	366	385	1,698	2,307	7,254
1927	1,553	225	171	169	1,581	12,714	4,027	429	334	361	387	1,684	23,635
1928	370	376	371	1,273	1,385	1,337	331	353	364	386	1,898	2,313	10,757
1929	1,485	348	356	354	325	298	317	365	384	399	2,705	2,352	9,687
1930	1,620	913	196	208	214	220	203	218	229	1,119	2,374	201	7,714
1931	220	231	235	237	218	231	228	1,518	266	226	246	259	4,114
1932	265	264	438	250	957	375	247	329	372	395	1,992	1,794	7,678
1933	358	210	219	298	278	356	361	378	221	750	2,944	1,056	7,428
1934	200	216	224	292	193	164	219	227	232	1,908	3,113	2,625	9,615
1935	561	202	213	308	189	327	450	163	208	232	1,540	2,229	6,623
1936	1,514	280	203	211	633	215	201	198	222	235	2,583	400	6,894
1937	220	230	234	205	1,220	16,407	16,797	906	616	663	695	753	38,947
1938	1,380	668	355	1,274	31,477	187,266	15,786	2,058	595	639	687	697	242,882
1939	465	457	350	1,314	1,331	1,378	274	346	367	413	1,093	2,288	10,077
1940	1,449	767	361	321	240	250	315	367	385	395	1,814	2,283	8,948
1941	1,520	349	265	593	61,511	193,710	120,372	18,170	2,751	540	601	642	401,022
1942	326	327	525	413	400	577	5,340	486	383	351	374	1,093	10,594
1943	369	361	361	44,554	28,843	66,383	10,164	532	607	649	691	700	154,214
1944	441	417	332	291	17,975	35,876	4,575	518	611	671	693	706	63,106
1945	505	331	354	347	498	4,902	2,487	390	357	386	532	2,314	13,403
1946	1,399	355	237	345	327	305	795	379	373	390	1,253	2,238	8,396
1947	1,427	293	303	349	329	345	363	376	389	404	2,382	2,284	9,243
1948	1,531	773	359	370	377	382	386	392	231	1,810	736	225	7,570
1949	238	244	245	240	241	1,956	209	1,719	322	218	240	254	6,126
1950	260	261	244	250	1,908	200	215	3,174	194	213	236	251	7,408
1951	259	260	257	254	252	26	26	853	26	25	24	215	2,476
1952	23	22	29	1,561	239	1,590	8,178	597	374	341	1,808	1,627	16,389
1953	1,458	301	360	2,042	275	314	325	368	376	389	2,031	2,568	10,808
1954	1,809	1,056	347	686	1,332	337	264	367	372	395	2,715	2,619	12,301
1955	1,849	1,117	186	156	172	193	201	191	228	1,857	3,123	745	10,017
1956	205	219	765	952	243	177	213	165	209	218	1,840	1,144	6,351
1957	228	214	217	205	160	155	190	203	660	2,300	2,897	867	8,297
1958	256	304	217	166	834	1,184	32,707	8,951	504	626	673	694	47,115
1959	469	453	399	332	2,084	274	322	357	369	440	2,165	2,422	10,089
1960	1,707	947	357	349	1,929	350	321	367	377	396	3,180	198	10,477
1961	217	213	213	228	227	225	226	1,780	315	222	243	256	4,366
1962	262	303	172	168	2,771	644	264	288	362	383	2,397	797	8,812
1963	375	386	383	367	320	303	240	328	367	897	1,527	375	5,868
1964	223	228	228	227	226	225	226	1,912	350	215	237	251	4,548
1965	258	260	257	173	229	211	378	199	3,976	3,055	1,104	377	10,477
1966	212	377	368	431	283	246	350	351	373	395	2,152	2,376	7,915
1967	1,633	893	317	757	442	26,517	53,176	20,137	701	660	684	703	106,620
1968	496	938	364	359	340	1,928	321	365	381	466	1,923	2,118	9,998
1969	1,496	727	358	131,692	188,306	78,100	17,786	5,432	510	642	675	692	426,416
1970	436	361	355	312	298	2,186	331	363	378	440	982	2,241	8,685
1971	1,473	873	247	299	327	341	358	375	388	403	1,967	2,232	9,284
1972	1,501	829	254	332	343	369	371	376	383	397	2,198	2,318	9,670
1973	1,590	158	198	680	1,430	24,496	7,517	526	619	676	695	704	39,288
1974	1,255	734	352	546	275	441	463	385	372	416	1,017	2,178	8,435
1975	1,506	346	316	324	2,285	5,439	4,820	494	381	354	384	1,011	17,660
1976	717	380	379	377	1,946	318	336	362	378	394	2,566	1,617	9,770
1977	358	374	375	374	374	371	375	382	1,088	1,727	205	228	6,230
1978	241	245	245	687	14,526	145,501	35,126	7,236	500	594	653	685	206,239
1979	376	367	353	312	567	20,979	10,877	512	595	663	696	1,056	37,352
1980	1,167	352	346	276	68,102	40,739	6,849	626	574	654	697	706	121,088
1981	944	427	376	319	289	2,408	237	319	354	419	1,234	2,267	9,594
1982	1,544	514	355	342	349	1,953	340	313	372	386	1,201	2,236	9,905
1983	1,450	322	376	15,448	57,262	196,272	56,284	29,186	4,897	530	593	648	363,268
1984	292	339	12,472	4,730	1,590	467	382	342	365	381	529	2,079	23,967
1985	1,365	651	299	350	330	335	360	375	388	404	2,013	2,160	9,029
1986	667	368	366	339	774	3,614	3,841	434	335	373	394	2,096	13,601
1987	710	367	369	356	371	1,949	352	364	374	392	1,729	376	7,708
1988	391	397	390	352	372	1,928	320	355	212	1,097	2,878	2,315	11,008
1989	205	207	217	218	209	218	222	226	937	2,215	637	221	5,732
1990	235	242	243	244	243	238	241	1,361	212	478	310	296	4,345
1991	434	319	249	248	247	711	214	169	2,473	2,395	3,021	1,842	12,323
1992	331	206	200	153	1,036	429	281	281	343	379	828	2,311	6,777
1993	1,527	767	342	26,719	113,792	65,274	28,552	6,151	497	608	664	698	245,591
AVG	840	443	469	3,350	8,850	16,991	6,407	1,791	559	643	1,398	1,353	43,094
MEDIAN	500	358	337	344	371	405	351	373	373	403	1,152	1,075	9,728

Alternative 4A&B

SANTA YNEZ RIVER AT 154 BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	300	300	300	300	48,541	129,142	18,118	4,968	600	600	600	600	204,368
1919	389	380	300	1,161	1,251	1,248	300	300	300	348	1,508	2,062	9,547
1920	1,343	300	300	300	300	567	300	300	300	300	1,849	2,224	8,383
1921	1,516	841	150	150	182	234	150	150	150	150	2,473	2,090	8,236
1922	1,464	707	1,400	812	2,530	4,129	7,471	536	342	300	300	711	20,700
1923	1,105	648	484	1,247	1,288	1,224	300	300	300	300	681	1,901	9,778
1924	1,254	574	300	300	300	300	300	300	300	300	1,610	1,908	7,747
1925	1,289	579	150	150	150	150	196	150	150	965	2,551	514	6,994
1926	150	150	150	150	449	186	2,172	300	300	300	1,453	2,108	7,868
1927	1,425	366	218	208	3,831	12,908	4,188	456	300	300	300	1,443	25,943
1928	300	300	300	1,160	1,490	1,365	300	300	300	300	1,645	2,121	9,881
1929	1,365	300	300	300	300	300	300	300	300	300	2,388	2,177	8,630
1930	1,496	844	150	150	150	328	150	150	150	892	2,129	150	6,739
1931	150	150	150	150	150	150	150	1,291	205	150	150	150	2,995
1932	150	150	847	386	2,222	668	300	300	300	300	1,729	1,619	8,971
1933	300	150	150	504	300	300	300	300	150	617	2,631	931	6,632
1934	150	150	150	505	255	150	150	150	150	1,623	2,877	2,471	8,781
1935	504	150	150	554	247	607	934	186	150	150	1,280	2,020	6,932
1936	1,383	233	150	150	1,420	324	286	150	150	150	2,245	329	6,969
1937	150	150	150	273	2,928	17,728	17,146	963	600	600	600	642	41,929
1938	1,183	588	300	1,175	32,872	190,875	16,134	2,035	600	600	600	600	247,562
1939	378	365	300	1,264	1,342	1,474	300	300	300	325	884	2,063	9,295
1940	1,319	698	300	300	324	300	300	300	300	300	1,545	2,081	8,067
1941	1,391	300	428	1,274	65,697	199,602	123,083	18,617	2,846	600	600	600	415,037
1942	300	300	1,063	652	484	818	5,417	549	376	300	305	899	11,462
1943	300	300	300	45,718	29,494	67,952	10,424	600	600	600	600	600	157,489
1944	357	335	300	300	19,105	36,596	4,721	600	600	600	600	600	64,715
1945	405	300	300	300	884	4,981	2,535	392	300	309	424	2,032	13,161
1946	1,258	300	300	300	300	365	847	339	300	300	1,026	2,018	7,654
1947	1,296	300	300	300	300	300	300	300	300	300	2,070	2,098	8,164
1948	1,406	707	300	300	300	300	300	300	150	1,532	634	150	6,379
1949	150	150	150	150	150	1,965	150	1,522	264	150	150	150	5,100
1950	150	150	150	150	1,834	150	150	2,911	155	150	150	150	6,250
1951	150	150	150	150	150	0	0	639	0	0	0	47	1,437
1952	0	0	0	3,570	310	3,722	8,242	672	356	300	1,627	1,485	20,283
1953	1,348	300	647	2,205	300	300	300	300	300	300	1,774	2,374	10,448
1954	1,683	962	300	709	1,324	588	300	300	300	300	2,411	2,444	11,620
1955	1,728	1,019	150	175	150	150	150	150	150	1,587	2,896	677	8,983
1956	150	150	1,758	2,284	404	228	318	189	150	150	1,557	987	8,325
1957	174	150	150	150	171	150	150	150	537	2,033	2,706	798	7,318
1958	197	232	150	188	1,951	2,903	35,296	9,326	600	600	600	600	52,642
1959	383	367	320	300	2,299	300	300	300	300	346	1,895	2,240	9,351
1960	1,582	878	300	300	1,895	300	300	300	300	300	2,850	150	9,454
1961	150	150	150	150	150	150	150	1,536	253	150	150	150	3,288
1962	150	187	150	173	7,086	1,405	393	300	300	300	2,131	715	13,289
1963	300	300	300	300	528	478	300	300	300	768	1,307	300	5,480
1964	150	150	150	150	150	150	150	1,676	294	150	150	150	3,470
1965	150	150	150	183	150	150	719	150	3,649	2,926	1,008	321	9,706
1966	150	734	716	865	463	300	300	300	300	300	1,881	2,193	8,502
1967	1,513	827	566	1,705	760	26,521	53,449	20,488	724	600	600	600	108,352
1968	402	816	300	300	300	1,871	300	300	300	362	1,651	1,941	8,842
1969	1,375	664	300	134,734	192,523	79,598	18,298	5,618	600	600	600	600	435,510
1970	354	300	300	300	300	2,393	300	300	300	341	832	1,969	7,989
1971	1,330	818	347	300	300	300	300	300	300	300	1,683	2,036	8,315
1972	1,373	760	360	300	300	300	300	300	300	300	1,913	2,131	8,637
1973	1,464	150	150	1,538	3,379	24,970	7,752	600	600	600	600	600	42,404
1974	1,065	656	300	1,135	300	560	479	357	300	325	876	1,934	8,286
1975	1,365	300	530	300	2,861	6,692	4,967	575	375	300	300	877	19,442
1976	610	300	300	300	1,925	300	300	300	300	300	2,265	1,463	8,663
1977	300	300	300	300	300	300	300	300	912	1,542	150	150	5,154
1978	150	150	150	1,522	17,930	149,271	36,280	7,463	600	600	600	600	215,316
1979	310	300	300	498	982	21,322	11,210	600	600	600	600	888	38,210
1980	1,029	300	300	417	70,286	41,991	7,016	746	600	600	600	600	124,485
1981	827	346	301	300	300	3,167	324	300	300	329	1,023	2,067	9,584
1982	1,415	456	300	300	300	1,948	596	300	300	300	992	2,023	9,230
1983	1,320	300	685	17,157	59,498	198,836	57,739	29,993	5,131	600	600	600	372,460
1984	300	300	12,517	4,830	1,646	502	382	300	300	300	416	1,802	23,596
1985	1,219	581	300	300	300	300	300	300	300	300	1,721	1,967	7,887
1986	598	300	300	300	1,765	4,513	3,852	461	300	300	300	1,823	14,811
1987	627	300	300	300	300	1,932	300	300	300	300	1,472	300	6,731
1988	300	300	300	300	300	1,895	300	300	150	896	2,631	2,161	9,833
1989	164	150	150	150	150	150	150	150	793	1,947	552	150	4,655
1990	150	150	150	150	150	150	150	1,113	150	371	209	187	3,079
1991	302	207	150	150	150	1,583	304	150	2,204	2,225	2,848	1,714	11,986
1992	280	150	150	150	2,470	834	431	300	300	300	694	2,036	8,095
1993	1,383	699	300	27,756	116,105	66,642	29,137	6,364	600	600	600	600	250,786
AVG	737	381	483	3,536	9,404	17,471	6,589	1,787	508	548	1,222	1,206	43,872
MEDIAN	403	300	300	300	427	597	300	300	300	300	1,000	915	8,977

Alternative 4A&B

SANTA YNEZ RIVER ABOVE ALISAL BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	9	13	29	61	54,923	134,007	19,913	5,586	855	439	288	253	216,376
1919	90	119	110	841	1,151	1,166	194	179	124	90	660	1,213	5,937
1920	807	140	167	158	412	1,359	551	231	134	61	907	1,365	6,292
1921	939	571	32	130	258	421	98	71	10	3	1,307	1,278	5,119
1922	895	458	3,589	2,211	7,929	6,174	8,212	786	284	133	49	264	30,984
1923	403	330	884	1,130	1,291	1,135	320	227	161	99	261	955	7,196
1924	667	326	142	156	179	340	195	164	117	62	740	1,105	4,192
1925	743	338	26	24	23	67	290	39	13	330	1,545	203	3,640
1926	0	0	2	2	845	220	6,219	465	162	84	626	1,241	9,866
1927	849	686	323	346	12,605	13,978	4,795	571	215	122	38	581	35,111
1928	50	60	90	817	1,847	1,498	250	193	149	66	771	1,278	7,069
1929	819	124	140	170	281	370	314	183	110	51	1,301	1,359	5,221
1930	930	574	32	29	33	705	76	40	7	285	1,181	0	3,892
1931	0	0	0	0	6	0	0	575	13	0	0	0	593
1932	0	0	1,584	584	7,069	1,702	499	273	143	54	807	846	13,560
1933	69	0	0	1,076	378	209	195	142	9	233	1,495	365	4,172
1934	0	0	0	1,041	422	149	35	14	0	761	1,834	1,673	5,930
1935	246	5	4	1,285	450	1,595	2,674	343	58	0	474	1,142	8,277
1936	803	68	19	22	4,149	744	634	93	21	0	1,135	53	7,741
1937	0	0	0	383	8,931	22,879	18,322	1,187	564	383	259	241	53,150
1938	482	299	145	911	38,252	205,573	17,464	1,997	654	472	296	254	266,798
1939	90	90	155	1,150	1,436	1,889	418	226	150	90	242	1,152	7,089
1940	751	437	131	264	616	503	336	190	116	60	672	1,218	5,295
1941	820	128	833	3,433	79,472	222,298	133,697	19,945	3,086	719	515	402	465,348
1942	178	194	2,201	1,229	713	1,425	5,827	746	354	150	90	250	13,357
1943	53	92	118	51,142	31,679	74,388	11,271	815	590	429	290	251	171,118
1944	90	90	185	317	23,389	39,063	5,236	884	580	375	277	224	70,710
1945	90	183	147	186	2,424	5,601	2,871	453	154	90	90	1,011	13,301
1946	660	108	534	212	291	639	1,205	301	142	69	323	1,123	5,608
1947	729	280	281	190	249	233	195	150	104	46	1,034	1,260	4,751
1948	840	451	133	136	140	144	138	118	4	740	243	0	3,087
1949	0	0	0	0	0	1,613	1	837	59	0	0	0	2,511
1950	0	0	2	0	1,110	3	0	1,764	3	0	0	0	2,882
1951	0	0	0	0	0	0	0	27	0	0	0	0	27
1952	0	0	0	11,177	335	9,545	8,412	848	256	137	864	789	32,364
1953	810	215	1,153	2,695	425	330	293	171	126	64	867	1,490	8,641
1954	1,090	584	158	861	1,359	1,254	508	172	150	55	1,327	1,583	9,101
1955	1,142	634	48	191	118	90	76	101	7	798	1,907	343	5,455
1956	0	0	3,586	5,369	810	396	645	323	54	25	658	349	12,216
1957	0	0	0	11	142	146	83	56	215	1,142	1,792	447	4,033
1958	5	13	0	200	4,871	8,344	45,493	10,626	897	478	315	250	71,491
1959	90	90	90	208	2,944	409	280	198	146	90	954	1,397	6,896
1960	1,006	609	140	181	1,791	199	268	163	117	52	1,678	0	6,204
1961	0	7	7	0	0	0	0	765	41	0	0	0	820
1962	0	0	20	47	19,361	3,385	813	367	154	78	1,175	344	25,744
1963	40	35	55	103	807	751	395	240	146	379	529	30	3,510
1964	0	0	0	0	0	0	0	873	75	0	0	0	948
1965	0	0	0	51	4	4	1,281	14	2,293	2,091	478	64	6,279
1966	0	1,095	1,274	1,935	850	492	238	219	147	57	933	1,347	8,587
1967	944	564	1,491	4,598	2,191	27,276	54,642	22,141	806	383	307	228	115,570
1968	90	400	119	151	233	1,831	293	160	113	90	749	1,131	5,360
1969	818	422	138	149,241	211,986	86,421	20,004	6,354	898	459	335	273	477,349
1970	90	113	143	296	372	3,369	270	177	127	90	354	991	6,393
1971	721	607	677	334	259	254	209	154	108	50	760	1,188	5,323
1972	805	492	738	252	233	173	169	149	110	53	942	1,287	5,402
1973	890	90	25	3,740	10,117	26,706	8,524	870	550	353	263	220	52,348
1974	397	350	138	2,741	421	918	598	341	149	90	402	1,005	7,549
1975	764	124	887	244	4,337	10,029	5,490	860	346	138	49	391	23,658
1976	224	52	74	98	1,840	266	237	177	114	55	1,220	769	5,126
1977	73	61	78	99	118	140	135	120	444	880	0	0	2,148
1978	0	0	0	3,199	28,223	163,688	39,970	8,305	936	582	380	281	245,563
1979	90	91	143	963	2,160	22,576	12,396	891	599	381	257	279	40,825
1980	459	107	153	826	78,638	46,181	7,665	1,201	701	422	265	223	136,841
1981	395	90	90	235	363	5,475	629	298	188	90	338	1,196	9,385
1982	842	244	140	197	206	2,122	1,596	343	137	75	326	1,147	7,375
1983	758	206	1,929	22,056	66,382	210,798	62,989	33,250	5,923	747	565	398	406,002
1984	282	170	12,598	5,200	1,906	702	453	245	158	90	90	851	22,746
1985	628	327	256	186	248	253	205	153	108	50	785	1,136	4,335
1986	299	81	111	195	4,375	6,737	3,995	568	215	92	31	849	17,546
1987	288	75	97	152	137	1,865	194	160	120	59	627	35	3,808
1988	17	17	39	131	114	1,927	271	173	13	309	1,625	1,412	6,048
1989	15	1	1	5	38	23	16	9	414	1,092	202	0	1,818
1990	0	0	0	0	0	0	0	309	0	15	0	0	324
1991	0	0	0	0	0	3,522	551	82	1,258	1,387	1,923	1,045	9,769
1992	70	0	26	159	7,428	2,274	1,121	467	248	109	269	1,047	13,219
1993	766	434	171	31,803	124,241	72,335	31,556	7,248	984	564	362	250	270,714
AVG	369	192	511	4,208	11,360	19,280	7,308	1,844	391	272	614	640	46,987
MEDIAN	201	91	114	210	760	1,210	436	259	146	90	438	400	7,142

Alternative 4A&B													
SANTA YNEZ RIVER NEAR BUELLTON (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	4	64,058	135,670	21,786	6,413	1,265	402	173	139	229,911
1919	2	20	47	661	1,096	1,126	93	98	36	7	298	709	4,194
1920	404	19	74	54	612	1,995	917	222	49	0	465	802	5,616
1921	476	315	0	152	412	727	92	53	0	0	755	714	3,695
1922	433	223	6,604	4,095	13,242	8,535	9,165	1,126	290	76	0	98	43,886
1923	124	152	1,505	1,133	1,357	1,057	368	191	98	26	97	503	6,610
1924	293	143	42	62	82	449	125	75	32	0	361	627	2,291
1925	353	144	0	0	0	52	514	8	0	84	973	27	2,156
1926	0	0	0	0	1,577	365	9,673	754	117	19	249	696	13,449
1927	404	1,099	494	574	21,395	14,573	5,535	732	186	64	0	237	45,293
1928	0	0	10	596	2,107	1,674	218	120	64	0	367	746	5,901
1929	398	7	30	81	325	516	392	124	26	0	766	793	3,459
1930	467	317	0	0	0	1,291	44	0	0	51	644	0	2,815
1931	0	0	0	0	0	0	0	218	0	0	0	0	218
1932	0	0	3,127	1,203	10,102	3,214	770	331	63	0	373	373	19,556
1933	0	0	0	2,013	581	194	158	58	0	73	893	45	4,014
1934	0	0	0	1,944	653	222	0	0	0	347	1,147	1,004	5,318
1935	45	0	0	2,374	775	2,611	4,478	577	32	0	153	623	11,669
1936	374	0	0	0	6,954	1,325	910	74	0	0	619	0	10,256
1937	0	0	0	748	16,933	28,771	19,752	1,475	604	295	121	82	68,781
1938	171	126	71	725	45,612	215,171	19,113	1,937	810	497	182	131	284,544
1939	5	4	146	1,261	1,702	2,511	592	192	68	10	31	657	7,178
1940	354	222	24	302	1,078	823	443	138	31	0	301	702	4,417
1941	400	11	1,437	6,436	90,045	241,934	141,734	21,658	3,487	1,012	631	407	509,192
1942	206	233	3,880	2,097	1,053	2,269	6,447	1,028	407	104	35	37	17,795
1943	0	11	35	55,991	34,200	79,897	12,268	1,103	671	390	174	126	184,866
1944	12	12	193	471	27,210	41,501	5,841	1,267	649	277	155	75	77,664
1945	0	236	121	183	4,493	6,115	3,347	564	87	16	1	550	15,712
1946	290	4	947	194	360	702	1,777	334	67	1	72	635	5,384
1947	339	331	339	136	250	209	125	56	21	0	567	728	3,102
1948	410	227	20	29	38	43	42	29	0	394	60	0	1,292
1949	0	0	0	0	0	1,748	0	464	0	0	0	0	2,212
1950	0	0	0	0	987	0	0	1,099	0	0	0	0	2,086
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	18,904	842	18,849	9,530	1,221	194	95	552	373	50,560
1953	439	155	1,881	3,457	593	383	255	72	35	1	423	882	8,577
1954	577	217	24	983	1,446	2,130	792	69	67	0	768	943	8,016
1955	598	249	0	140	95	55	33	115	0	390	1,221	95	2,990
1956	0	0	6,302	8,419	1,341	613	954	545	8	9	267	47	18,505
1957	0	0	0	0	178	219	85	46	70	647	1,126	163	2,533
1958	0	0	0	269	8,968	15,667	57,144	12,101	1,319	408	188	110	96,173
1959	0	0	1	219	4,058	578	233	112	78	6	501	821	6,607
1960	520	342	18	67	1,715	89	227	62	25	0	1,054	0	4,119
1961	0	0	0	0	0	0	0	315	0	0	0	0	315
1962	0	0	0	2	34,359	6,087	1,370	450	65	4	667	109	43,112
1963	0	0	0	0	1,217	1,135	540	225	75	171	140	0	3,503
1964	0	0	0	0	0	0	0	372	0	0	0	0	372
1965	0	0	0	15	0	0	2,027	0	1,485	1,364	92	0	4,984
1966	0	1,652	2,090	3,442	1,390	771	153	175	79	0	459	761	10,972
1967	456	298	2,671	8,533	3,503	27,657	55,053	23,451	834	258	241	101	123,056
1968	3	203	55	103	264	1,961	341	65	28	7	383	641	4,055
1969	398	206	21	166,745	230,136	94,805	21,275	7,167	1,269	384	232	161	522,799
1970	12	89	103	435	579	4,499	225	85	42	14	163	536	6,782
1971	332	443	899	440	257	203	134	59	24	0	363	676	3,831
1972	388	260	1,219	261	213	80	81	65	32	0	492	743	3,834
1973	441	51	0	6,118	18,688	28,293	9,422	1,059	495	223	126	71	64,987
1974	120	158	51	5,055	611	1,425	789	387	72	10	193	533	9,404
1975	355	7	1,406	226	6,451	14,590	6,142	1,244	312	64	0	187	30,984
1976	62	0	0	7	1,957	269	197	87	30	0	707	327	3,645
1977	0	0	0	0	8	29	28	21	177	466	0	0	727
1978	0	0	0	5,318	42,505	181,490	44,640	9,382	1,295	680	361	159	285,830
1979	17	23	106	1,767	3,894	24,468	13,823	1,264	614	263	114	50	46,404
1980	151	3	45	1,449	89,620	51,344	8,436	1,640	787	328	132	78	154,013
1981	194	0	4	272	548	8,801	1,046	351	157	10	79	683	12,144
1982	415	75	25	116	150	2,406	2,914	404	47	10	74	655	7,291
1983	360	164	3,306	28,882	75,273	218,139	66,904	36,176	7,074	1,063	740	405	438,484
1984	463	163	13,291	5,605	2,188	931	480	174	71	13	2	431	23,812
1985	269	142	261	120	245	243	149	60	25	0	390	647	2,553
1986	102	0	15	166	7,980	9,861	4,187	605	196	17	0	425	23,554
1987	96	0	3	65	38	1,901	103	61	31	0	262	0	2,560
1988	0	0	0	71	29	2,210	308	83	0	67	1,027	841	4,637
1989	0	0	0	0	12	0	0	0	218	637	27	0	894
1990	0	0	0	0	0	0	0	34	0	0	0	0	34
1991	0	0	0	0	0	6,774	1,166	166	777	852	1,245	510	11,489
1992	0	0	0	244	14,211	4,224	1,983	700	289	34	91	554	22,329
1993	347	213	67	37,455	134,299	78,911	34,613	8,109	1,351	593	329	124	296,409
AVG	172	118	698	5,117	13,673	21,176	8,086	1,991	380	174	341	344	52,269
MEDIAN	53	7	19	235	1,066	1,549	566	220	67	15	236	212	6,980

Alternative 4A&B													
SANTA YNEZ RIVER ABOVE SALSIPUEDES CREEK CONFLUENCE (acre-feet/month)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	73,077	135,454	23,851	7,572	1,783	347	29	0	242,112
1919	0	0	0	314	852	1,028	19	41	0	0	0	37	2,292
1920	0	0	0	0	587	2,067	1,238	230	0	0	0	62	4,183
1921	0	6	0	57	406	909	85	43	0	0	78	43	1,626
1922	0	0	8,793	5,971	17,716	11,042	10,466	1,670	376	38	0	0	56,072
1923	0	0	1,613	1,019	1,375	1,037	481	214	70	0	0	0	5,809
1924	0	0	0	0	0	417	45	2	0	0	0	10	474
1925	0	0	0	0	0	0	531	0	0	0	116	0	647
1926	0	0	0	0	1,676	309	11,023	1,043	88	0	0	36	14,176
1927	0	1,107	500	725	29,133	14,958	6,569	1,030	217	20	0	0	54,258
1928	0	0	0	190	1,800	1,678	196	69	1	0	0	49	3,984
1929	0	0	0	0	222	535	407	66	0	0	63	61	1,353
1930	0	7	0	0	0	1,633	7	0	0	0	1	0	1,648
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	3,774	1,201	10,509	4,802	1,043	439	8	0	0	0	21,776
1933	0	0	0	2,427	619	152	117	4	0	0	119	0	3,438
1934	0	0	0	2,202	613	223	0	0	0	0	208	142	3,387
1935	0	0	0	2,966	965	3,291	5,976	899	34	0	0	19	14,149
1936	0	0	0	0	8,618	1,892	1,071	90	0	0	33	0	11,704
1937	0	0	0	704	24,501	34,475	21,641	1,976	754	219	0	0	84,271
1938	0	0	0	383	53,045	221,309	21,217	2,037	1,101	544	44	0	299,679
1939	0	0	26	1,176	1,883	3,183	818	216	19	0	0	20	7,340
1940	0	0	0	179	1,360	1,074	555	116	0	0	0	34	3,317
1941	0	0	1,600	9,105	93,764	258,171	147,208	23,631	3,947	1,289	660	321	539,694
1942	150	186	4,788	2,770	1,344	2,956	7,184	1,397	493	48	0	0	21,316
1943	0	0	0	59,002	37,205	84,923	13,592	1,508	839	347	40	0	197,457
1944	0	0	65	469	29,308	43,959	6,705	1,801	801	191	16	0	83,315
1945	0	113	16	98	6,586	6,488	4,083	796	75	0	0	6	18,259
1946	0	0	1,101	115	392	505	2,470	431	25	0	0	17	5,057
1947	0	182	245	46	195	181	79	3	0	0	18	52	1,000
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	1,052	0	4	0	0	0	0	1,056
1950	0	0	0	0	250	0	0	102	0	0	0	0	352
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	26,393	325	27,236	10,113	1,552	75	14	116	0	65,826
1953	12	7	1,959	4,003	798	501	230	22	0	0	0	105	7,637
1954	12	0	0	814	1,343	2,725	1,131	10	1	0	80	129	6,245
1955	10	0	0	0	3	0	0	67	0	0	227	0	306
1956	0	0	6,801	8,960	1,736	830	1,158	845	0	0	0	0	20,331
1957	0	0	0	0	8	109	13	0	0	36	197	0	363
1958	0	0	0	72	11,655	22,658	69,024	14,029	1,879	296	26	0	119,639
1959	0	0	0	84	4,724	712	146	40	25	0	2	71	5,803
1960	0	15	0	0	1,281	0	110	0	0	0	161	0	1,567
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	46,805	7,011	1,634	396	0	0	29	0	55,875
1963	0	0	0	0	771	891	389	103	0	0	0	0	2,155
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	1,188	0	207	275	0	0	1,670
1966	0	895	1,925	4,353	1,655	1,031	73	151	36	0	3	70	10,191
1967	0	5	3,626	12,101	4,847	28,245	55,704	24,966	880	142	133	0	130,649
1968	0	0	0	6	216	2,020	404	7	0	0	0	27	2,680
1969	0	0	0	186,436	249,463	105,240	22,179	8,123	1,671	279	85	18	573,494
1970	0	6	9	491	773	5,554	205	40	1	0	0	7	7,086
1971	0	131	763	460	219	142	78	7	0	0	0	37	1,837
1972	0	0	1,427	219	179	21	30	19	0	0	4	61	1,961
1973	0	0	0	6,899	27,064	29,488	10,651	1,279	455	109	0	0	75,944
1974	0	0	0	6,599	758	1,835	1,008	483	31	0	0	2	10,716
1975	0	0	1,272	121	7,858	18,306	6,943	1,767	253	1	0	0	36,521
1976	0	0	0	0	1,663	192	117	7	0	0	42	0	2,021
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	5,265	55,275	200,581	49,961	10,800	1,689	743	270	2	324,586
1979	0	0	2	2,219	5,335	26,252	15,675	1,774	618	121	0	0	51,995
1980	0	0	0	1,612	100,174	57,307	9,542	2,161	859	198	1	0	171,854
1981	0	0	0	125	575	11,657	1,507	450	147	0	0	18	14,479
1982	0	0	0	0	22	2,491	4,283	480	0	0	0	17	7,293
1983	0	19	4,323	34,584	84,064	223,640	69,485	38,885	8,467	1,367	853	342	466,028
1984	551	88	13,727	6,179	2,657	1,330	572	161	34	0	0	0	25,299
1985	0	0	74	12	163	189	103	3	0	0	0	23	566
1986	0	0	0	17	10,334	12,072	4,521	626	228	0	0	0	27,798
1987	0	0	0	0	0	1,526	12	0	0	0	0	0	1,537
1988	0	0	0	0	0	2,062	233	0	0	0	122	60	2,477
1989	0	0	0	0	0	0	0	0	0	27	0	0	27
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	8,987	1,316	107	142	152	310	0	11,014
1992	0	0	0	147	20,649	6,344	3,093	1,050	396	0	0	15	31,695
1993	0	0	0	42,838	145,483	86,720	38,616	9,116	1,717	558	236	0	325,283
AVG	10	36	769	5,817	15,617	22,837	8,817	2,197	401	97	57	25	56,680
MEDIAN	0	0	0	118	909	1,655	695	111	1	0	0	0	6,666

Alternative 4A&B

SANTA YNEZ RIVER AT LOMPOC NARROWS (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	54	78,938	144,093	25,542	8,117	2,194	525	103	69	259,637
1919	64	64	70	367	1,038	1,213	13	126	0	0	0	0	2,955
1920	9	36	46	52	809	2,997	1,648	318	83	0	0	1	6,000
1921	0	0	0	137	613	1,279	163	120	26	63	22	0	2,423
1922	0	0	12,052	7,427	22,244	12,957	11,322	1,890	472	124	0	0	68,489
1923	0	0	2,537	1,217	1,662	1,124	621	307	157	79	0	0	7,704
1924	0	0	33	43	50	641	118	76	71	0	0	0	1,032
1925	0	0	0	0	0	7	731	47	47	0	14	0	845
1926	0	0	9	19	2,486	675	15,682	1,456	181	82	0	0	20,591
1927	0	1,640	845	995	35,210	16,386	7,215	1,238	309	102	0	0	63,940
1928	0	35	44	216	2,467	2,088	286	156	83	0	0	0	5,375
1929	0	0	27	44	261	692	580	141	0	0	3	0	1,750
1930	0	0	0	0	14	1,969	80	68	0	0	0	0	2,132
1931	0	0	0	0	61	20	36	0	0	0	0	0	117
1932	0	0	5,399	1,625	16,718	5,780	1,472	637	96	29	0	0	31,755
1933	0	0	0	3,096	960	233	204	84	0	0	37	0	4,615
1934	0	0	0	2,953	1,002	397	79	29	0	0	89	47	4,596
1935	0	0	0	3,740	1,339	4,306	7,615	1,106	125	30	0	0	18,262
1936	0	0	0	25	10,851	2,384	1,503	182	35	0	0	0	14,981
1937	0	0	0	984	29,704	39,068	22,931	2,196	852	299	0	0	96,034
1938	0	0	43	391	57,734	235,215	22,511	2,137	1,205	629	120	72	320,057
1939	0	0	175	1,408	2,273	3,763	1,120	310	107	0	0	0	9,156
1940	0	0	0	249	1,698	1,461	767	200	32	0	0	0	4,409
1941	0	0	2,249	11,655	113,039	277,039	156,861	25,321	4,661	1,787	1,040	596	594,250
1942	428	463	8,191	4,450	2,254	4,784	8,311	1,909	787	229	167	55	32,029
1943	66	157	165	61,887	39,163	88,864	14,554	1,925	1,040	530	118	74	208,542
1944	70	70	328	841	33,454	46,488	7,347	2,225	1,001	274	93	0	92,191
1945	16	260	178	267	7,427	7,095	4,313	902	70	0	0	0	20,529
1946	0	0	1,139	174	468	1,292	2,770	524	113	0	0	0	6,479
1947	0	268	377	109	358	281	160	0	0	0	0	0	1,553
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	2,144	0	0	0	0	0	0	2,144
1950	0	0	0	0	616	1	0	0	0	0	0	0	617
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	32,930	588	35,934	10,407	1,585	96	19	49	0	81,608
1953	5	189	3,763	5,044	996	613	380	57	31	1	0	14	11,091
1954	0	0	0	806	1,579	4,097	1,331	4	77	1	16	40	7,952
1955	0	0	0	250	136	61	79	125	1	0	82	0	735
1956	0	0	12,918	16,119	2,847	1,341	1,902	1,147	87	79	0	1	36,441
1957	0	0	1	44	342	269	96	73	1	1	84	0	910
1958	1	0	0	295	16,943	29,593	77,483	14,913	2,293	472	112	69	142,175
1959	64	62	66	248	6,071	1,009	347	128	109	0	0	5	8,109
1960	0	0	0	38	1,738	81	408	75	0	0	51	0	2,392
1961	0	67	102	6	7	13	0	0	0	0	0	0	194
1962	1	0	126	448	65,424	10,769	2,256	691	100	77	2	0	79,894
1963	0	1	33	51	2,513	2,497	1,258	483	178	71	0	0	7,086
1964	0	0	1	3	4	6	7	0	0	0	0	0	22
1965	0	0	0	337	23	83	2,643	79	189	203	1	0	3,558
1966	1	3,528	4,309	6,683	3,037	1,553	246	338	121	26	0	9	19,851
1967	0	0	3,912	15,981	5,310	28,662	56,622	25,427	1,073	126	108	1	137,222
1968	0	10	54	67	269	2,154	495	2	0	0	1	0	3,051
1969	0	0	0	194,554	257,716	108,030	24,015	8,760	2,078	441	159	91	595,844
1970	70	80	176	661	956	6,299	298	34	0	0	0	0	8,574
1971	0	43	997	599	396	223	169	1	0	0	0	0	2,429
1972	0	0	1,472	263	238	8	17	5	1	0	0	0	2,003
1973	0	79	1	10,981	33,769	32,258	11,505	1,583	641	187	25	0	91,029
1974	3	11	55	9,211	1,065	2,745	1,410	679	120	30	20	0	15,350
1975	0	8	2,718	294	11,286	25,069	7,878	2,185	540	98	73	21	50,169
1976	60	60	64	68	2,194	388	316	92	0	0	0	0	3,244
1977	0	0	0	25	34	56	0	44	0	0	0	0	159
1978	0	0	0	9,556	70,468	212,476	54,011	11,758	2,094	1,023	438	88	361,912
1979	143	160	171	3,288	7,475	28,921	16,659	2,192	906	212	25	9	60,161
1980	7	15	72	2,248	108,835	61,489	10,290	2,579	1,150	357	28	21	187,090
1981	17	16	61	376	839	15,316	2,018	651	238	31	13	0	19,576
1982	0	5	43	137	83	2,641	4,925	574	37	1	0	0	8,445
1983	0	49	4,556	43,181	93,694	233,595	74,705	40,808	9,324	1,867	1,137	520	503,436
1984	831	366	15,102	6,707	2,979	1,547	774	257	74	0	0	0	28,636
1985	0	1	361	79	317	365	179	0	0	0	0	0	1,303
1986	0	0	19	102	15,071	17,578	4,937	924	322	0	0	0	38,951
1987	6	7	47	141	63	2,236	96	33	0	0	0	0	2,628
1988	0	0	16	112	50	2,043	325	79	0	0	36	2	2,663
1989	0	0	0	1	3	2	1	0	0	0	0	0	7
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	12,806	1,176	9	0	0	21	0	14,012
1992	0	0	2	81	25,161	7,588	3,423	1,252	485	79	0	0	38,072
1993	0	0	103	46,174	152,972	89,988	39,798	9,655	2,023	737	309	0	341,759
AVG	25	102	1,121	6,745	17,874	24,857	9,624	2,408	502	144	60	24	63,486
MEDIAN	0	0	43	265	1,459	2,149	1,148	229	80	0	0	0	8,277

Cachuma Project Deliveries and Shortages

From: "Curtis Lawler" <curtisl@stetsonengineers.com>
To: "Andy Fecko" <AFecko@waterrights.swrcb.ca.gov>
Date: Thu, Jul 24, 2003 3:42 PM
Subject: model Cachuma shortages

Andy,

Attached are the model results for the Cachuma Project deliveries and shortages for the EIR alternatives (1, 2, 3A-C, and 4A-B) that you requested. These results already include Tecolote Tunnel infiltration, which averages about 2,000 acre-feet per year. The annual draft from the Cachuma Project is 25,714 acre-feet. All of the simulation runs reduce the Cachuma annual draft when the storage level goes below 100,000 acre-feet on May 1st and have a minimum storage level of 12,000 acre-feet in the critical drought year 1951. The model assumes the ability of perfect forecast.

Please let me know if you have any questions or need additional information.

Thank, Curtis

<<CachumaProjectShortages.xls>> <<CachumaProjectDeliveries.xls>>

CC: "Dana Differding" <DDifferding@exec.swrcb.ca.gov>, "Lewis Moeller" <LMOELLER@waterrights.swrcb.ca.gov>, <alis@stetsonengineers.com>

Cachuma Project Deliveries in Acre-feet - Alternative 1 (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1919	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1920	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1921	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1922	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1923	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1924	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1925	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,597	2,925	3,549	3,369	2,597	25,517
1926	1,861	1,300	1,255	1,188	1,121	1,603	2,015	2,631	2,963	3,595	3,414	2,631	25,578
1927	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1928	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1929	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1930	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,551	2,872	3,485	3,309	2,551	25,246
1931	1,827	1,277	1,233	1,167	1,101	1,574	1,979	2,179	2,453	2,977	2,826	2,179	22,771
1932	1,561	1,091	1,053	997	940	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,542
1933	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1934	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1935	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1936	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1937	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1938	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1939	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1940	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1941	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1942	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1943	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1944	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1945	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1946	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1947	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1948	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1949	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,407	2,711	3,289	3,123	2,407	24,415
1950	1,725	1,205	1,164	1,101	1,039	1,485	1,867	2,093	2,357	2,860	2,716	2,093	21,706
1951	1,500	1,048	1,012	958	904	1,292	1,624	1,781	2,005	2,433	2,310	1,781	18,646
1952	1,276	891	861	815	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	23,878
1953	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1954	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1955	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1956	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,570	2,894	3,512	3,334	2,570	25,360
1957	1,841	1,287	1,242	1,176	1,109	1,586	1,994	2,288	2,577	3,126	2,968	2,288	23,482
1958	1,639	1,146	1,106	1,047	988	1,412	2,041	2,631	2,963	3,595	3,414	2,631	24,613
1959	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1960	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1961	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1962	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1963	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1964	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1965	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1966	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1967	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1968	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1969	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1970	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1971	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1972	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1973	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1974	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1975	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1976	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1977	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1978	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1979	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1980	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1981	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1982	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1983	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1984	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1985	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1986	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1987	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1988	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1989	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,510	2,826	3,429	3,255	2,510	25,008
1990	1,798	1,256	1,213	1,148	1,083	1,549	1,947	2,140	2,410	2,924	2,776	2,140	22,383
1991	1,533	1,071	1,034	979	924	1,321	1,660	2,388	2,689	3,262	3,097	2,388	22,345
1992	1,711	1,195	1,154	1,092	1,030	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,082
1993	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
AVG	1,853	1,295	1,250	1,183	1,121	1,608	2,025	2,586	2,912	3,533	3,355	2,586	25,308
MEDIAN	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714

Cachuma Project Deliveries in Acre-feet - Alternative 2 (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1919	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1920	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1921	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1922	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1923	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1924	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1925	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,585	2,911	3,532	3,353	2,585	25,445
1926	1,852	1,294	1,249	1,183	1,116	1,595	2,005	2,631	2,963	3,595	3,414	2,631	25,529
1927	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1928	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1929	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1930	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,488	2,802	3,399	3,227	2,488	24,883
1931	1,782	1,246	1,203	1,138	1,074	1,535	1,930	1,987	2,238	2,715	2,578	1,987	21,414
1932	1,424	995	961	909	858	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,046
1933	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1934	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1935	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1936	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,627	2,959	3,590	3,408	2,627	25,691
1937	1,882	1,315	1,270	1,202	1,134	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,704
1938	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1939	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1940	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1941	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1942	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1943	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1944	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1945	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1946	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1947	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1948	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1949	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,287	2,576	3,125	2,967	2,287	23,722
1950	1,639	1,145	1,106	1,046	987	1,412	1,774	1,863	2,098	2,545	2,417	1,863	19,895
1951	1,335	933	901	852	804	1,150	1,445	1,466	1,651	2,003	1,901	1,466	15,906
1952	1,050	734	709	671	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	23,199
1953	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1954	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1955	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1956	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,524	2,842	3,448	3,274	2,524	25,090
1957	1,808	1,263	1,220	1,155	1,089	1,557	1,958	2,141	2,411	2,926	2,778	2,141	22,448
1958	1,534	1,072	1,035	980	924	1,321	2,041	2,631	2,963	3,595	3,414	2,631	24,143
1959	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1960	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1961	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,626	2,957	3,587	3,406	2,626	25,680
1962	1,881	1,314	1,269	1,201	1,133	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,699
1963	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1964	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1965	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,550	2,872	3,484	3,308	2,550	25,243
1966	1,827	1,277	1,233	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,576
1967	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1968	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1969	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1970	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1971	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1972	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1973	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1974	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1975	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1976	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1977	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1978	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1979	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1980	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1981	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1982	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1983	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1984	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1985	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1986	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1987	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1988	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1989	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,419	2,724	3,305	3,138	2,419	24,485
1990	1,733	1,211	1,169	1,107	1,044	1,493	1,877	1,923	2,166	2,628	2,495	1,923	20,769
1991	1,378	963	930	880	830	1,187	1,492	2,273	2,560	3,106	2,949	2,273	20,820
1992	1,629	1,138	1,099	1,040	981	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,786
1993	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
AVG	1,837	1,284	1,240	1,174	1,114	1,601	2,017	2,565	2,888	3,504	3,327	2,565	25,115
MEDIAN	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714

Cachuma Project Deliveries in Acre-feet - Alternative 3A
(SYRHM simulation 1918-1993)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1919	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1920	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1921	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1922	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1923	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1924	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1925	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,485	2,798	3,395	3,223	2,485	24,864
1926	1,780	1,244	1,201	1,137	1,072	1,533	1,927	2,631	2,963	3,595	3,414	2,631	25,130
1927	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1928	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1929	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1930	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,413	2,717	3,297	3,130	2,413	24,451
1931	1,729	1,208	1,167	1,104	1,042	1,489	1,872	1,838	2,069	2,511	2,384	1,838	20,250
1932	1,317	920	888	841	793	1,624	2,041	2,631	2,963	3,595	3,414	2,631	23,659
1933	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1934	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1935	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1936	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,588	2,914	3,536	3,357	2,588	25,462
1937	1,854	1,296	1,251	1,184	1,117	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,601
1938	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1939	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1940	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1941	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1942	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1943	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1944	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1945	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1946	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1947	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1948	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1949	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,172	2,446	2,968	2,818	2,172	23,055
1950	1,556	1,087	1,050	994	937	1,340	1,685	1,668	1,879	2,279	2,164	1,668	18,309
1951	1,195	835	806	763	720	1,030	1,294	1,253	1,411	1,713	1,626	1,253	13,901
1952	898	628	606	573	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	22,740
1953	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1954	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1955	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1956	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,450	2,759	3,348	3,179	2,450	24,665
1957	1,755	1,227	1,184	1,121	1,058	1,512	1,901	2,017	2,271	2,756	2,617	2,017	21,436
1958	1,445	1,010	975	923	871	1,245	2,041	2,631	2,963	3,595	3,414	2,631	23,744
1959	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1960	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1961	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,508	2,824	3,426	3,253	2,508	24,998
1962	1,797	1,256	1,212	1,147	1,082	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,394
1963	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1964	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1965	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,415	2,719	3,300	3,133	2,415	24,461
1966	1,730	1,209	1,167	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,346
1967	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1968	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1969	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1970	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1971	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1972	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1973	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1974	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1975	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1976	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1977	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1978	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1979	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1980	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1981	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1982	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1983	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1984	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1985	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1986	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1987	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1988	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1989	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,283	2,570	3,119	2,961	2,283	23,695
1990	1,635	1,143	1,103	1,044	985	1,409	1,771	1,710	1,926	2,337	2,218	1,710	18,991
1991	1,225	856	827	782	738	1,055	1,327	2,152	2,424	2,941	2,792	2,152	19,272
1992	1,542	1,078	1,040	985	929	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,474
1993	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
AVG	1,820	1,272	1,228	1,164	1,106	1,593	2,008	2,541	2,861	3,471	3,296	2,541	24,901
MEDIAN	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714

Cachuma Project Deliveries in Acre-feet - Alternative 3B (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1919	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1920	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1921	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1922	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1923	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1924	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1925	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,540	2,861	3,471	3,295	2,540	25,187
1926	1,820	1,272	1,228	1,162	1,096	1,568	1,971	2,631	2,963	3,595	3,414	2,631	25,351
1927	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1928	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1929	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1930	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,471	2,783	3,376	3,206	2,471	24,786
1931	1,770	1,237	1,194	1,131	1,067	1,525	1,917	1,904	2,144	2,601	2,470	1,904	20,863
1932	1,364	953	920	871	822	1,624	2,041	2,631	2,963	3,595	3,414	2,631	23,830
1933	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1934	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1935	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1936	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,578	2,903	3,523	3,345	2,578	25,407
1937	1,847	1,291	1,246	1,180	1,113	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,577
1938	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1939	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1940	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1941	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1942	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1943	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1944	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1945	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1946	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1947	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1948	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1949	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,221	2,501	3,034	2,881	2,221	23,337
1950	1,591	1,112	1,074	1,016	959	1,371	1,723	1,725	1,943	2,357	2,238	1,725	18,832
1951	1,236	864	834	789	745	1,065	1,338	1,310	1,475	1,789	1,699	1,310	14,452
1952	938	656	633	599	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	22,862
1953	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1954	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1955	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1956	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,506	2,822	3,424	3,251	2,506	24,987
1957	1,795	1,255	1,211	1,146	1,081	1,546	1,944	2,076	2,338	2,837	2,694	2,076	22,000
1958	1,488	1,040	1,004	950	896	1,281	2,041	2,631	2,963	3,595	3,414	2,631	23,934
1959	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1960	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1961	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,562	2,885	3,500	3,323	2,562	25,311
1962	1,835	1,283	1,238	1,172	1,106	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,534
1963	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1964	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1965	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,456	2,765	3,355	3,186	2,456	24,698
1966	1,759	1,230	1,187	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,415
1967	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1968	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1969	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1970	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1971	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1972	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1973	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1974	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1975	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1976	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1977	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1978	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1979	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1980	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1981	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1982	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1983	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1984	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1985	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1986	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1987	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1988	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1989	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,342	2,638	3,200	3,039	2,342	24,041
1990	1,678	1,173	1,132	1,072	1,011	1,445	1,817	1,777	2,001	2,427	2,305	1,777	19,614
1991	1,273	889	859	813	767	1,096	1,378	2,190	2,466	2,992	2,841	2,190	19,756
1992	1,569	1,097	1,059	1,002	945	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,572
1993	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
AVG	1,827	1,277	1,233	1,168	1,109	1,596	2,012	2,550	2,872	3,484	3,308	2,550	24,986
MEDIAN	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714

Cachuma Project Deliveries in Acre-feet - Alternative 3C (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1919	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1920	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1921	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1922	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1923	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1924	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1925	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,602	2,930	3,555	3,375	2,602	25,543
1926	1,864	1,303	1,258	1,190	1,123	1,606	2,018	2,631	2,963	3,595	3,414	2,631	25,597
1927	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1928	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1929	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1930	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,539	2,859	3,469	3,294	2,539	25,181
1931	1,819	1,271	1,227	1,162	1,096	1,567	1,970	2,014	2,268	2,752	2,613	2,014	21,772
1932	1,443	1,008	974	921	869	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,115
1933	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1934	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1935	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1936	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,603	2,931	3,556	3,376	2,603	25,547
1937	1,865	1,303	1,258	1,191	1,123	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,639
1938	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1939	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1940	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1941	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1942	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1943	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1944	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1945	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1946	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1947	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1948	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1949	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,324	2,617	3,175	3,014	2,324	23,932
1950	1,665	1,163	1,123	1,063	1,003	1,434	1,803	1,857	2,091	2,537	2,409	1,857	20,005
1951	1,330	930	898	850	801	1,146	1,441	1,455	1,638	1,988	1,887	1,455	15,819
1952	1,042	728	703	666	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	23,175
1953	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1954	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1955	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1956	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,559	2,881	3,496	3,319	2,559	25,294
1957	1,833	1,281	1,237	1,171	1,104	1,579	1,985	2,161	2,433	2,953	2,803	2,161	22,702
1958	1,548	1,082	1,045	989	933	1,334	2,041	2,631	2,963	3,595	3,414	2,631	24,206
1959	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1960	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1961	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,618	2,948	3,577	3,396	2,618	25,636
1962	1,876	1,311	1,265	1,198	1,130	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,679
1963	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1964	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1965	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,504	2,820	3,421	3,248	2,504	24,977
1966	1,794	1,254	1,210	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,498
1967	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1968	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1969	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1970	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1971	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1972	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1973	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1974	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1975	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1976	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1977	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1978	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1979	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1980	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1981	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1982	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1983	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1984	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1985	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1986	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1987	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1988	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1989	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,422	2,727	3,309	3,142	2,422	24,501
1990	1,735	1,213	1,171	1,108	1,045	1,495	1,879	1,896	2,135	2,590	2,459	1,896	20,621
1991	1,358	949	916	867	818	1,170	1,471	2,249	2,533	3,073	2,918	2,249	20,573
1992	1,612	1,126	1,087	1,029	971	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,725
1993	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
AVG	1,838	1,284	1,240	1,174	1,114	1,602	2,019	2,565	2,888	3,505	3,328	2,565	25,122
MEDIAN	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714

Cachuma Project Deliveries in Acre-feet - Alternative 4A&B (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1919	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1920	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1921	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1922	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1923	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1924	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1925	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1926	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1927	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1928	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1929	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1930	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,629	2,960	3,592	3,411	2,629	25,701
1931	1,884	1,316	1,271	1,203	1,135	1,622	2,039	2,055	2,316	2,819	2,676	2,057	22,394
1932	1,470	1,027	992	939	886	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,214
1933	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1934	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1935	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1936	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1937	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1938	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1939	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1940	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1941	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1942	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1943	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1944	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1945	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1946	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1947	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1948	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1949	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,461	2,772	3,365	3,195	2,461	24,734
1950	1,762	1,232	1,189	1,125	1,062	1,519	1,910	1,941	2,188	2,666	2,530	1,943	21,068
1951	1,388	970	937	887	836	1,198	1,508	1,483	1,674	2,049	1,944	1,487	16,363
1952	1,059	740	714	676	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	23,224
1953	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1954	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1955	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1956	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,592	2,919	3,543	3,363	2,592	25,489
1957	1,857	1,298	1,253	1,186	1,119	1,600	2,011	2,161	2,435	2,962	2,812	2,163	22,857
1958	1,547	1,081	1,044	988	932	1,334	2,041	2,631	2,963	3,595	3,414	2,631	24,201
1959	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1960	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1961	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,595	2,922	3,547	3,367	2,595	25,506
1962	1,859	1,299	1,254	1,187	1,120	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,620
1963	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1964	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1965	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,389	2,691	3,269	3,103	2,390	24,321
1966	1,711	1,195	1,154	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,300
1967	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1968	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1969	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1970	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1971	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1972	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1973	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1974	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1975	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1976	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1977	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1978	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1979	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1980	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1981	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1982	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1983	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1984	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1985	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1986	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1987	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1988	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1989	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,438	2,746	3,334	3,166	2,438	24,601
1990	1,746	1,220	1,178	1,115	1,052	1,504	1,892	1,899	2,141	2,609	2,476	1,901	20,731
1991	1,358	949	916	867	818	1,172	1,476	2,223	2,505	3,046	2,891	2,224	20,444
1992	1,591	1,112	1,074	1,016	959	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,652
1993	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
AVG	1,841	1,286	1,242	1,177	1,117	1,605	2,023	2,569	2,894	3,512	3,334	2,570	25,169
MEDIAN	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714

Cachuma Project Shortages in Acre-feet - Alternative 1 (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	0	0	0	0	0	0	0	0	0
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	0	0	0	0	0	0	0
1921	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	34	38	47	44	34	197
1926	24	17	16	16	15	21	26	0	0	0	0	0	136
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	81	91	111	105	81	468
1931	58	41	39	37	35	50	63	453	510	618	587	453	2,943
1932	324	227	219	207	195	0	0	0	0	0	0	0	1,172
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	224	253	306	291	224	1,299
1950	161	112	108	103	97	138	174	538	606	735	698	538	4,008
1951	385	269	260	246	232	332	417	851	958	1,162	1,104	851	7,068
1952	610	426	411	389	0	0	0	0	0	0	0	0	1,836
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	61	69	84	79	61	354
1957	44	31	30	28	26	38	47	343	387	469	445	343	2,232
1958	246	172	166	157	148	212	0	0	0	0	0	0	1,101
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	122	137	167	158	122	706
1990	87	61	59	56	53	75	95	492	554	672	638	492	3,331
1991	352	246	238	225	212	303	381	244	275	333	316	244	3,369
1992	175	122	118	112	105	0	0	0	0	0	0	0	632
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	32	23	22	21	15	15	16	45	51	62	59	45	406
MEDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0

Cachuma Project Shortages in Acre-feet - Alternative 2
(SYRHM simulation 1918-1993)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	0	0	0	0	0	0	0	0	0
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	0	0	0	0	0	0	0
1921	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	47	52	64	60	47	269
1926	33	23	23	21	20	29	36	0	0	0	0	0	185
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	144	162	196	186	144	831
1931	103	72	69	66	62	89	111	644	725	880	835	644	4,300
1932	461	322	311	295	278	0	0	0	0	0	0	0	1,668
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	4	5	5	5	4	23
1937	3	2	2	2	2	0	0	0	0	0	0	0	10
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	344	387	470	446	344	1,992
1950	247	172	166	157	148	212	267	768	865	1,050	997	768	5,819
1951	550	385	371	352	332	474	596	1,166	1,313	1,593	1,512	1,166	9,808
1952	835	584	563	533	0	0	0	0	0	0	0	0	2,515
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	108	121	147	140	108	624
1957	77	54	52	49	47	66	84	490	552	669	636	490	3,266
1958	351	245	237	224	211	302	0	0	0	0	0	0	1,571
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	6	7	8	8	6	34
1962	4	3	3	3	3	0	0	0	0	0	0	0	15
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	81	92	111	105	81	471
1966	58	41	39	0	0	0	0	0	0	0	0	0	138
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	212	239	290	275	212	1,229
1990	152	106	103	97	92	131	165	708	797	968	919	708	4,945
1991	507	355	342	324	306	437	549	358	403	490	465	358	4,894
1992	257	179	173	164	155	0	0	0	0	0	0	0	928
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	48	33	32	30	22	23	24	67	75	91	87	67	599
MEDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0

Cachuma Project Shortages in Acre-feet - Alternative 3A (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	0	0	0	0	0	0	0	0	0
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	0	0	0	0	0	0	0
1921	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	147	165	200	190	147	850
1926	105	73	71	67	63	91	114	0	0	0	0	0	584
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	218	246	298	283	218	1,263
1931	156	109	105	100	94	135	169	794	894	1,084	1,030	794	5,464
1932	569	397	384	363	343	0	0	0	0	0	0	0	2,055
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	44	49	59	56	44	252
1937	31	22	21	20	19	0	0	0	0	0	0	0	113
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	459	517	627	596	459	2,659
1950	329	230	222	210	198	283	356	963	1,085	1,316	1,249	963	7,405
1951	690	482	466	441	416	594	747	1,378	1,552	1,883	1,788	1,378	11,813
1952	987	690	666	630	0	0	0	0	0	0	0	0	2,974
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	181	204	248	235	181	1,049
1957	130	91	88	83	78	112	141	614	692	839	797	614	4,278
1958	440	308	297	281	265	379	0	0	0	0	0	0	1,970
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	124	139	169	160	124	716
1962	89	62	60	57	53	0	0	0	0	0	0	0	320
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	216	244	296	281	216	1,253
1966	155	108	105	0	0	0	0	0	0	0	0	0	368
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	349	393	476	452	349	2,019
1990	250	175	169	160	151	215	271	921	1,037	1,259	1,195	921	6,723
1991	660	461	445	421	398	569	715	479	539	654	621	479	6,442
1992	343	240	232	219	207	0	0	0	0	0	0	0	1,240
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	65	45	44	40	30	31	33	91	102	124	118	91	813
MEDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0

Cachuma Project Shortages in Acre-feet - Alternative 3B (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	0	0	0	0	0	0	0	0	0
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	0	0	0	0	0	0	0
1921	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	91	103	124	118	91	527
1926	65	46	44	42	39	56	71	0	0	0	0	0	363
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	160	181	219	208	160	928
1931	115	80	77	73	69	99	124	728	819	994	944	728	4,851
1932	521	364	352	333	314	0	0	0	0	0	0	0	1,884
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	53	60	72	69	53	307
1937	38	27	26	24	23	0	0	0	0	0	0	0	137
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	411	462	561	533	411	2,377
1950	294	206	198	188	177	253	318	906	1,021	1,238	1,176	906	6,882
1951	649	454	438	415	391	559	703	1,322	1,488	1,806	1,715	1,322	11,262
1952	947	662	639	605	0	0	0	0	0	0	0	0	2,852
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	126	141	172	163	126	727
1957	90	63	61	57	54	78	97	555	625	758	720	555	3,714
1958	398	278	268	254	240	343	0	0	0	0	0	0	1,780
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	70	78	95	90	70	403
1962	50	35	34	32	30	0	0	0	0	0	0	0	180
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	176	198	240	228	176	1,017
1966	126	88	85	0	0	0	0	0	0	0	0	0	299
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	289	325	395	375	289	1,673
1990	207	145	140	132	125	178	224	855	963	1,168	1,109	855	6,100
1991	612	428	413	391	369	528	663	441	497	603	572	441	5,958
1992	316	221	213	202	190	0	0	0	0	0	0	0	1,142
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	58	41	39	36	27	28	29	81	92	111	106	81	728
MEDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0

Cachuma Project Shortages in Acre-feet - Alternative 3C
(SYRHM simulation 1918-1993)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	0	0	0	0	0	0	0	0	0
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	0	0	0	0	0	0	0
1921	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	29	33	40	38	29	171
1926	21	15	14	13	13	18	23	0	0	0	0	0	117
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	92	104	126	119	92	533
1931	66	46	45	42	40	57	71	617	695	844	801	617	3,942
1932	442	309	298	282	266	0	0	0	0	0	0	0	1,599
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	29	32	39	37	29	167
1937	21	14	14	13	12	0	0	0	0	0	0	0	75
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	308	347	421	399	308	1,782
1950	221	154	149	141	133	190	239	774	872	1,058	1,005	774	5,709
1951	555	388	374	354	334	478	601	1,176	1,325	1,607	1,526	1,176	9,895
1952	843	589	569	538	0	0	0	0	0	0	0	0	2,539
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	73	82	99	94	73	420
1957	52	36	35	33	31	45	56	470	530	643	610	470	3,012
1958	337	236	227	215	203	290	0	0	0	0	0	0	1,508
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	14	15	19	18	14	78
1962	10	7	7	6	6	0	0	0	0	0	0	0	35
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	127	143	174	165	127	737
1966	91	64	62	0	0	0	0	0	0	0	0	0	216
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	209	236	286	272	209	1,213
1990	150	105	101	96	90	129	162	736	828	1,005	954	736	5,093
1991	527	368	356	337	317	454	571	382	430	522	495	382	5,141
1992	274	191	185	175	165	0	0	0	0	0	0	0	989
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	47	33	32	30	21	22	23	66	75	91	86	66	592
MEDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0

Cachuma Project Shortages in Acre-feet - Alternative 4A&B (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	0	0	0	0	0	0	0	0	0
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	0	0	0	0	0	0	0
1921	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	0	0	0	0	0	0
1926	0	0	0	0	0	0	0	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	2	3	3	3	2	13
1931	2	1	1	1	1	1	2	576	647	776	737	575	3,320
1932	415	290	280	265	250	0	0	0	0	0	0	0	1,500
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	171	192	230	218	170	980
1950	123	86	83	78	74	105	132	690	775	929	883	688	4,646
1951	497	347	335	317	299	426	533	1,148	1,289	1,546	1,469	1,144	9,351
1952	827	578	558	528	0	0	0	0	0	0	0	0	2,490
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	39	44	53	50	39	225
1957	28	20	19	18	17	24	30	470	528	633	601	469	2,857
1958	338	236	228	216	204	290	0	0	0	0	0	0	1,513
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	36	41	49	46	36	208
1962	26	18	18	17	16	0	0	0	0	0	0	0	94
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	242	272	326	310	242	1,393
1966	175	122	118	0	0	0	0	0	0	0	0	0	414
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	194	217	261	248	193	1,113
1990	139	97	94	89	84	120	150	733	822	987	938	730	4,983
1991	528	369	356	337	318	452	566	408	458	550	522	407	5,270
1992	294	205	198	188	177	0	0	0	0	0	0	0	1,062
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	45	31	30	27	19	19	19	62	70	83	79	62	545
MEDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0

Upstream Reservoirs Water Supply

From: Ali Shahroody <alis@stetsonengineers.com>
To: Andy Fecko <AFecko@waterrights.swrcb.ca.gov>
Date: Wed, Jul 23, 2003 4:50 PM
Subject: Fwd: SYRHM upper watershed water supply

Andy;

Attached are four tables with a brief explanation. Please call or send email if additional information is needed.

Regards, ALI

CC: Dana Differding <DDifferding@exec.swrcb.ca.gov>, Lewis Moeller <LMOELLER@waterrights.swrcb.ca.gov>, Curtis Lawler <curtisl@stetsonengineers.com>

Attached are the model results for water supply from the upper Santa Ynez River watershed. The results are the same for all of the EIR alternatives (1, 2, 3A-C, and 4A-B), and they consist of the following items:

- Diversions from Jameson Reservoir
  (Diversions from Alder Creek are included in the inflow to Jameson Reservoir.)
- Doulton Tunnel infiltration
  (It includes Fox Creek diversions.)
- Diversions from Gibraltar Reservoir
- Mission Tunnel infiltration
  (It includes Devils Canyon diversions.)

Diversions from Jameson Reservoir in Acre-feet - Alternatives 1 through 4
(SYRHM simulation 1918-1993)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1919	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1920	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1921	200	150	116	90	78	88	148	157	175	181	173	166	1,720
1922	151	113	87	68	78	88	148	208	232	240	230	220	1,862
1923	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1924	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1925	200	150	116	90	78	88	148	59	65	68	65	62	1,189
1926	56	42	33	25	22	25	42	208	232	240	230	220	1,376
1927	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1928	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1929	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1930	200	150	116	90	78	88	148	71	80	82	79	75	1,258
1931	69	51	40	31	27	30	51	32	36	37	36	34	474
1932	31	23	18	14	12	88	148	208	232	240	230	220	1,464
1933	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1934	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1935	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1936	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1937	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1938	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1939	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1940	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1941	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1942	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1943	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1944	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1945	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1946	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1947	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1948	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1949	200	150	116	90	78	88	148	76	84	87	84	80	1,280
1950	73	54	42	33	28	32	54	53	59	61	58	56	602
1951	51	38	29	23	20	22	37	17	19	20	19	18	312
1952	16	12	9	7	78	88	148	208	232	240	230	220	1,489
1953	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1954	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1955	200	150	116	90	78	88	148	88	98	101	97	93	1,346
1956	84	63	49	38	33	37	62	63	70	73	70	67	708
1957	61	45	35	27	24	27	45	62	69	72	69	66	600
1958	60	45	35	27	23	88	148	208	232	240	230	220	1,555
1959	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1960	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1961	200	150	116	90	78	88	148	68	76	79	75	72	1,240
1962	65	49	38	29	26	88	148	208	232	240	230	220	1,573
1963	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1964	200	150	116	90	78	88	148	131	146	151	145	139	1,582
1965	126	95	73	57	49	55	93	109	121	125	120	115	1,138
1966	104	78	116	90	78	88	148	208	232	240	230	220	1,833
1967	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1968	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1969	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1970	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1971	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1972	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1973	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1974	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1975	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1976	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1977	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1978	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1979	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1980	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1981	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1982	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1983	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1984	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1985	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1986	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1987	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1988	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1989	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1990	200	150	116	90	78	88	148	43	48	50	48	46	1,104
1991	41	31	24	19	16	18	148	208	232	240	230	220	1,428
1992	200	150	116	90	78	88	148	208	232	240	230	220	2,000
1993	200	150	116	90	78	88	148	208	232	240	230	220	2,000
AVG	176	132	103	80	70	82	139	183	204	211	203	194	1,778
MEDIAN	200	150	116	90	78	88	148	208	232	240	230	220	2,000

Doulton Tunnel Infiltration in Acre-feet - Alternatives 1 through 4 (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	53	48	44	40	31	97	88	99	92	86	80	74	832
1919	69	64	60	56	52	49	46	44	41	39	37	36	593
1920	16	15	14	13	20	27	31	29	27	26	24	23	265
1921	21	20	20	20	15	17	17	33	31	28	26	24	272
1922	22	20	14	49	88	109	121	114	104	96	89	82	908
1923	76	70	52	47	50	46	56	52	48	44	40	37	618
1924	34	31	29	26	25	23	21	20	18	17	17	17	278
1925	12	12	12	12	12	12	13	13	13	13	13	13	150
1926	13	13	13	13	10	31	70	83	77	72	67	62	524
1927	58	54	51	48	62	70	89	82	76	71	66	61	788
1928	57	54	50	47	31	28	26	24	23	21	20	18	399
1929	17	17	17	17	17	17	17	17	17	17	17	17	204
1930	13	13	13	13	13	13	13	13	13	13	13	13	156
1931	13	13	13	13	13	13	13	14	13	13	13	13	157
1932	11	11	10	43	72	86	82	76	71	66	61	57	646
1933	54	50	47	31	29	27	25	23	21	20	19	18	364
1934	17	17	17	10	27	26	24	23	29	27	25	24	266
1935	23	22	30	10	30	53	49	64	60	56	53	49	499
1936	46	44	41	39	19	43	45	41	39	37	34	32	460
1937	30	28	34	34	52	95	86	98	90	83	77	71	778
1938	66	62	58	54	65	112	109	119	109	100	92	85	1,031
1939	79	73	58	54	49	46	42	39	36	34	32	30	572
1940	28	26	25	23	18	17	17	17	17	17	17	17	239
1941	40	35	28	46	47	50	27	85	142	130	122	84	836
1942	112	55	53	76	45	47	62	45	17	53	38	49	652
1943	18	54	38	21	21	27	27	134	88	60	59	68	615
1944	77	71	66	51	45	40	84	78	43	33	61	54	703
1945	49	46	47	49	50	42	41	53	74	67	59	46	623
1946	46	52	41	36	47	34	55	68	76	57	35	44	591
1947	47	48	42	43	37	49	51	21	20	20	20	20	418
1948	20	20	20	20	20	21	19	27	17	20	11	9	224
1949	10	10	10	10	10	10	10	10	10	10	10	10	120
1950	10	10	10	25	25	25	25	11	11	10	10	10	182
1951	10	10	10	10	10	15	15	10	10	10	10	10	130
1952	10	10	10	56	74	74	74	74	80	108	115	113	798
1953	110	110	74	72	69	79	24	12	27	21	25	22	645
1954	24	27	34	34	25	32	53	51	41	34	21	21	397
1955	38	36	36	36	32	36	35	38	32	31	31	31	412
1956	31	31	31	31	25	25	25	25	25	25	25	25	324
1957	25	25	25	25	25	25	25	25	25	25	25	25	300
1958	25	25	25	25	25	90	187	153	76	72	67	57	827
1959	57	47	38	37	29	35	44	24	22	37	10	17	397
1960	17	11	13	24	19	16	14	12	7	10	8	9	160
1961	8	14	9	10	8	10	12	11	10	29	33	28	182
1962	22	30	21	19	59	84	74	53	48	52	37	44	543
1963	45	27	25	12	24	20	26	22	29	18	21	27	296
1964	18	24	24	23	31	22	15	12	22	19	10	7	227
1965	8	19	24	11	5	17	9	23	20	12	4	12	164
1966	16	21	43	79	60	49	36	19	23	12	29	25	412
1967	12	25	58	65	71	80	125	151	119	81	78	71	936
1968	56	59	39	41	25	44	36	22	34	39	78	61	534
1969	33	43	43	38	106	189	145	115	86	88	81	59	1,026
1970	53	57	39	46	42	84	39	25	33	26	31	27	502
1971	28	25	30	55	50	52	43	46	34	25	32	27	447
1972	21	18	24	53	43	39	38	33	31	31	33	28	392
1973	29	40	37	38	102	246	225	177	115	102	84	73	1,268
1974	67	58	63	57	73	78	80	82	76	74	58	53	819
1975	55	47	50	54	52	93	107	90	86	85	72	58	849
1976	56	53	49	49	50	63	51	54	46	50	44	40	605
1977	40	42	36	43	31	32	29	36	36	18	24	25	392
1978	26	19	18	57	102	172	164	158	96	81	78	65	1,036
1979	57	57	54	45	43	58	92	71	75	66	68	51	737
1980	54	33	25	28	53	132	114	99	80	62	63	61	804
1981	39	30	27	69	26	35	18	62	31	53	39	37	466
1982	43	39	30	28	28	32	49	60	56	39	42	36	482
1983	23	29	34	64	104	208	194	137	89	84	84	66	1,116
1984	34	80	95	78	78	107	83	85	73	71	75	56	915
1985	57	39	31	28	30	49	47	55	46	52	62	53	549
1986	56	33	61	64	64	85	93	95	71	98	83	72	875
1987	84	79	71	84	47	81	58	32	40	34	50	39	699
1988	37	46	55	113	36	32	31	53	15	33	34	39	524
1989	44	50	60	72	32	21	24	42	40	35	33	43	496
1990	42	43	46	57	54	61	53	51	33	41	43	20	544
1991	20	20	24	22	23	27	82	62	21	44	35	57	437
1992	34	35	26	41	38	70	43	36	48	42	24	22	459
1993	24	28	20	79	133	178	165	152	96	70	47	32	1,024
AVG	37	36	35	40	42	58	58	57	48	46	43	40	541
MEDIAN	34	32	33	40	34	44	44	46	38	38	35	36	513

Diversions from Gibraltar Reservoir in Acre-feet - Alternatives 1 through 4 (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1919	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1920	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1921	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1922	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1923	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1924	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1925	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1926	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1927	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1928	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1929	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1930	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1931	527	431	431	403	385	518	536	395	83	0	0	0	3,707
1932	0	100	431	403	385	518	536	582	481	124	101	64	3,723
1933	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1934	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1935	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1936	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1937	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1938	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1939	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1940	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1941	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1942	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1943	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1944	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1945	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1946	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1947	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1948	527	431	431	403	385	518	536	582	481	124	101	1	4,516
1949	0	0	0	0	19	518	536	181	0	0	0	0	1,253
1950	0	0	0	386	385	518	536	582	396	0	0	0	2,802
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	403	385	518	536	582	481	124	101	64	3,192
1953	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1954	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1955	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1956	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1957	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1958	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1959	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1960	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1961	527	431	431	403	385	518	536	109	0	0	0	0	3,338
1962	0	0	100	109	385	518	536	582	481	124	101	64	2,998
1963	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1964	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1965	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1966	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1967	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1968	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1969	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1970	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1971	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1972	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1973	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1974	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1975	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1976	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1977	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1978	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1979	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1980	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1981	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1982	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1983	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1984	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1985	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1986	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1987	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1988	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1989	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1990	527	431	364	0	0	0	0	0	0	0	0	0	1,321
1991	0	0	0	0	0	0	536	582	481	124	101	64	1,887
1992	527	431	431	403	385	518	536	582	481	124	101	64	4,580
1993	527	431	431	403	385	518	536	582	481	124	101	64	4,580
AVG	478	392	397	378	365	497	522	552	449	114	93	58	4,295
MEDIAN	527	431	431	403	385	518	536	582	481	124	101	64	4,580

Mission Tunnel Infiltration in Acre-feet - Alternatives 1 through 4
(SYRHM simulation 1918-1993)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	149	143	137	131	132	177	170	162	156	149	143	137	1,786
1919	131	126	121	116	112	108	104	100	97	93	90	87	1,285
1920	84	82	79	77	75	88	89	86	84	81	79	76	980
1921	74	72	70	68	69	76	75	85	82	80	77	75	903
1922	73	71	79	101	127	142	138	134	129	124	119	114	1,351
1923	110	106	102	107	109	105	111	107	103	100	96	93	1,249
1924	90	87	84	81	79	77	74	72	70	68	67	65	914
1925	63	62	60	59	58	57	56	62	61	60	59	57	714
1926	56	55	54	53	53	52	91	88	85	82	80	77	826
1927	75	73	71	69	99	104	104	100	97	94	90	87	1,063
1928	85	82	79	77	77	87	85	84	82	79	77	74	968
1929	72	70	68	67	65	72	77	74	73	71	69	67	845
1930	65	64	62	61	59	63	63	65	64	63	61	60	750
1931	58	57	56	55	54	53	52	57	56	55	54	53	660
1932	52	51	56	72	105	102	99	97	94	90	87	85	990
1933	82	79	77	77	74	73	71	69	70	68	66	65	871
1934	63	62	60	59	69	67	65	64	67	65	64	62	767
1935	61	59	58	69	72	86	98	95	92	89	86	83	948
1936	81	78	76	74	81	87	88	85	82	80	77	75	964
1937	73	71	69	82	104	131	126	121	116	112	108	104	1,217
1938	100	96	93	90	115	163	161	155	148	142	136	131	1,530
1939	125	120	116	111	107	120	115	112	108	104	100	96	1,334
1940	93	90	87	84	83	85	87	84	82	79	77	75	1,006
1941	72	70	69	90	148	201	219	209	200	191	182	174	1,825
1942	166	159	153	146	140	134	142	136	131	126	121	116	1,670
1943	112	108	104	132	149	159	156	150	143	137	132	127	1,609
1944	122	117	112	108	139	141	141	135	130	124	120	115	1,504
1945	111	107	103	99	97	112	108	104	101	97	94	91	1,224
1946	88	85	82	80	77	101	97	94	91	88	85	82	1,050
1947	80	77	75	73	71	72	71	69	67	66	64	62	847
1948	61	60	58	57	56	55	54	53	52	51	50	49	656
1949	49	48	47	47	46	46	45	45	45	44	44	44	550
1950	43	43	42	42	42	42	47	46	46	45	45	44	527
1951	44	43	43	42	42	42	41	41	41	41	40	40	500
1952	40	40	39	105	104	139	140	134	129	124	119	114	1,227
1953	110	106	102	98	95	92	92	90	88	85	82	80	1,120
1954	77	75	73	71	69	85	83	81	78	76	74	72	914
1955	70	68	66	64	65	66	80	79	77	74	72	70	851
1956	68	67	65	66	68	66	81	85	83	80	78	75	882
1957	73	71	69	67	66	64	71	74	72	70	68	66	831
1958	64	63	61	65	107	135	169	164	157	150	144	138	1,417
1959	133	127	122	117	118	114	111	107	103	100	96	93	1,341
1960	90	87	84	81	79	76	75	73	71	69	67	65	917
1961	64	62	61	59	58	57	56	55	54	53	52	51	682
1962	50	49	49	48	111	113	109	105	101	98	94	91	1,018
1963	88	85	82	80	77	75	83	81	80	78	75	73	957
1964	71	69	67	66	64	63	61	60	58	57	56	55	747
1965	54	53	52	51	50	50	74	73	71	69	67	65	729
1966	64	69	98	102	101	99	95	92	89	86	83	81	1,059
1967	78	76	80	105	101	120	139	134	128	123	118	114	1,316
1968	110	106	102	98	95	91	89	86	83	81	78	76	1,095
1969	74	72	70	136	191	188	189	180	172	165	158	151	1,746
1970	145	139	133	128	123	126	121	117	112	108	104	100	1,456
1971	97	93	102	102	104	100	99	98	94	91	88	85	1,153
1972	82	80	77	76	74	72	71	70	68	66	64	63	863
1973	61	60	59	71	118	128	123	118	114	109	105	101	1,167
1974	98	94	91	102	98	113	111	107	103	99	96	93	1,205
1975	90	87	84	81	84	111	114	110	106	102	98	95	1,162
1976	92	89	86	83	80	78	76	74	72	70	68	67	935
1977	65	63	62	60	59	58	57	57	56	55	54	53	699
1978	52	51	50	71	116	172	178	170	163	156	150	143	1,472
1979	137	132	127	122	133	152	145	139	134	128	123	119	1,591
1980	136	97	91	111	156	183	80	189	63	182	174	146	1,608
1981	169	164	172	133	148	151	42	87	142	133	123	101	1,565
1982	123	121	104	53	58	58	238	218	112	121	117	85	1,408
1983	84	86	115	115	169	275	227	330	336	226	172	240	2,375
1984	126	123	141	159	164	139	150	171	138	135	124	154	1,724
1985	109	114	102	82	110	195	172	127	76	101	49	34	1,271
1986	34	52	46	75	164	202	145	138	77	70	65	55	1,123
1987	67	75	82	83	72	89	48	38	54	38	79	16	741
1988	77	87	81	105	100	156	117	125	109	112	124	85	1,278
1989	85	112	109	100	81	113	86	83	64	77	84	67	1,061
1990	32	43	44	47	44	66	44	43	37	37	37	37	511
1991	37	37	37	54	47	93	155	107	95	80	51	33	826
1992	69	33	48	49	126	176	190	175	163	96	107	48	1,280
1993	75	112	111	217	190	313	327	314	211	165	129	122	2,286
AVG	84	82	82	86	95	109	108	108	99	95	91	86	1,125
MEDIAN	77	77	78	80	90	100	96	95	89	87	84	79	1,060

APPENDIX F

Hydrologic Modeling Technical Memoranda Nos. 5–7
(Stetson Engineers, 2006)

Draft Technical Memorandum No. 5
Hydrologic Impact Analysis of
Possible Cachuma Operations Alternatives

D R A F T
TECHNICAL MEMORANDUM No. 5

2171 E. Francisco Blvd., Suite K • San Rafael, California • 94901
TEL: (415) 457-0701 FAX: (415) 457-1638 E-mail: alis@stetsonengineers.com

TO:	Ernest Mona State Water Resources Control Board	**DATE:**	August 11, 2005 rev. October 2, 2006
	cc: Diane Riddle (SWRCB) Dana Heinrich (SWRCB) David Fee (URS)		
FROM:	Ali Shahroody and Curtis Lawler	**JOB NO:**	1893
RE:	Hydrologic Impact Analysis of Possible Cachuma Operations Alternatives		

1. INTRODUCTION

Three variations of CalTrout's proposed Alternative 3A2 were identified for analysis by the State Water Resources Control Board's (SWRCB) staff. The additional analyses requested by the Board staff (12/20/04) were in connection with the Draft Environmental Impact Report (DEIR) on the "Consideration of Modifications to the U.S. Bureau of Reclamation's Water Right Permits 11308 and 11310 (Applications 11331 and 11332) To Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir)" dated August 2003. The three possible alternatives (identified as Alternatives 5A, 5B and 5C) are essentially identical to the DEIR Alternatives 3A, 3B and 3C except that the new alternatives would use the CalTrout Alternative 3A2 operating criteria for releases from Cachuma Reservoir for fish during wet and above-normal water year types. Otherwise, during below-normal, dry, and critical year types, the releases would be the same as Alternatives 3A, 3B and 3C of the Draft EIR as set forth in the Biological Opinion (BO).

Hydrologic impact analyses were performed using the Santa Ynez River Hydrology Model (SYRHM) to determine impacts to water supply of Cachuma Project Member Units. Included in this memorandum are the results of hydrologic impact analyses (similar to those presented in the Draft EIR) for:

- Cachuma Reservoir Releases
- Cachuma Storage and Elevations
- Santa Ynez River Flows

- Groundwater Storage in the Above Narrows Alluvial Basin
- Water Rights Releases (WR 89-18)
- Member Unit's Supply and Demand
- State Water Project Deliveries

2. ANALYSIS OF NEW ALTERNATIVES

2A. BACKGROUND

The Draft EIR alternatives are briefly described below for reference, followed by a brief description of the three possible new Alternatives 5A, 5B, and 5C.

Draft EIR Alternatives

The alternatives included in the Draft EIR are described as follows:

1. Operations under the Order WR 89-18.

2. Current operations under Orders WR 89-18 and 94-5 and the Biological Opinion interim flow requirements (environmental baseline conditions and the no project alternative).

3A. Operations under the Biological Opinion assuming the U.S. Bureau of Reclamation (USBR) achieves a 3.0-foot surcharge, except that releases for fish rearing and passage will be provided with current 0.75-foot surcharge.

3B. Operations under the Biological Opinion assuming USBR achieves a 3.0-foot surcharge, except that releases for fish rearing and passage will be provided with a 1.8-foot surcharge.

3C. Operations under the Biological Opinion assuming USBR achieves a 3.0-foot surcharge.

4A. Operations under the Biological Opinion assuming USBR achieves a 3.0-foot surcharge and provision of State Water Project (SWP) water directly to the City of Lompoc in exchange for water available for ground-water recharge in the Below Narrows Account established by Order WR 73-37, as amended by Order WR 89-18.

4B. Operations under the Biological Opinion assuming USBR achieves a 3.0-foot surcharge and discharge of SWP water to the river near Lompoc in exchange for water available for groundwater recharge in the Below

Narrows Account established by Order WR 73-37, as amended by Order WR 89-18.

<u>Three New Alternatives:</u>

The three new alternatives identified for analysis are described as follows:

5A. Operations under the proposed CalTrout Alternative 3A2 during wet and above-normal water year types, with operations under the Biological Opinion during below-normal, dry and critical water year types, assuming USBR achieves a 3.0-foot surcharge, except that releases for fish rearing and passage will be provided with current 0.75-foot surcharge.

5B. Operations under the proposed CalTrout Alternative 3A2 during wet and above-normal water year types, with operations under the Biological Opinion during below-normal, dry and critical water year types, assuming USBR achieves a 3.0-foot surcharge, except that releases for fish rearing and passage will be provided with a 1.8-foot surcharge.

5C. Operations under the proposed CalTrout Alternative 3A2 during wet and above-normal water year types, with operations under the Biological Opinion during below-normal, dry and critical water year types, assuming USBR achieves a 3.0-foot surcharge.

2B. MODIFICATION OF FLASHBOARDS FOR 3-FOOT SURCHARGE

Historically, Cachuma Reservoir was filled to the lake elevation of 750 feet with the one-foot flashboards providing freeboard at the top of the four radial gates. In year 1998, USBR used 0.75 feet of the flashboards to increase the reservoir storage to a new elevation of 750.75 feet, leaving 0.25 feet of freeboard when the four radial gates at the spillway were closed. Similarly, USBR surcharged the reservoir by about 0.75 feet in years 2000 and 2001.

USBR replaced the one-foot flashboards with 4-foot flashboards in 2004. The new flash boards were constructed as extensions at the top of existing radial gates. The new flashboards will be used to surcharge 3.0 feet of storage above the historical lake elevation of 750 feet while providing one foot of freeboard.

In February 2004, County of Santa Barbara (County), Cachuma Conservation Release Board (CCRB), Improvement District No. 1 (ID No. 1), and Santa Barbara County Water Agency (SBCWA) entered into a Memorandum of Understanding (MOU) on the reservoir surcharge and recreational resources at the lake. The MOU allowed USBR to surcharge

Cachuma Reservoir by 1.8 feet after April 1, 2004. The County agreed to modify the boat launch ramp to raise it to 751.8 feet elevation prior to that date. USBR was allowed to surcharge the reservoir by 3.0 feet five years from the execution of the MOU or upon relocation of the County park's water treatment plant and associated facilities, whichever occurs first.

With the storm events of late December 2004 and early January 2005, Cachuma Reservoir spilled on January 10, 2005. The winter storm operations at Bradbury Dam provided an opportunity to observe the lake elevation near 753 feet in relation to the County park facilities. On January 14, 2005, a survey of the water treatment plant, intake facility and boat launch area was undertaken by Stetson Engineers while the lake elevation was held at 753.1 feet. Based on the results of January 14, 2005 survey, the parties agreed to revise the February 2004 MOU. According to the revised MOU (2005), CCRB and ID No. 1 agreed to construct a barrier (gabion) to protect water treatment plant from damage due to potential wave run-up. The revised MOU allowed USBR to raise the lake elevation to 752.47 starting in 2005. The revised MOU also provided that the County will complete the modification of the boat launch ramp to accommodate the lake elevation of 753.0 feet by February 14, 2009.

With the surcharge of Cachuma Reservoir to 2.47 feet (actual surcharge was 2.32 feet) in 2005, USBR and Cachuma Member Unites (CCRB and ID No. 1) have initiated releases to meet the long-term flow requirements under the Biological Opinion, which are set for the 3.0-foot surcharge. As a result of above events, the reservoir was not operated under the 1.8-foot surcharge.

The SWRCB staff has indicated that Alternative 2 is the baseline for the CEQA analysis and provides a conservative representation of existing conditions for the water supply impact analysis in this technical memorandum (7/22/05). The surcharge analyses for 1.8 feet (Alternative 3B) and 3.0 feet (Alternative 3C) would provide a range for the 2.47-foot surcharge for the purpose of impact evaluation. The SWRCB staff has requested to delete Alternatives 1 and 3A because those conditions do not exist any more (6/9/05). Similarly, the new Alternative 5A is deleted. The SWRCB staff has also requested (6/9/05) to delete Alternative 4A because the City of Lompoc is not agreeable to this arrangement which makes the alternative infeasible.

In light of the present surcharge, the SWRCB staff has requested to undertake a sensitivity analysis in relation to the 2.47-foot surcharge (8/2/05). The results of sensitivity analysis are presented in Section 4 of this technical memorandum.

2C. MODELING OF ALTERNATIVES

The SYRHM was utilized for the hydrologic analysis of the alternatives. Stetson's Technical Memoranda (Dec. 2000, revised Dec. 2001) provide an overview of the SYRHM and modeling results prepared for the SWRCB Draft EIR (August 2003) which included hydrologic analyses for the seven alternatives (Alternatives 1, 2, 3A, 3B, 3C, 4A and 4B). The model documentation is provided in the "Santa Ynez River Hydrology Model Manual" dated April 2004.

The proposed releases from Cachuma Reservoir for fish in the Draft EIR alternatives (Alternatives 3A, 3B, 3C, 4A and 4B) are based on the Biological Opinion by the National Marine Fisheries Service (NOAA Fisheries) (Sep. 2000) and the Lower Santa Ynez River Fish Management Plan (FMP) (Oct. 2000). According to the Biological Opinion, these long-term releases would begin when the reservoir is surcharged 3.0 feet as shown in Table 1.

TABLE 1
PROPOSED PROJECT REARING TARGET FLOWS

Lake Storage Conditions (acre-feet)	Reservoir Spill? (AF = acre-feet)	Long Term Target Flow (cfs)	Long Term Target Site
> 120,000	Spill is greater than 20,000 AF	10[1]	Highway 154
> 120,000	Spill is greater than 20,000 AF	1.5 (if steelhead present)[2]	Alisal Road
> 120,000	No spill or spill is less than 20,000 AF	5	Highway 154
> 120,000	If spill greater than 20,000 AF in <u>previous year</u>	1.5 (if steelhead present)[2]	Alisal Road
30,000 - 120,000	No spill	2.5	Highway 154
< 30,000	No spill	Periodic release; < or = 30 AF/month[3]	Stilling basin & long pool

[1]*Only up to 10 cfs will be released from Cachuma Reservoir to meet target flows if reservoir is not spilling or WR 89-18 releases are not being made.*

[2]*Only if steelhead are present in the Alisal Reach.*

[3]*Reclamation must also consult with NMFS in this situation.*

In addition to the above long-term flow targets, the Biological Opinion requires a 2 cfs target flow in Hilton Creek as part of the terms and conditions to implement reasonable and prudent measure No. 2. Once the 3.0-foot surcharge is achieved, an additional amount of about 9,200 acre-feet of water will be stored in Cachuma Reservoir. According to the Biological Opinion, up to 3,200 acre-feet of the surcharge will be dedicated to the fish passage account and 500 acre-feet will be allocated to the adaptive management account. The remaining surcharge water (5,500 acre-feet) will be dedicated for the mainstem rearing target flows. The water in these two accounts is allowed to carryover from one year to the next; however, the accounts are deemed to spill first and are then reset to their maximum amount of 3,700 acre-feet. Water in the passage account would be used to supplement naturally occurring storms by augmenting the descending limb of the storm hydrograph in the Santa Ynez River downstream of Bradbury Dam.

The variation in the possible Cachuma Operations Alternatives 5B and 5C from the Draft EIR Alternatives 3B and 3C operations for fish and downstream habitat is the incorporation of the release criteria under the proposed CalTrout Alternative 3A2 during wet and above-normal year types. The origin of the CalTrout Alternative 3A2 is from the Cachuma Contract Renewal EIS/EIR (1995). The 1995 EIS/EIR describes Alternative 3A2 as follows (pg. 6.1-11):

> **Alternative 3A2** involves operation of Lake Cachuma with releases to maintain the following minimum streamflows at selected locations downstream of the dam in order to improve steelhead habitat and general aquatic and riparian habitat conditions.
>
> - 48 cfs 15 February to 14 April, then
> - 20 cfs to 1 June, then
> - 25 cfs for one week, then
> - Ramp releases to 10 cfs by 30 June, then
> - Hold at 10 cfs to 1 October, then
> - 5 cfs for the rest of the year.
>
> Under this alternative, the above flows are to be maintained at both San Lucas and Alisal bridges. These flows would be created by both natural streamflow and releases from the dam.

Figure 1 shows the flow requirements under Alternative 3A2. Please note that the rearing flow targets under Alternative 3A2 for July to January are similar to the long-term targets of the BO/FMP in a spill year (spill of greater than 20,000 acre-feet) in which rearing flows would be 10 cfs after the spill and then 5 cfs starting in the next water year when the storage in Cachuma Reservoir remains above 120,000 acre-feet. However, Alternative 3A2 has these flow requirements (10 and 5 cfs) at both the Highway 154 Bridge (San Lucas Bridge) and the Alisal Bridge, while the long-term BO/FMP has these flow requirements at the Highway 154 Bridge with 1.5 cfs flows at Alisal Bridge in the spill year and year after spill. Other major differences between Alternative 3A2 releases and the long-term BO/FMP releases are that the BO/FMP fish flow targets at the Highway 154 Bridge drop to 2.5 cfs (no target requirements at the Alisal Bridge) when Cachuma storage recedes below 120,000 acre-feet. The long-term BO/FMP uses a different strategy for passage flows for steelhead. The operating criteria under Alternative 3A2 use steady releases for passage regardless of the occurrence of storm events while the long-term BO/FMP plan for passage releases is based on augmenting the descending limb of a storm hydrograph in non-spill years and non-dry years.

The Alternative 3A2 operating criteria for fish water releases has been shown to have significant water supply impacts to the Project Member Units in both studies performed for the 1995 Cachuma Contract EIS/EIR and the 2003 SWRCB hearings. Variations of Alternative 3A2 have been suggested to reduce the water supply impacts to the Member Units. In the 2003 SWRCB hearings, CalTrout proposed a variation called "3A2 Adjusted for Dry Years."

2D. DESCRIPTION OF ALTERNATIVES 5B AND 5C

The new Alternatives 5B and 5C are variants of the CalTrout Alternative 3A2. These alternatives would operate under two different sets of hydrologic conditions for releases of water from Cachuma Reservoir for fish. In years when the runoff condition is determined to be wet or above normal, the criteria for fish water releases would be based on the proposed CalTrout Alternative 3A2. In other years when the runoff condition is determined to be below normal, dry, or critical, the criteria for fish water releases would be under the long-term BO/FMP. The attempt is to reduce the impacts to water supplies by switching to the long-term BO/FMP operating criteria in years of below-normal, dry, and critical runoff conditions. In years of wet and above-normal runoff conditions, the releases would be under the proposed CalTrout 3A2 operating criteria.

2E. SANTA YNEZ RIVER HYDROLOGIC YEAR CLASSIFICATION

The water year hydrologic classification for the Santa Ynez River is based on inflows to Cachuma Reservoir for the period 1918-1993 (76 years). Cachuma Reservoir inflows are from the SYRHM used in the analysis of the Draft EIR alternatives. The water year types are defined consistent with the SWRCB classification method and Cachuma Reservoir inflows are used as an index for water year classification. Figure 2 shows a frequency analysis of Cachuma Reservoir inflows, which includes operations of Jameson and Gibraltar and 50% cloud seeding. Water year classification was conducted to determine five water-year types based on roughly twenty-percentile grouping of ranked data. The developed five-water year types are shown in Table 2 below:

TABLE 2
CACHUMA RESERVOIR INFLOW INDEX FOR WATER YEAR CLASSIFICATION

Water Year Classification	Index (Cachuma Reservoir Inflow) (AF)
Wet	Greater than 117,842
Above Normal	Equal to or less than 117,842 and greater than 33,707
Below Normal	Equal to or less than 33,707 and greater than 15,366
Dry	Equal to or less than 15,366 and greater than 4,550
Critical	Equal to or less than 4,550

2F. MODEL ANALYSIS OF ALTERNATIVES 5B AND 5C

For the purpose of modeling the new Alternatives 5B and 5C, the following reservoir operating criteria had to be programmed in the SYRHM. Once the cumulative annual inflow into Cachuma Reservoir exceeds 33,707 acre-feet, then the proposed CalTrout Alternative 3A2 flows shown in Figure 1 would become the operating criteria for fish water releases. Figure 3 shows the SYRHM operating criteria for fish water releases from Cachuma Reservoir for the possible new Alternatives 5B and 5C. Please note that at the beginning of a water year, it is not known what type of water year it would be, so Alternative 3A2 flows would be triggered when the cumulative Cachuma inflow (from October 1) of 33,307 acre-feet is reached. For example, based on the SWRCB classification the water year 1991 would be classified as an above-normal year, but until the March "Miracle" storm, it was not known whether that year would be above normal. The March storm also occurred at the end of a long drought period in the late 80s and early 90s. Table 3 shows the months in which the runoff conditions for wet and above-normal year types are met. The probability of reaching the wet or above-normal year classification is highest in the month of February. According to Table 3, about 70% of these year classes (wet or above-normal) would be known by February or earlier.

TABLE 3
NUMBER OF OCCURRENCES OF WHEN INFLOW INTO CACHUMA RESERVOIR REACHES WATER YEAR WET/ABOVE-NORMAL CLASSIFICATION (>33,707 AF)

Month	Occurrence (1918-1993)	Frequency Percentage
Dec	2	6%
Jan	7	23%
Feb	13	42%
Mar	4	13%
Apr	4	13%
May	1	3%
Total	**31**	**100%**

At all other times when the cumulative inflow (from October 1) to Cachuma Reservoir has not reached the wet or above-normal year classification, the operating criteria for fish water releases in Alternatives 5B and 5C would be the same as the long-term BO/FMP. These criteria are based on meeting the Highway 154 Bridge target flows of 5.0 cfs when storage is greater than 120,000 acre-feet and 2.5 cfs when storage is less than 120,000 acre-feet. Releases would still be limited to 30 acre-feet per month when storage is less than 30,000 acre-feet. Also there would still be the minimum target flow of 2 cfs in Hilton Creek, the 1.5 cfs target flow at Alisal Bridge in the year after a spill year of 20,000 acre-feet or greater, and the passage and adaptive management accounts of 3,700 acre-feet. The new alternatives (Alternatives 5B and 5C) have the same criteria for releases for fish, except that under Alternatives 5B and 5C, Cachuma Reservoir would be surcharged to 1.8 feet and 3.0 feet, respectively (similar to the Draft EIR Alternatives 3B and 3C). Aside from the above changes in the criteria for releases of fish water from Cachuma Reservoir, all other modeling assumptions and limitations in the SYRHM are the same for these new Alternatives 5B and 5C. The model analysis for Alternatives 5B and 5C is consistent with the previous hydrologic analyses performed for the August 2003 SWRCB Draft EIR.

3. SYRHM RESULTS

3A. CACHUMA RESERVOIR OPERATIONS

Key hydrologic characteristics of Cachuma Reservoir operations for the new Alternatives 5B and 5C as well as the Draft EIR Alternatives 2, 3B, 3C, and 4B are shown in Table 4 for the hydrologic period 1918-1993. Table 4 shows that on average over the 76-year period, the total amount of water discharged from Cachuma Reservoir, as spills and leakage, water right releases, and releases for fish, is relatively the same (except for Alt. 4B) or with less than 2% variation. For example, the total discharge from Bradbury Dam on average ranges from 43,867 to 44,167 acre-feet per year in Alternatives 3B and 3C and ranges from 44,092 to 44,388 acre-feet per year in Alternatives 5B and 5C. Table 4 indicates that more low flow releases (fish water) would result in less spills or high flow releases. The reduction in spills is relatively small compared with the overall magnitude of spills. Table 4 also shows that the number of spill years slightly decreases for the Alternatives 5B and 5C to 23 years (30% of years) compared with the DEIR Alternatives 3B and 3C of 25 spill years (33% of years). Significant spill years with spills greater than 20,000 acre-feet are the same at 15 years (20% of years).

Figures 4a through 4b show the frequency of releases and spills from Cachuma Reservoir. Figures 4a-b indicate that comparative differences between the Alternative 3B-C series and Alternative 5B-C series are the same. The frequency of releases and spills for Alternatives 5B and 5C are basically the same as the DEIR Alternatives 3B and 3C during low flow periods because they operate under the same criteria for releases for fish. As shown on Figures 4a-b, the frequency of releases for the 7-20 cfs range would increase under Alternatives 5B and 5C compared to the long-term BO/FMP alternatives (Alternatives 3B and 3C). This is attributed to the higher flow requirements under Alternatives 5B and 5C. Project releases for fish (not including conjunctive use of spills, leakage, and water rights) would be increased on average from about 2,700 acre-feet per year in the DEIR Alternatives 3B and 3C to about 4,000 acre-feet per year in the new Alternatives 5B and 5C (Table 4).

Table 5 displays key frequencies for spills and downstream releases from Cachuma Reservoir. Frequency of occurrence of releases and spills at or above 10 cfs increases by about 10% in Alternatives 5B and 5C compared to Alternatives 3B and 3C. The frequency of releases and spills of 5 cfs or above is similar between Alternatives 3B and 3C and Alternatives 5B and 5C, which would be expected since Alternatives 5B and 5C would switch to the operating

TABLE 4
(DEIR TABLE 4-7, AUGUST 2003)
KEY HYDROLOGIC CHARACTERISTICS OF CACHUMA RESERVOIR OPERATIONS
BASED ON SYRHM, 1918-1993

Parameter	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8' surcharge	Alt 3C: BO with 3' surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5C: "3A2"/BO and with 3' surcharge
Average spills/leakage (AFY)	36,693	35,784	35,415	35,288	34,916	34,537
Average 89-18 releases (AFY)	6,023	5,682	5,737	3,940	5,473	5,529
Average fish releases (AFY)	1,362	2,701	2,715	2,801	3,999	4,026
Total discharges from the dam (AFY)	44,078	44,167	43,867	42,029	44,388	44,092
No. of spill months	82	79	78	74	75	74
No. of spill water years	26	25	25	24	23	23
No. of spill water years > 20,000 acre-feet	16	15	15	15	15	15

TABLE 5
(DEIR TABLE 4-8, AUG. 2003)
FLOWS FROM CACHUMA LAKE DUE TO SPILLS AND DOWNSTREAM RELEASES

cfs	Percentage of Time that Spills and Downstream Releases are at or Above the Indicated Flow (simulation, 1918-1993)					
	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8’ surcharge	Alt 3C: BO with 3’ surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8’ surcharge	Alt 5C: "3A2"/BO and 3’ surcharge
2	99	99	99	99	99	99
5	42	67	68	68	68	69
10	30	36	36	34	45	45
20	26	27	27	24	31	31
50	13	12	12	8	12	12

criteria under Alternatives 3B and 3C in years when the runoff conditions are below normal, dry, or critical.

3B. LAKE STORAGE AND ELEVATION

In the modeling analysis, the minimum storage level (minimum pool) in Cachuma Reservoir for all alternatives is 12,000 acre-feet. The minimum storage condition would occur during the critical drought period (1947-1951). Due to several concerns, including recreation, aesthetics, inundation of Lake Cachuma facilities, Hilton Creek siphon and Tecolote Tunnel intake valves, the reservoir water surface elevation and duration of the 3.0' surcharge were analyzed. Tables 6 and 7 summarize median Lake Cachuma storage and elevation for each alternative. Tables 8, 9, and 10 characterize the frequency of surcharging and the duration of inundation.

3C. SANTA YNEZ RIVER FLOWS

As indicated above (Section 3A), since the comparative differences between the Alternatives 3B-C series and the Alternatives 5B-C series are the same (Figures 4a-c), the flow frequency graphs for the downstream locations show Alternative 3C and Alternative 5C for the purpose of comparison. Figures 5a through 5f show the frequency of flows at six different locations downstream of Cachuma Reservoir for various alternatives based on the SYRHM results. Table 11 shows the frequency of flows in tabular format. Alternative 5C, when compared to Alternative 3C, would result in an increase in frequency of flows between 5 and 50 cfs by about 0 to 12 percent of the time in the reach from Bradbury Dam to Alisal Bridge. The increase in the frequency of flows between 5 and 50 cfs would be about 0 to 8 percent for the reach below Alisal Bridge to the Lompoc Narrows. Monthly flows for Alternatives 5B and 5C at various locations in the Santa Ynez River for the period 1918-1993 are included in Appendix A.

TABLE 6
(DEIR TABLE 4-2, AUG. 2003)
MEDIAN MONTHLY STORAGE IN CACHUMA LAKE (SIMULATION, 1918-1993)
(ACRE-FEET)

Month	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8' surcharge	Alt 3C: BO with 3' surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5C: "3A2"/BO and 3' surcharge
November	130,484	132,602	136,080	135,135	126,831	130,324
February	152,394	150,918	154,607	154,660	149,466	152,943
April	165,533	165,018	167,877	169,135	162,685	166,287
July	146,851	149,528	153,067	154,840	144,258	147,788

	Difference with Alt 3B	Difference with Alt 3C
November	-5,772	-5,756
February	-1,452	-1,664
April	-2,334	-1,591
July	-5,270	-5,279

TABLE 7
(DEIR TABLE 4-3, AUG. 2003)
MEDIAN LAKE LEVEL (SIMULATION, 1918-1993)
(FEET)

Month	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8’ surcharge	Alt 3C: BO with 3’ surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8’ surcharge	Alt 5C: "3A2"/BO and 3’ surcharge
Annual	733.7	733.3	734.6	735.2	732.5	733.7
Feb	737.2	736.7	738.1	738.1	736.1	737.4
Aug	732.2	733.6	735.0	735.2	731.4	733.0
					Difference with Alt 3B	**Difference with Alt 3C**
				Annual	-0.8	-0.9
				Feb	-0.6	-0.6
				Aug	-2.1	-2.0

TABLE 8
(DEIR TABLE 4-4, AUG. 2003)
FREQUENCY OF SURCHARGING
NO. OF YEARS SURCHARGING PREDICTED TO OCCUR IN 76-YEAR PERIOD (SIMULATION, 1918-1993)

Elevation (feet)	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8' surcharge	Alt 3C: BO with 3' surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5C: "3A2"/BO and 3' surcharge
750-750.9	26	26	27	27	26	27
751-751.9		25	26	26	26	26
752-752.9			26	26		26
= or > 753			25	24		23

TABLE 9
(DEIR TABLE 4-5, AUG. 2003)
PERCENTAGE OF TIME THAT LAKE ELEVATIONS ARE MET OR EXCEEDED (SIMULATION, 1918-1993)

750	11%	14%	16%	16%	13%	16%
751		11%	14%	14%	11%	13%
752			11%	11%		11%
753			9%	8%		8%

TABLE 10
(DEIR TABLE 4-6, AUG. 2003)
DURATION OF INUNDATION
MEDIAN NUMBER OF CONSECUTIVE MONTHS AT OR ABOVE LAKE ELEVATION (SIMULATION 1918-1993)

750	4	5	5	5	5	5
751		4	5	5	4	5
752			4	4		4
753			3	3		3

TABLE 11
(DEIR TABLE 4-9, AUG. 2003)
STREAMFLOWS DOWNSTREAM OF CACHUMA LAKE

Location	cfs	Percentage of Time that Flows are at or above the Indicated Flow (simulation, 1918-1993)					
		Alt 2: CEQA Baseline	Alt 3B: BO and 1.8' surcharge	Alt 3C: BO with 3' surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5C: "3A2"/BO and 3' surcharge
Below Hilton Creek	2	99	99	99	99	99	99
	5	47	74	75	75	74	75
	10	33	39	39	37	48	48
	20	26	28	28	24	32	32
	50	13	12	12	8	12	12
Highway 154	2	82	99	99	99	99	99
	5	48	77	78	78	76	77
	10	34	39	39	37	49	49
	20	27	28	28	25	33	33
	50	12	12	12	8	11	11
Above Alisal Road	2	53	69	69	69	70	71
	5	43	49	49	47	56	56
	10	34	36	36	34	48	48
	20	23	25	25	18	28	28
	50	12	12	12	10	11	12
Near Buellton	2	51	57	57	56	61	61
	5	41	44	44	42	52	52
	10	32	34	34	29	38	38
	20	24	26	26	18	28	28
	50	12	12	12	12	12	12
Above Salsipuedes Creek	2	39	42	43	36	48	48
	5	35	37	37	29	40	40
	10	30	32	32	25	35	35
	20	25	26	26	19	29	29
	50	12	13	13	12	12	12
Narrows	2	45	48	48	40	52	53
	5	38	41	41	33	44	44
	10	33	35	35	27	38	38
	20	28	29	29	21	31	31
	50	14	14	14	14	14	14

3D. GROUNDWATER STORAGE IN THE ABOVE NARROWS ALLUVIAL BASIN

Percolation into the above Narrows alluvial basin would tend to increase when there are more releases during low flow periods. The effect on the Santa Ynez sub-basin (Bradbury to Alisal Bridge) is more pronounced. Table 12 shows the dewatered storage in the above Narrows alluvial basin for each of the alternatives.

3E. WATER RIGHTS RELEASES (WR 89-18)

Table 13 shows the impacts to water rights releases for the various alternatives as determined by the Santa Ynez River Hydrology Model. The average annual reductions in water rights releases under various alternatives are compared to Alternative 2 (CEQA baseline). The reduction in the downstream water rights releases under Alternatives 3B and 3C would be about 5-6 percent. The reduction would be about 8-9 percent under Alternatives 5B and 5C.

TABLE 13
SIMULATED IMPACTS TO AVERAGE WATER RIGHTS RELEASES FOR WATER YEARS 1918-1993 (ACRE-FEET/YEAR)

Water Rights Releases	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8’ surcharge	Alt 3C: BO with 3’ surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8’ surcharge	Alt 5C: "3A2"/BO and 3’ surcharge
WR 89-18 Releases	6,023	5,682	5,737	5,711	5,473	5,529
Difference in WR 89-18 Releases from Alt 2	---	-341	-286	-312	-550	-494
Percent Reduction in WR 89-18 Releases from Alt 2	---	-5.7%	-4.7%	-5.2%	-9.1%	-8.2%

TABLE 12
(DEIR TABLE 4-27, AUG. 2003)
MONTHLY DEWATERED STORAGE IN THE ABOVE NARROWS ALLUVIAL GROUNDWATER BASIN
(ACRE-FEET)

	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8' surcharge	Alt 3C: BO with 3' surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5C: "3A2"/BO and 3' surcharge
Entire Basin						
Mean	10,769	10,310	10,281	10,240	10,146	10,131
Median	10,517	10,099	10,081	10,031	9,852	9,840
% Difference Relative to Alt 2	---	-4%	-4%	-5%	-6%	-6%
Minimum	2,324	2,315	2,315	2,311	2,315	2,315
Santa Ynez Subarea						
Mean	1,926	1,722	1,704	1,647	1,684	1,683
Median	1,769	1,606	1,584	1,510	1,553	1,547
% Difference Relative to Alt 2	---	-9%	-10%	-15%	-12%	-13%
Minimum	0	0	0	0	0	0
Buellton Subarea						
Mean	5,634	5,482	5,471	5,438	5,435	5,432
Median	5,570	5,449	5,442	5,382	5,363	5,360
% Difference Relative to Alt 2	---	-2%	-2%	-3%	-4%	-4%
Minimum	2,166	2,167	2,153	2,144	2,168	2,169
Santa Rita Subarea						
Mean	3,244	3,105	3,105	3,155	3,027	3,016
Median	3,080	2,981	2,978	3,105	2,870	2,867
% Difference Relative to Alt 2	---	-3%	-3%	1%	-7%	-7%
Minimum	0	0	0	0	0	0

3F. CACHUMA PROJECT DELIVERIES

The results of SYRHM analysis indicate that Alternatives 5B and 5C would produce greater shortages in Cachuma Project water supply during drought periods in comparison with Alternative 2, CEQA baseline (Table 14). The results of modeling analysis also indicate that the new Alternatives 5B and 5C would produce greater shortages in the Cachuma Project water supply compared to DEIR Alternatives 3B and 3C, respectively. Impacts on Project deliveries to Member Units are shown in Table 14 for the various alternatives. Table 14 shows that in the critical drought year (1951) shortages in Cachuma Project water supply would be 9,810 acre-feet for Alternative 2. The shortages in the critical drought year would increase to 11,260 acre-feet and 9,890 acre-feet under the DEIR Alternatives 3B and 3C, respectively. Table 14 also indicates that shortages in the critical drought year would be further increased under the new Alternatives 5B and 5C to 12,510 acre-feet and 11,410 acre-feet, respectively.

During the last three years of the critical drought period (1949-1951), the cumulative shortages under the new Alternatives 5B and 5C would be increased to 26,660 acre-feet and 23,810 acre-feet, respectively, compared to the DEIR Alternatives 3B and 3C with the three-year cumulative shortages of 23,370 acre-feet, and 19,920 acre-feet, respectively. Table 14 also indicates that the frequency of years with shortages greater than 10% increases under Alternatives 5B and 5C.

Simulated monthly Cachuma Project deliveries for Alternative 5B and 5C for the period 1918-1993 are included in Appendix B. Simulated monthly Cachuma Project shortages for Alternative 5B and 5C for the period 1918-1993 are included in Appendix C.

TABLE 14
(DEIR TABLE 4-16, AUG. 2003)
IMPACTS ON CACHUMA PROJECT DELIVERIES TO MEMBER UNITS

Water Supply Parameter	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8' surcharge	Alt 3C: BO with 3' surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5C: "3A2"/BO and 3' surcharge
Average Annual Deliveries and Years of Shortages (1918-1993)						
Average annual delivery (afy)	25,115	24,986	25,122	25,169	24,855	24,988
Difference compared to Alt 2 (afy)	---	-129	7	54	-260	-127
Number of years with 10% or more shortage	6	7	6	6	8	7
Number of years with 10% or more shortage – difference from Alt 2	---	1	0	0	2	1
Critical Drought Year (based on 1951 drought year)						
Shortage (af)	9,808	11,262	9,895	9,351	12,506	11,406
% Shortage in Cachuma deliveries	38%	44%	38%	36%	49%	44%
% Shortage in Cachuma deliveries – difference from Alternative 2	---	6%	0%	-2%	10%	6%
Critical 3-Year Drought Period (based on 1949-51 drought)						
Shortage (af)	20,134	23,373	19,925	17,467	26,659	23,806
% Shortage in Cachuma deliveries	26%	30%	26%	23%	35%	31%
% Shortage in Cachuma deliveries – difference from Alternative 2	---	4%	0%	-3%	8%	5%

Based on Project draft of 25,714 acre-feet per year.
Cumulative shortage in critical drought period based on 36 consecutive months starting in May 1949.

3G. MEMBER UNITS WATER SUPPLY IN CRITICAL DROUGHT

Table 15 shows the Member Units' supply and demand in the critical drought year (1951) which include Member Units' demands and supplies from sources other than the Cachuma Project. The source of data for demand and water supplies other than the Cachuma Project is from the water supply managers. Tables 16, 17, and 18a-e are the updates to the Draft EIR Tables 4-18, 4-19, 4-20, 4-21, 4-22, 4-23, and 4-24 which provide the source data for Table 15 (EIR Table 4-17). The Member Units' water supply from the Cachuma Project in the critical drought year (1951) as shown in Tables 18a-e is based on Alternative 5B, because the water supply impacts were greatest under this alternative. The total supply from other sources for the Member Units includes groundwater pumping which would not be sustainable on a long term basis, the maximum capacity of the desalinization plant, and 50 percent delivery of State Project water (Table A and CCWA drought buffer). Table 15 shows that Alternatives 5B and 5C will increase the water supply impacts in the critical drought year (1951) and the shortages already associated with the steelhead fish water releases under the Biological Opinion.

Tables 19a-b (EIR Table 4-25) show the Member Units' supply and demand during the critical three-year drought period (1949-1951) for DEIR Alternatives 3B and 3C and the new Alternatives 5B and 5C. Local groundwater is based on the critical drought year supply with a 0.8 reduction factor, except for ID No. 1 river wells which are based on simulated water levels (dewatered storage). State Water Project import supply is based on 50 percent delivery (Table A and CCWA drought buffers). Based on data provided by the water supply managers, the desalinization plant for the City of Santa Barbara would operate only in the critical drought year of 1951 in the three-year drought period (1949-1951). The comparisons in Tables 19a-b indicate that the additional releases for fish under Alternatives 5B and 5C would further increase water shortages for both current demand and planned growth future water demands.

TABLE 15
(DEIR TABLE 4-17, AUG. 2003)
MEMBER UNITS' SUPPLY AND DEMAND IN CRITICAL DROUGHT YEAR (1951)
(ACRE-FEET)

Parameter	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8' surcharge	Alt 3C: BO with 3' surcharge	Alt 4B: BO with SWP delivery to Lompoc	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5C: "3A2"/BO and 3' surcharge
Cachuma Project Yield	15,906	14,452	15,819	16,363	13,208	14,308
Total Supply From Other Sources (includes CCWA drought buffer)	31,312	31,312	31,312	31,312	31,312	31,312
Total Supply	47,218	45,764	47,131	47,675	44,520	45,620
Year 2000 demand	46,007	46,007	46,007	46,007	46,007	46,007
Surplus or shortage	1,211	-243	1,124	1,668	-1,487	-387
Year 2020 demand	56,287	56,287	56,287	56,287	56,287	56,287
Surplus or shortage	-9,069	-10,523	-9,156	-8,612	-11,767	-10,667

TABLE 16
(DEIR TABLE 4-18, AUG. 2003)
MEMBER UNITS' SUPPLY FROM SOURCES OTHER THAN CACHUMA PROJECT
IN CRITICAL DROUGHT YEAR (1951)
(ACRE-FEET)

CVWD	
1. Local groundwater supply (Table 18a)	4,650
MWD	
2. Jameson Lake and Alder Creek diversions (SYRHM simulation, DEIR Appendix E)	312
3. Doulton Tunnel infiltration and Fox Creek diversion (SYRHM simulation, DEIR Appendix E)	130
4. Local groundwater supply (Table 18b)	400
5. MWD subtotal	842
City of Santa Barbara	
6. Gibraltar Reservoir (SYRHM simulation, DEIR Appendix E)	0
7. Mission Tunnel infiltration and Devil Canyon diversions (SYRHM simulation, DEIR Appendix E)	500
8. Jameson Reservoir (Table 18c)	300
9. Local groundwater supply (Table 18c)	4,150
10. Reclaimed water (Table 18c)	900
11. Desalinization (Table 18c)	3,125
12. City of SB subtotal	8,975
GWD	
13. Local groundwater supply (Table 18d)	2,350
14. Reclaimed water (Table 18d)	1,500
15. GWD (subtotal)	3,850
SYRWCD, ID No. 1	
16. Local groundwater supply (Table 18e)	2,320
17. Santa Ynez River Diversion (Table 18e)	1,450
18. SYRWCD, ID No. 1 subtotal	3,770
19. State Water Project delivery (assume 50% of Table A + buffer)	9,225[1)]
20. Total Supply for sources other than Cachuma Project	**31,312**

1) Includes SWP delivery to Solvang under a water supply contract with ID No. 1.

TABLE 17
(DEIR TABLE 4-19, AUG. 2003)
MEMBER UNITS' DEMAND IN ACRE-FEET

Member Unit	Year 2002	Year 2020
Carpinteria Valley Water District	4,300[1]	5,833
Montecito Water District	6,073[2]	6,835
City of Santa Barbara	14,342	18,200[3]
Goleta Water District	14,000	17,300
Santa Ynez River Water Conservation District, ID No. 1	7,292[4]	8,119[4]
Total	**46,007**	**56,287**

[1]*Represents year 2001*

[2]*Represents year 2000*

[3]*Represents year 2009*

[4]*Includes 1,500 AFY of SWP allocated to City of Solvang under a water supply contract.*

TABLE 18A
(DEIR TABLE 4-10, AUG. 2003)
WATER SUPPLY AND DEMAND - CARPINTERIA VALLEY WATER DISTRICT [1)]

	Normal Year	Critical Drought Year [2)]	Comment
	(acre-feet per year)		
Supplies			
Cachuma Project	2,813	1,445	Fixed percentage of Cachuma Project yield. Cachuma represents 38% of total supply
State Water Project	1,650	1,100	SWP Table A amount is 2,000 AFY plus 200 AFY of CCWA drought buffer; CVWD assumes 75% average annual delivery and 50% during droughts
Local groundwater	3,000	4,650	Share of local groundwater basin
Total	**7,463**	**7,195**	
Demand			
Current (2001)	4,300		Approx. 50% for agricultural use
Planned Future (2020)	5,833	6,819	Because of agricultural needs, assumes higher demand in drought

1) *Sources: CVWD (2001 and C. Hamilton, Gen. Manager, 2003)*
2) *Based on simulation of Alternative 5B from the Santa Ynez River Hydrology Model (SYRHM).*

TABLE 18B
(DEIR TABLE 4-11, AUG. 2003)
WATER SUPPLY AND DEMAND – MONTECITO WATER DISTRICT [1)]

	Normal Year	Critical Drought Year [2)]	Comment
	(acre-feet per year)		
Supplies			
Cachuma Project	2,651	1,362	Fixed percentage of Cachuma Project yield. Cachuma represents 35% of total supply
Jameson Lake, Fox and Alder creeks	2,000	312	Diversions on the upper Santa Ynez River. Drought year values are from SYRHM.
Doulton Tunnel	375	130	Drought year values are from SYRHM.
State Water Project	2,280	1650	SWP Table A amount is 3,000 AFY plus 300 AFY of CCWA drought buffer; MWD assumes 76% average annual delivery of Table A amount
Local groundwater	200	400	District's portion of Montecito Groundwater Basin's safe yield of 1,650 AFY. Maximum pumping is 400 AFY.
Total	**7,506**	**3,854**	
Demand			
Current (2000)	6,073		12% is losses and transfers to City of S.B (300 AF).
Planned Future (2020)	6,835		Slight increase in all uses, allows for reserve

1) *Sources: MWD (2001 and T. Mosby, Operations Manager, 2003).*

2) *Based on simulation of Alternative 5B from the Santa Ynez River Hydrology Model (SYRHM).*

TABLE 18C
(DEIR TABLE 4-12, AUG. 2003)
WATER SUPPLY AND DEMAND – CITY OF SANTA BARBARA [1)]

	Normal	Critical Drought Year [2)]	Comment
	(acre-feet per year)		
Supplies			
Cachuma Project	8,277	4,251	Fixed percentage of Cachuma Project yield. Cachuma represents 45% of total supply
Gibraltar Reservoir and Devils Canyon	4,310	0	
Mission Tunnel	1,109	500	Infiltration; tunnel from Gibraltar Reservoir
Juncal Reservoir	300	300	Water from Montecito Water District per prior agreement
State Water Project	2,200	1,650	SWP Table A amount is 3,000 AFY plus 300 AFY of CCWA drought buffer. The City assumes 75% average annual delivery of Table A amount.
Local groundwater	1,104	4,150	City's portion of the Santa Barbara Groundwater Basin's safe yield of about 1,850 AFY; used for seasonal peaking and to replace surface water shortages due to drought
Reclaimed water	900	900	
Desalinization	0	3,125	For use only during emergency. Currently in storage mode. Max. capacity = 3,125 AFY
Total	**18,200**	**14,876**	
Demand			
Current (2002)	14,342		
Planned Future (2009 per LTWSP)	18,200		

1) *Source: City of Santa Barbara (2000; 1994 adopted Long Term Water Supply Program; and S. Mack, City Water Supply Manager, 2003)*

2) *Based on simulation of Alternative 5B from the Santa Ynez River Hydrology Model (SYRHM).*

TABLE 18D
(DEIR TABLE 4-13, AUG. 2003)
WATER SUPPLY AND DEMAND – GOLETA WATER DISTRICT [1)]

	Normal	Critical Drought Year [2)]	Comment
	(acre-feet per year)		
Supplies			
Cachuma Project	9,321	4,788	Fixed percentage of Cachuma Project yield; Cachuma represents about 53% of total supply
State Water Project	4,500	3,725	SWP Table A amount is 7,000 AFY plus 450 AFY of CCWA drought buffer. The District assumes 60 percent average annual delivery of Table A amount and drought buffer and 50 percent during drought. The District's right to CCWA facility capacity is 4,500 AFY.
Local groundwater	2,350	2,350	District's portion of the Goleta Basin. Safe yield estimated at 3,410 AFY.
Reclaimed water project	1,500	1,500	Approximate capacity of built out project. Current production is approximately 1,000 AFY.
Total	**17,671**	**12,363**	
Demand			
Current (2000)	14,000		Includes approximately 1,000 AFY of recycled water
Planned Future (2020)	17,300		Includes approximately 1,500 AFY of recycled water

1) *Sources: GWD (2001 and K Walsh, GWD General Mgr, 2003)*
2) *Based on simulation of Alternative 5B from the Santa Ynez River Hydrology Model (SYRHM).*

TABLE 18E
(DEIR TABLE 4-14, AUG. 2003)
WATER SUPPLY AND DEMAND – SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, ID NO. 1 [1)]

	Normal	Critical Drought Year [2)]	Comment
	(acre-feet per year)		
Supplies			
Cachuma Project	2,651	1,362	Fixed percentage of Cachuma Project. Cachuma Project represents approximately 44% of total supply.
Santa Ynez Uplands Groundwater Basin	1,430	2,320	Production for normal year is based on an average of the last five years (1998-2002) which reflects Well Nos. 3, 4, and 5A remaining out of production (destroyed or water quality problems) and Well No. 7 producing at a reduced rate due to lower water levels. Drought supply is based upon average annual production during the 1987-1991 drought adjusted for Well Nos. 3, 4, and 5A and reduced production from Well No. 7.
Gallery Well	0	0	Currently inactive due to proximity of the river. Maximum permitted diversion is 515 AFY
Santa Ynez River Underflow	1,480	1,450	This is estimate of future maximum production from two permitted well fields
State Water Project	1,650	1,100	SWP Table A amount is 2,000 AFY plus 200 AFY of CCWA drought buffer. District's Table A amount is 500 AFY plus 200 AFY of drought buffer. The remaining 1500 AFY is allocated to the City of Solvang under a water supply contract. District assumes 75% delivery of its 2,200 AFY allocation in normal year and 50% during drought.
Total	**7,211**	**6,232**	
Demand			
Current (2002)	7,292		Includes 1,500 AFY of SWP under contract to City of Solvang
Planned Future (2020)	8,119		Includes 1,500 AFY of SWP under contract to City of Solvang

1) *Source: ID No. 1 (Chris Dahlstrom, ID No. 1 General Mgr, 2003).*

2) *Based on simulation of Alternative 5B from the Santa Ynez River Hydrology Model (SYRHM).*

TABLE 19A
(DEIR TABLE 4-25, AUG. 2003)
MEMBER UNITS' SUPPLY AND DEMAND DURING CRITICAL THREE-YEAR DROUGHT PERIOD (1949-1951)
DRAFT EIR ALTERNATIVE 3B AND NEW ALTERNATIVE 5B

(ACRE-FEET)

	Alt. 3B	Alt. 5B
CVWD		
1. Local groundwater	11,160	11,160
MWD		
2. Jameson Lake and Alder Creek diversions	2,194	2,194
3. Doulton Tunnel infiltration and Fox Creek diversions	432	432
4. Local groundwater	960	960
5. MWD subtotal	3,586	3,586
City of Santa Barbara		
6. Gibraltar Reservoir	4,055	4,055
7. Mission Tunnel infiltration and Devil's Canyon diversion	1,577	1,577
8. Local groundwater	9,960	9,960
9. Reclaimed water	2,700	2,700
10. Desalinization	3,125	3,125
11. City of SB subtotal	21,417	21,417
GWD		
12. Local groundwater and reclaimed water	10,140	10,140
SYRWCD, ID No. 1		
13. Local groundwater and Santa Ynez River diversion	11,823	11,823
14. State Water Project Delivery (assumed 50% of Table A + buffer)	27,675	27,675
15. Cachuma Project yield	53,769	50,483
16. Total Supply in Critical 3-year Period	**139,570**	**136,284**
17. Demand for three-year period based on current demand level	138,021	138,021
18. Difference between 3-year drought supply and current demand	1,549	-1,737
19. Demand for three-year period based on planned future growth	168,861	168,861
20. Difference between 3-year drought supply and planned future growth	-29,291	-32,577

TABLE 19B
(DEIR TABLE 4-25, AUG. 2003)
MEMBER UNITS' SUPPLY AND DEMAND DURING CRITICAL THREE-YEAR DROUGHT PERIOD (1949-1951)
DRAFT EIR ALTERNATIVE 3C AND NEW ALTERNATIVE 5C

(ACRE-FEET)

	Alt. 3C	Alt. 5C
CVWD		
1. Local groundwater	11,160	11,160
MWD		
2. Jameson Lake and Alder Creek diversions	2,194	2,194
3. Doulton Tunnel infiltration and Fox Creek diversions	432	432
4. Local groundwater	960	960
5. MWD subtotal	3,586	3,586
City of Santa Barbara		
6. Gibraltar Reservoir	4,055	4,055
7. Mission Tunnel infiltration and Devil's Canyon diversion	1,577	1,577
8. Local groundwater	9,960	9,960
9. Reclaimed water	2,700	2,700
10. Desalinization	3,125	3,125
10. City of SB subtotal	21,417	21,417
GWD		
11. Local groundwater and reclaimed water	10,140	10,140
SYRWCD, ID No. 1		
12. Local groundwater and Santa Ynez River diversion	11,823	11,823
13. State Water Project Delivery (assumed 50% of Table A + buffer)	27,675	27,675
14. Cachuma Project yield	57,217	53,336
15. Total Supply in Critical 3-year Period	**143,018**	**139,137**
16. Demand for three-year period based on current demand level	138,021	138,021
17. Difference between 3-year drought supply and current demand	4,997	1,116
18. Demand for three-year period based on planned future growth	168,861	168,861
19. Difference between 3-year drought supply and planned future growth	-25,843	-29,724

3H. IMPACTS ON STATE WATER PROJECT DELIVERIES

Impacts on State Water Project deliveries for each of the alternatives are based upon entitlements and modeling results, which take into consideration the limitations due to shortages in SWP supply during state-wide droughts, pipeline capacity, and Cachuma Reservoir operations. The South Coast entitlement (Table A) amount of SWP water is 13,750 acre-feet per year, not including drought buffer and additional water (4,500 afy) contracted by Goleta Water District. The modeling results actually uses two hydrologic models, the Santa Ynez River Hydrology Model (used for Cachuma Reservoir) and the Department of Water Resources' DWRSIM model (used for shortages in SWP deliveries). Table 20 shows the SWP deliveries for the period 1942-1993. The period 1942-1993 was chosen because this period coincides with Lompoc groundwater models, which was used to determine impacts on salinity in Lompoc under the draft EIR alternatives.

TABLE 20
SUMMARY OF STATE WATER PROJECT DELIVERIES
AVERAGE FOR PERIOD 1942-1993 (ACRE-FEET/YEAR)

Alternative	Total Imports under South Coast Contracts	Delivery as Percentage of 13,750 AF
2	10,135	74%
3B	10,167	74%
3C	10,199	74%
4B	10,369	75%
5B	10,038	73%
5C	10,068	73%

Table 20 shows the impacts to SWP imports to the South Coast. The total amount of imported water shown includes the ID No. 1 exchange with the South Coast Member Units. The detailed analysis for Alternatives 5B and 5C is shown in Appendix D. As indicated in Table 20, the total amount of SWP water delivery to the South Coast would be reduced slightly under Alternatives 5B and 5C.

4. SENSITIVITY ANALYSIS FOR 2.47 FEET OF SURCHARGE

Section 15126.2 of the *CEQA Guidelines* states that the impacts of the proposed project on the environment should be assessed against changes in the physical conditions in the affected area as they exist at the time the notice of preparation (NOP) is published. For the alternatives analyzed in the DEIR on the "Consideration of Modifications to the U.S. Bureau of Reclamation's Water Right Permits 11308 and 11310 (Applications 11331 and 11332) To Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir)" dated August 2003, the existing conditions are represented as Alternative 2. As discussed above in Section 2B of this memorandum, physical conditions in the affected area have changed since publication of the NOP. Cachuma Reservoir has been surcharged to 2.47 feet (actual surcharge was 2.32 feet) in 2005, and USBR and Cachuma Member Unites (CCRB and ID No. 1) have initiated releases to meet the long-term flow requirements under the Biological Opinion, which are set for 3.0-foot surcharge.

In order to determine if this change in physical conditions is captured within the parameters of the impact analysis of alternatives in the DEIR a sensitivity analysis was performed using the SYRHM. The sensitivity analysis was undertaken to evaluate the water supply impacts of 2.47 feet of surcharge in relation to 1.8 feet and 3.0 feet of surcharge. For the purposes of sensitivity analysis, two new alternatives were analyzed: Alternative 3D and Alternative 5D. Alternative 3D is the same as Alternative 3B and 3C, except that Cachuma Reservoir is surcharged to 2.47 feet. Likewise, Alternative 5D is the same as Alternative 5B and 5C, except that Cachuma Reservoir is surcharged to 2.47 feet.

As expected, simulation results for Alternative 3D with a surcharge of 2.47 feet are in between simulation results for surcharges of 1.8 feet (Alternative 3B) and 3.0 feet (Alternative 3C). Similarly, simulation results for Alternative 5D are in between Alternatives 5B and 5C. For example, Table 21 compares the median lake levels. Simulated lake levels for Alternative 3D (2.47') falls in between the lake levels under Alternative 3B (1.8') and Alternative 3C (3.0'). Similarly, Alternative 5D (2.47') falls in between the lake levels under Alternative 5B (1.8') and Alternative 5C (3.0') as shown in Table 21.

TABLE 21
(DEIR TABLE 4-3, AUG. 2003)
MEDIAN LAKE LEVEL (SIMULATION, 1918-1993)
(FEET)

Month	Alt 3B: BO and 1.8' surcharge	Alt 3D: BO with 2.47' surcharge	Alt 3C: BO with 3' surcharge	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5D 3A2"/BO and 2.47' surcharge	Alt 5C: "3A2"/BO and 3' surcharge
Annual	733.3	734.0	734.6	732.5	733.1	733.7
Feb	736.7	737.5	738.1	736.1	736.9	737.4
Aug	733.6	734.4	735.0	731.4	732.3	733.0

Water supply impacts for the 2.47-foot surcharge similarly fall within water supply impacts for surcharges of 1.8 and 3.0 feet. As shown in Table 22, shortages of 10,382 acre-feet, in the critical drought year (1951), under Alternative 3D fall in between shortages of 11,262 and 9,895 acre-feet for Alternatives 3B and 3C, respectively. Similarly, shortages of 11,889 acre-feet, in critical drought year, under Alternative 5D fall in between 12,506 and 11,406 acre-feet for Alternatives 5B and 5C, respectively.

With respect to water supply impacts, relative comparisons of the 2.47-foot surcharge with the 1.8-foot and 3.0-foot surcharges are varied. For example, in terms of number of years with greater than 10% shortages, the 2.47-foot surcharge is more similar to the 1.8-foot surcharge than the 3.0-foot surcharge. However, in terms of the critical drought year supply (1951), Cachuma Project deliveries to the Member Units under the 2.47-foot surcharge are closer to the 3.0-foot surcharge than the 1.8-foot surcharge.

TABLE 22
(DEIR TABLE 4-16, AUG. 2003)
IMPACTS ON CACHUMA PROJECT DELIVERIES TO MEMBER UNITS

Water Supply Parameter	Alt 2: CEQA Baseline	Alt 3B: BO and 1.8' surcharge	Alt 3D: BO and 2.47' surcharge	Alt 3C: BO with 3' surcharge	Alt 5B: "3A2"/BO and 1.8' surcharge	Alt 5D: "3A2"/BO and 2.47' surcharge	Alt 5C: "3A2"/BO and 3' surcharge
Average Annual Deliveries and Years of Shortages (1918-1993)							
Average annual delivery (afy)	25,115	24,986	25,069	25,122	24,855	24,927	24,988
Reduction compared to Alt 2 (afy)	---	-129	-46	7	-260	-188	-127
Number of years with 10% or more shortage	6	7	7	6	8	8	7
Number of years with 10% or more shortage – difference from Alt 2	---	1	1	0	2	2	1
Critical Drought Year (based on 1951 drought year)							
Shortage (af)	9,808	11,262	10,382	9,895	12,506	11,889	11,406
% Shortage in Cachuma deliveries	38%	44%	40%	38%	49%	46%	44%
% Shortage in Cachuma deliveries – difference from Alternative 2	---	6%	2%	0%	10%	8%	6%
Critical 3-Year Drought Period (based on 1949-51 drought)							
Shortage (af)	20,134	23,373	21,114	19,925	26,659	25,047	23,806
% Shortage in Cachuma deliveries	26%	30%	27%	26%	35%	32%	31%
% Shortage in Cachuma deliveries – difference from Alternative 2	---	4%	1%	0%	8%	6%	5%

Based on Project draft of 25,714 acre-feet per year.
Cumulative shortage in critical drought period based on 36 consecutive months starting in May 1949.

Figures

Cachuma Contract Renewal Alternative 3A2
Flow Requirements at Highway 154 and Alisal Bridges

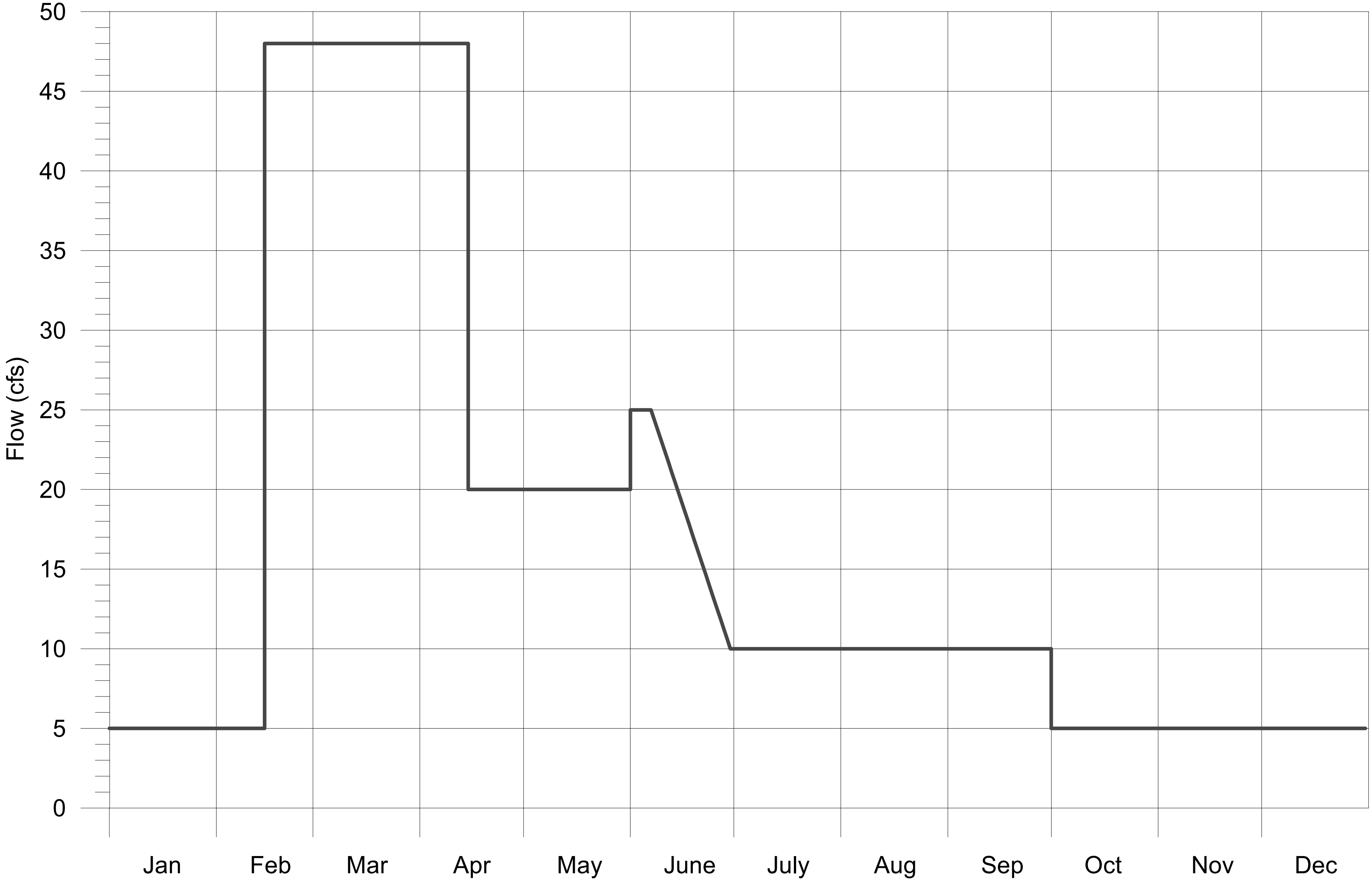
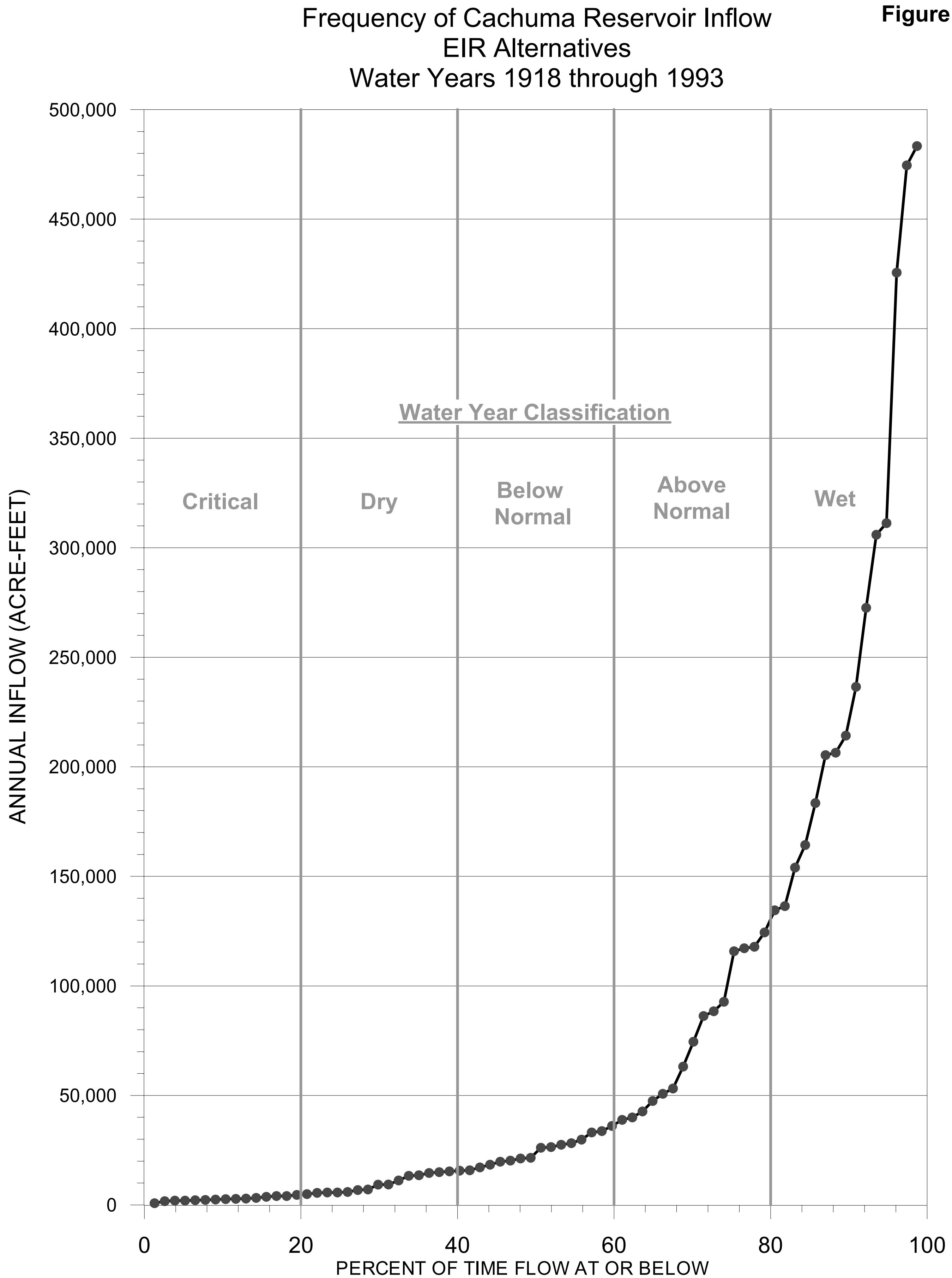


Figure 1

Figure 2



Frequency of Cachuma Reservoir Inflow
EIR Alternatives
Water Years 1918 through 1993
Water Year Classification
Critical
Dry
Below Normal
Above Normal
Wet
ANNUAL INFLOW (ACRE-FEET)
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
0
20
40
60
80
100
PERCENT OF TIME FLOW AT OR BELOW

Figure 3

SYRHM Operations Criteria for Fish Water Releases from Cachuma Reservoir for Alternatives 5B & 5C

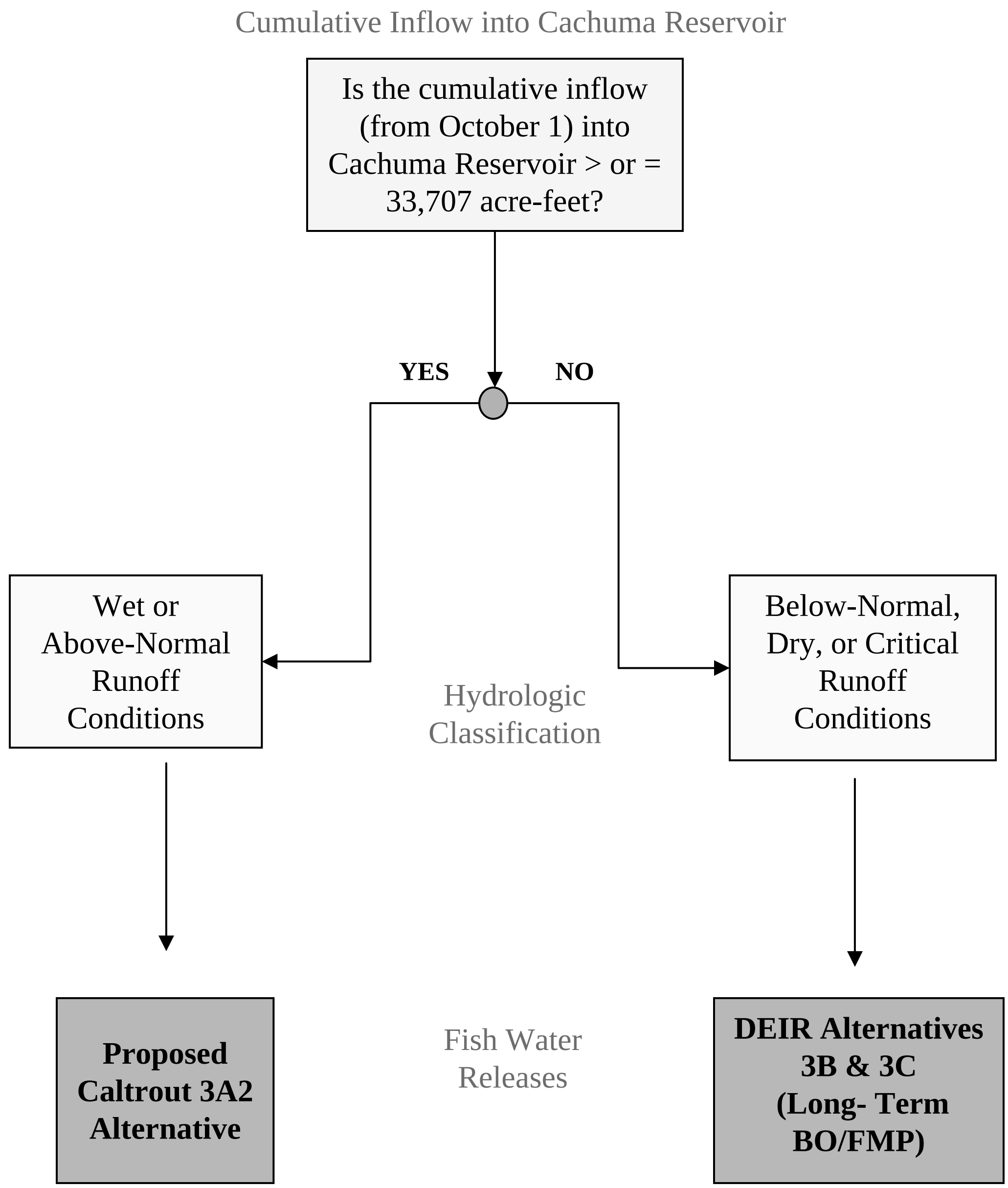
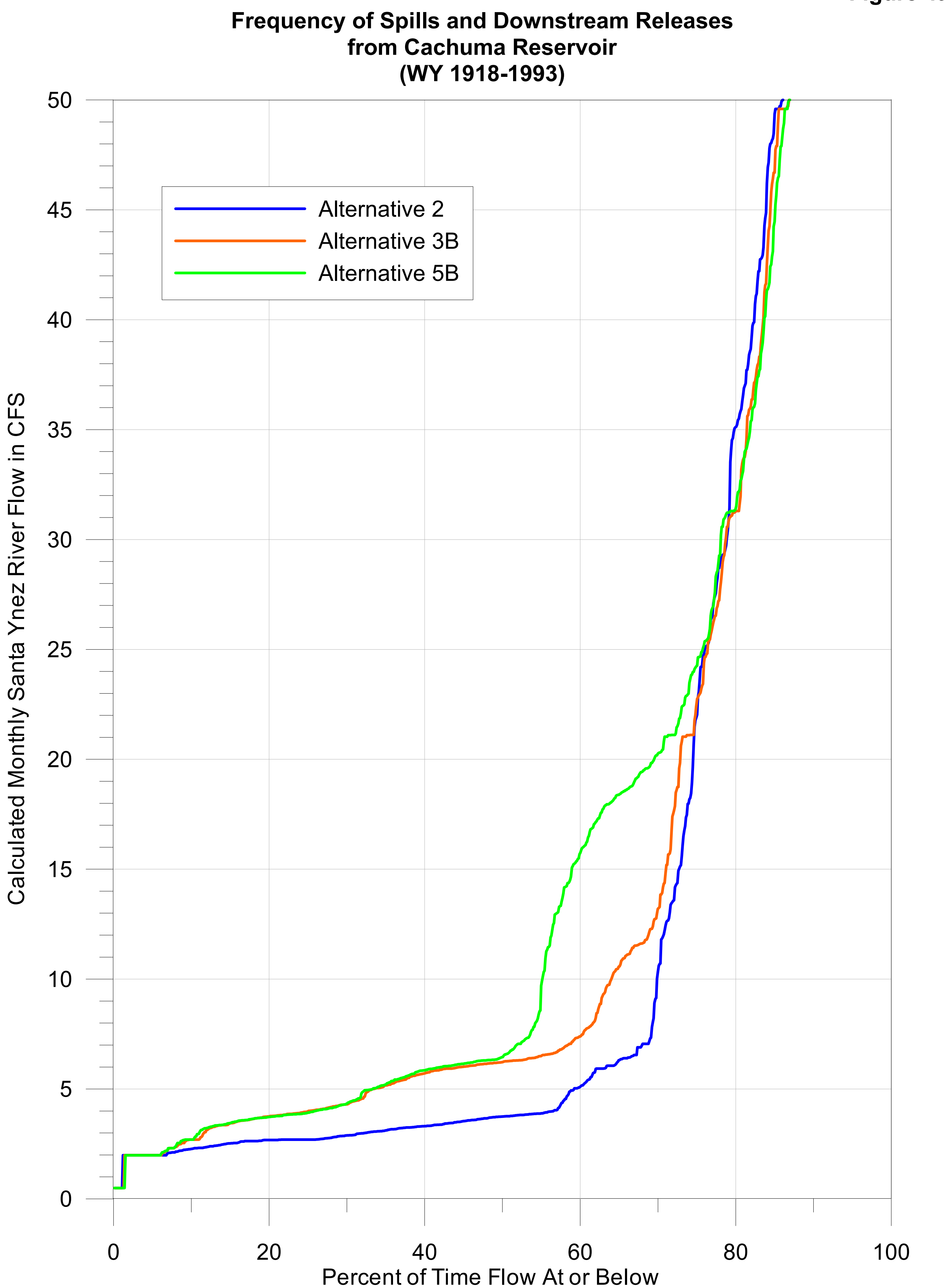


Figure 4a



Frequency of Spills and Downstream Releases
from Cachuma Reservoir
(WY 1918-1993)
Alternative 2
Alternative 3B
Alternative 5B
Calculated Monthly Santa Ynez River Flow in CFS
Percent of Time Flow At or Below
0
5
10
15
20
25
30
35
40
45
50
0
20
40
60
80
100

Figure 4b

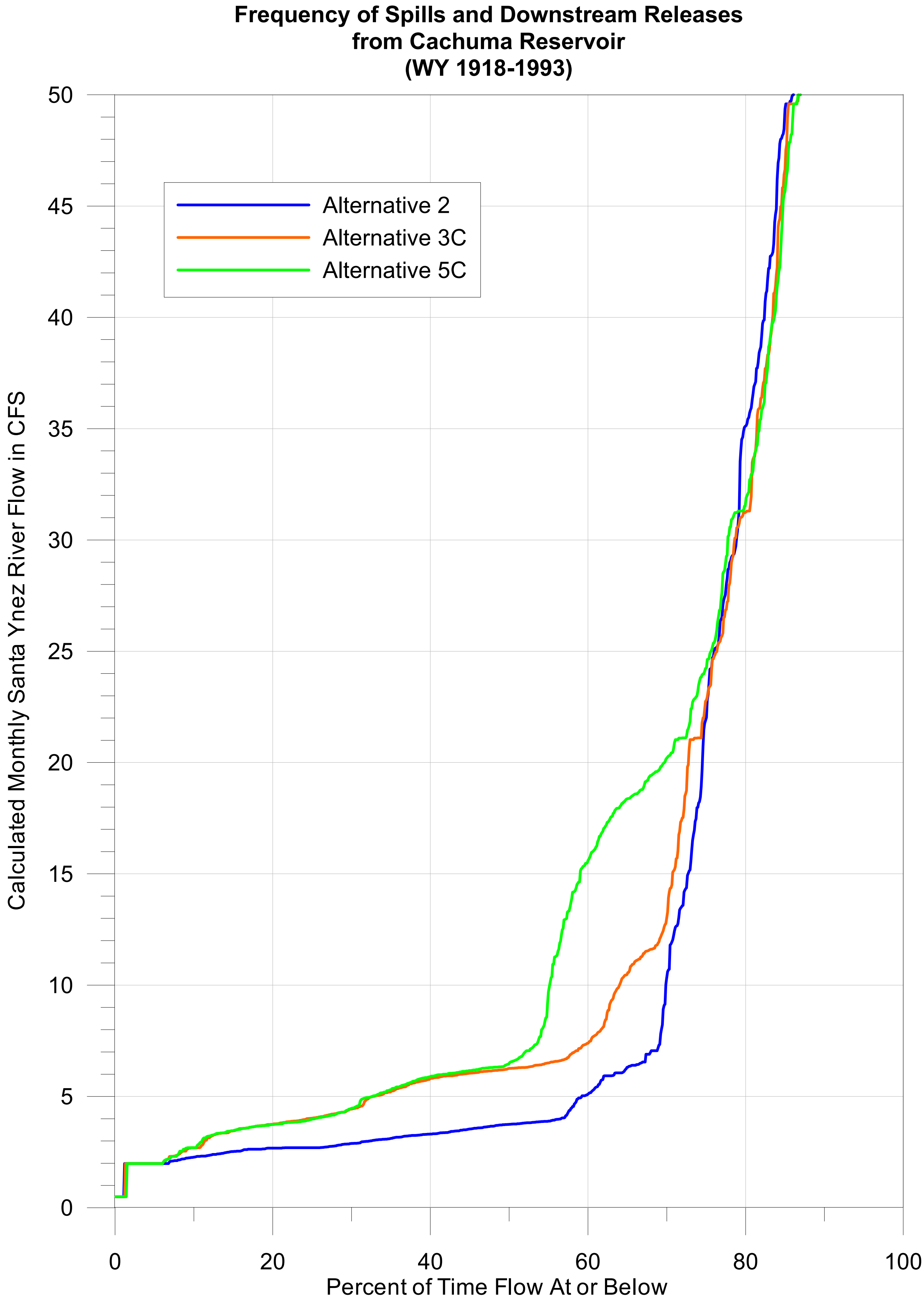

Frequency of Spills and Downstream Releases
from Cachuma Reservoir
(WY 1918-1993)
Alternative 2
Alternative 3C
Alternative 5C
Calculated Monthly Santa Ynez River Flow in CFS
Percent of Time Flow At or Below
0
5
10
15
20
25
30
35
40
45
50
0
20
40
60
80
100

Figure 5a

Frequency of Santa Ynez River Flow
Below Hilton Creek
(WY 1918-1993)

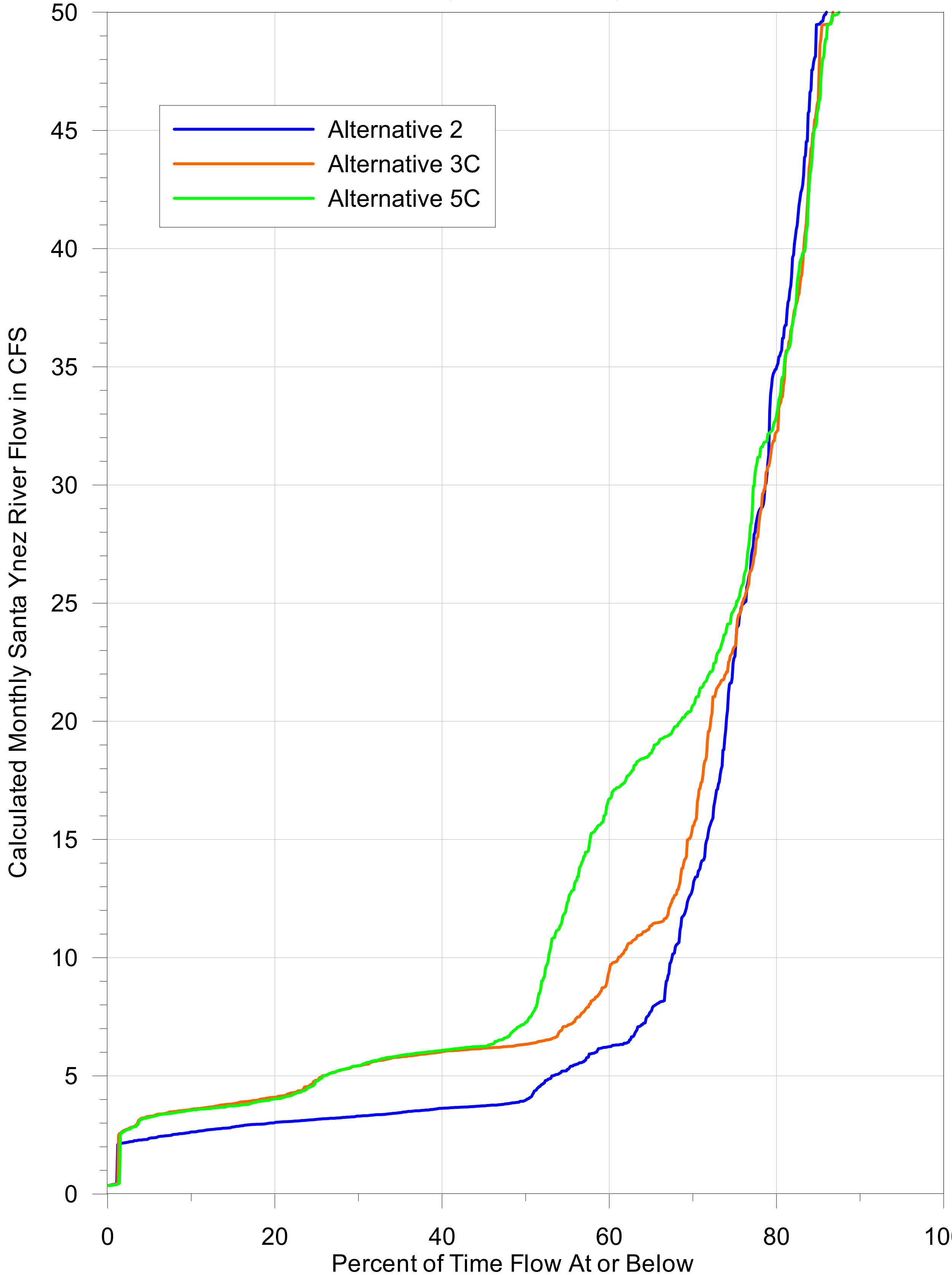


Figure 5b

Frequency of Santa Ynez River Flow
At Highway 154 Bridge
(WY 1918-1993)

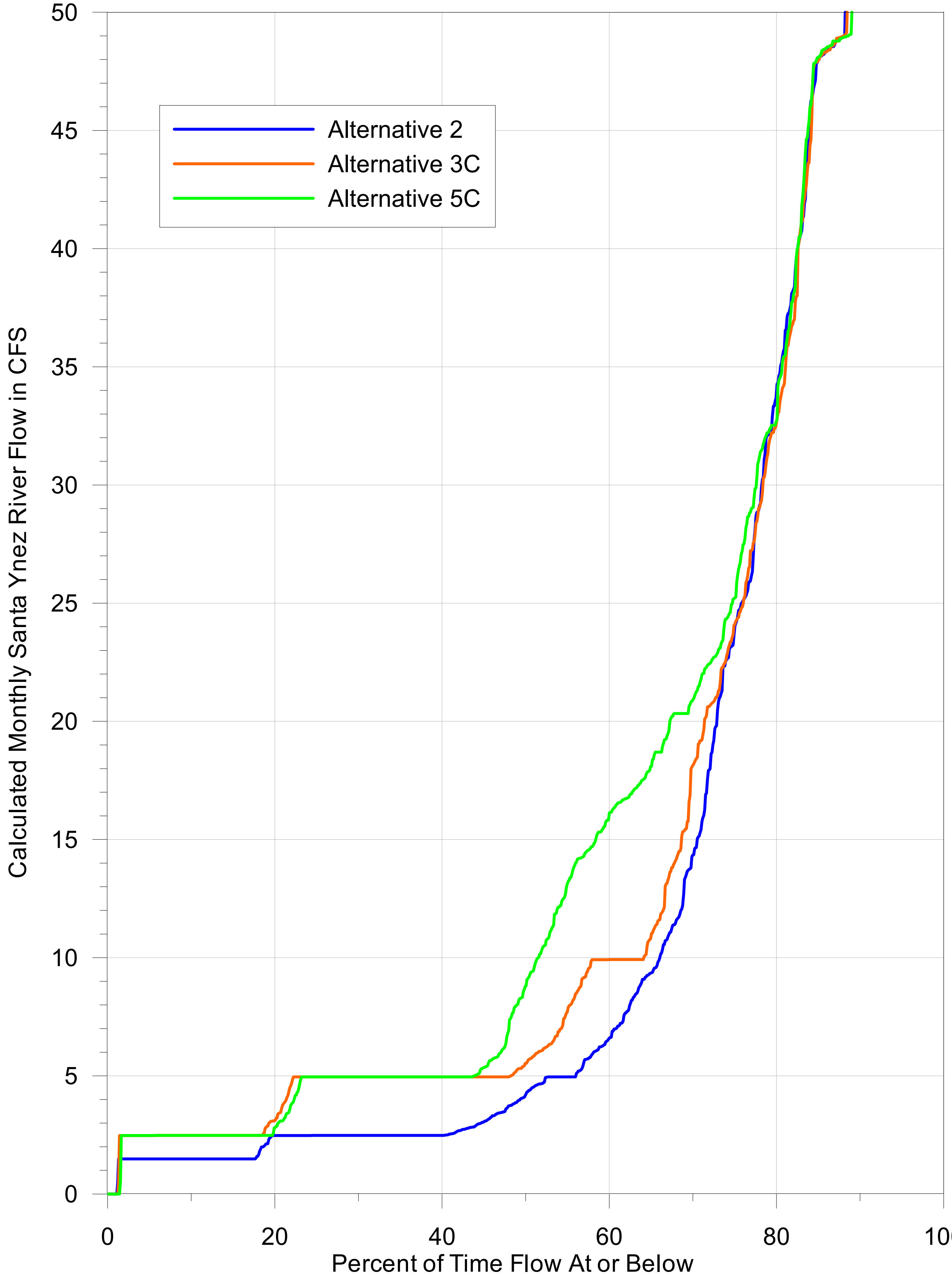


Figure 5c

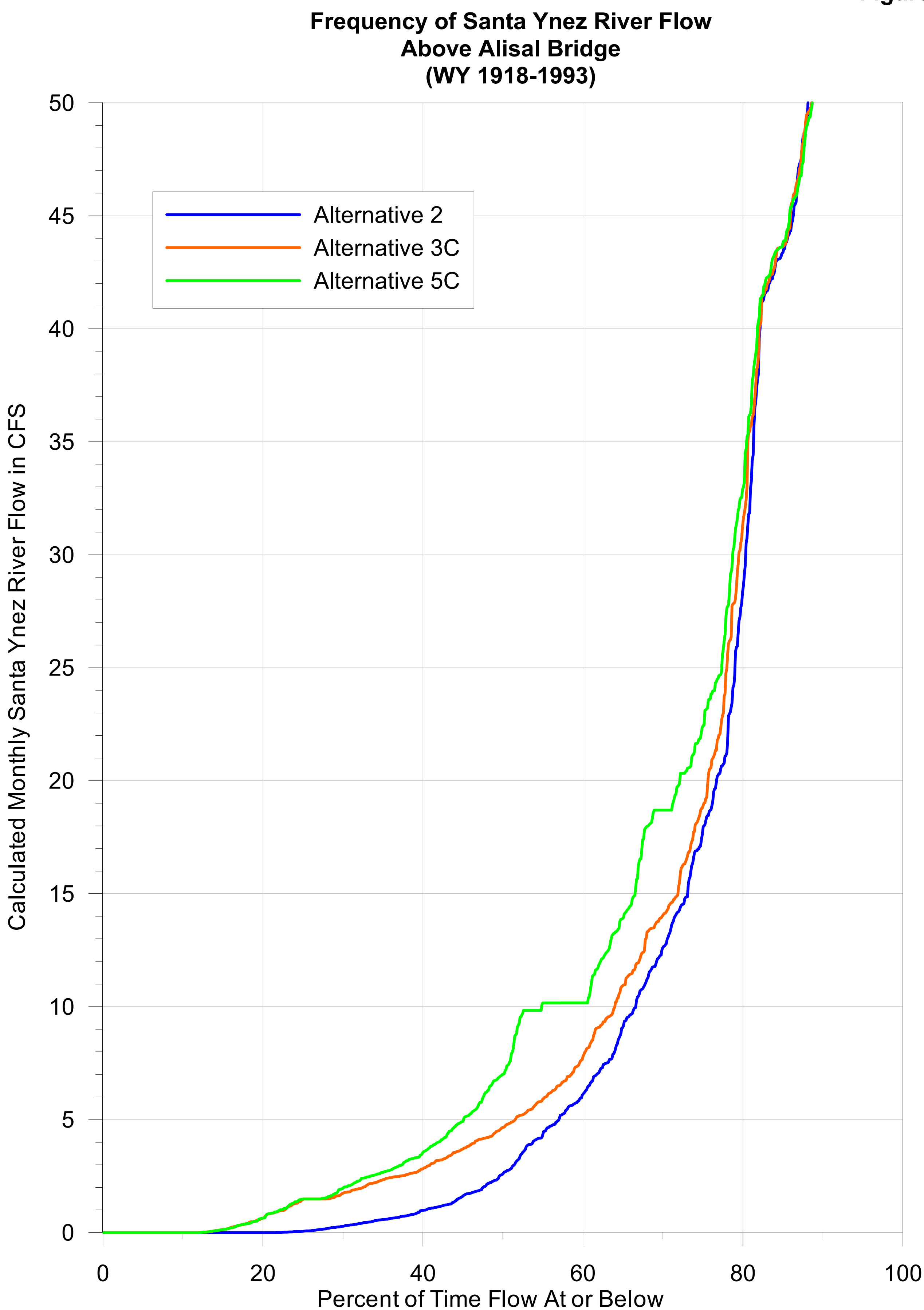

Frequency of Santa Ynez River Flow
Above Alisal Bridge
(WY 1918-1993)
Alternative 2
Alternative 3C
Alternative 5C
Calculated Monthly Santa Ynez River Flow in CFS
Percent of Time Flow At or Below
0
5
10
15
20
25
30
35
40
45
50
0
20
40
60
80
100

Figure 5d

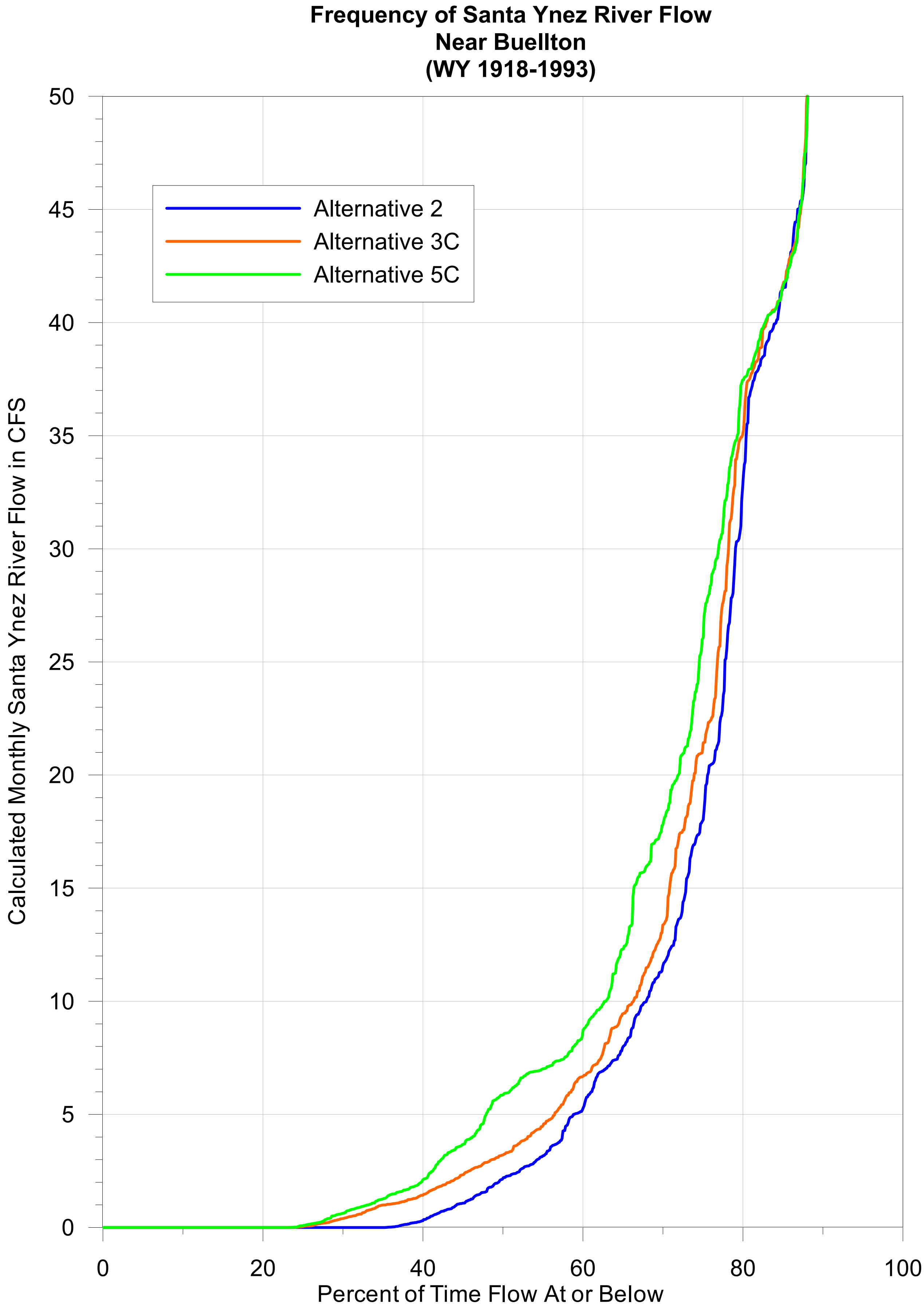
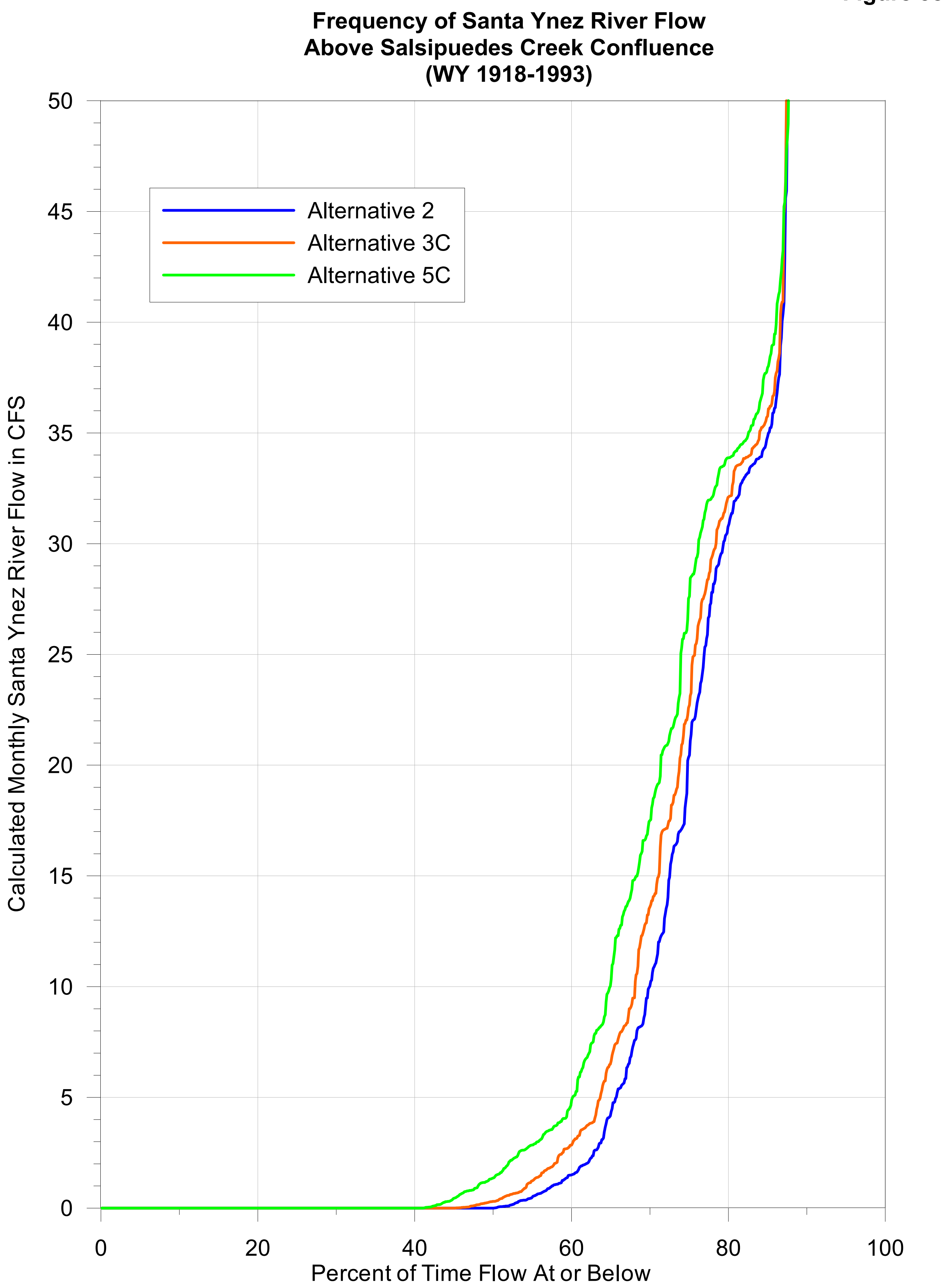
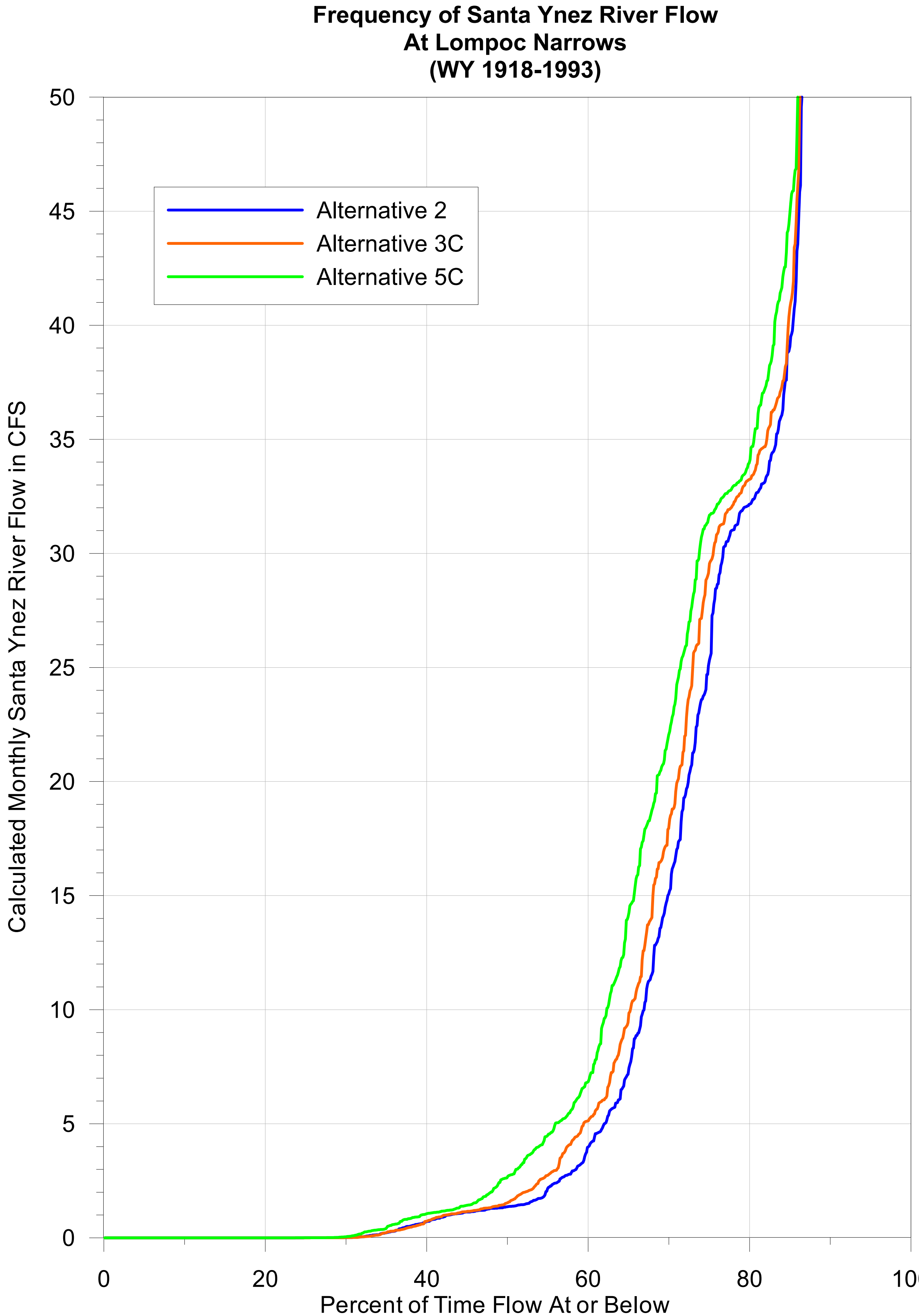

Frequency of Santa Ynez River Flow
Near Buellton
(WY 1918-1993)
Calculated Monthly Santa Ynez River Flow in CFS
Percent of Time Flow At or Below
Alternative 2
Alternative 3C
Alternative 5C
0
5
10
15
20
25
30
35
40
45
50
0
20
40
60
80
100

Figure 5e



Frequency of Santa Ynez River Flow
Above Salsipuedes Creek Confluence
(WY 1918-1993)
Alternative 2
Alternative 3C
Alternative 5C
Calculated Monthly Santa Ynez River Flow in CFS
Percent of Time Flow At or Below
0
5
10
15
20
25
30
35
40
45
50
0
20
40
60
80
100

Figure 5f



Frequency of Santa Ynez River Flow
At Lompoc Narrows
(WY 1918-1993)
Alternative 2
Alternative 3C
Alternative 5C
Calculated Monthly Santa Ynez River Flow in CFS
Percent of Time Flow At or Below
0
5
10
15
20
25
30
35
40
45
50
0
20
40
60
80
100

Appendix A

Monthly Flows Downstream of
Bradbury Dam (simulation, 1918-1993)

New Alternatives 5B and 5C

Alternative 5B

SANTA YNEZ RIVER BELOW HILTON CREEK (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	476	453	433	414	51,309	127,900	17,791	5,025	1,061	839	1,086	1,108	207,895
1919	427	378	365	1,273	1,296	1,294	351	361	374	3,789	441	2,162	12,512
1920	1,460	515	342	356	273	329	239	352	378	3,857	375	2,717	11,193
1921	1,642	911	197	163	162	183	196	206	229	235	4,837	2,173	11,135
1922	2,575	736	615	395	1,048	2,427	7,462	1,186	1,308	934	1,112	1,166	20,963
1923	382	390	302	1,299	1,307	1,283	314	346	364	378	4,271	3,037	13,674
1924	2,938	685	382	378	372	309	369	376	384	227	2,054	2,082	10,554
1925	1,411	436	201	212	220	206	171	221	229	1,318	2,797	469	7,892
1926	212	223	223	222	270	166	927	1,235	1,492	1,030	1,203	1,931	9,133
1927	4,466	225	171	169	1,581	10,682	4,178	1,219	1,358	951	1,139	1,198	27,334
1928	383	386	378	1,272	1,385	1,336	332	354	364	3,804	3,038	3,026	16,058
1929	3,017	401	394	380	343	310	326	372	3,546	2,853	1,489	2,411	15,843
1930	1,617	503	200	210	216	220	205	219	229	1,339	1,861	205	7,021
1931	223	233	237	238	219	231	229	1,518	266	226	246	259	4,125
1932	265	264	438	250	957	2,728	1,945	1,343	1,458	1,048	1,195	1,937	13,829
1933	687	208	217	294	277	189	198	219	3,560	2,994	2,601	2,065	13,509
1934	204	219	226	292	193	165	220	227	3,829	2,275	2,491	2,488	12,830
1935	191	208	218	308	188	327	450	1,268	1,489	1,055	4,097	2,561	12,360
1936	1,208	866	205	212	633	215	201	198	223	235	2,479	399	7,073
1937	221	231	235	205	1,220	9,761	16,948	1,174	1,236	923	1,127	1,176	34,459
1938	458	861	367	1,273	31,827	187,357	15,936	2,270	1,137	795	1,075	1,106	244,462
1939	417	425	347	1,314	1,331	1,378	274	345	367	3,560	3,037	3,035	15,831
1940	403	406	403	350	239	265	326	375	390	3,940	3,019	1,986	12,103
1941	1,525	191	253	588	56,612	193,797	120,506	18,381	2,979	555	722	879	396,987
1942	322	324	525	413	400	654	6,350	486	383	350	372	1,069	11,648
1943	370	361	361	46,094	28,923	66,500	10,315	1,171	1,190	849	1,081	1,109	158,324
1944	391	384	329	288	17,474	36,001	4,724	1,158	1,207	936	1,098	1,149	65,138
1945	446	325	349	344	470	4,433	2,641	1,250	1,459	1,016	1,180	1,226	15,139
1946	1,295	718	239	347	328	274	410	1,459	1,518	3,455	3,038	3,035	16,116
1947	3,036	342	338	374	347	358	372	3,430	3,037	3,028	3,017	3,011	20,689
1948	2,802	1,443	206	216	222	228	232	238	778	1,240	222	240	8,068
1949	250	253	252	245	244	1,956	211	1,812	291	218	240	254	6,225
1950	260	261	244	250	1,908	200	215	3,174	194	213	236	251	7,408
1951	26	25	25	24	23	23	22	842	24	23	22	213	1,291
1952	22	22	29	1,561	2,147	1,619	10,557	1,156	1,372	922	1,052	1,525	21,983
1953	887	319	359	2,041	279	317	327	369	378	3,889	3,038	2,467	14,670
1954	2,170	357	369	676	1,323	337	268	370	374	4,138	2,791	3,013	16,186
1955	1,886	802	194	155	177	197	204	194	230	2,091	3,112	514	9,757
1956	207	220	765	952	243	177	213	165	210	218	1,885	1,111	6,366
1957	228	214	217	205	160	155	190	203	4,189	778	2,943	800	10,283
1958	255	303	218	166	833	1,234	35,698	9,161	1,043	776	1,040	1,113	51,841
1959	422	421	378	330	2,085	274	322	356	369	3,849	3,038	2,123	13,967
1960	1,713	944	359	350	1,912	351	321	367	377	228	2,737	203	9,862
1961	221	216	215	230	228	226	227	1,754	315	222	243	256	4,354
1962	262	303	172	168	2,771	2,225	1,870	1,230	1,451	1,013	1,175	1,699	14,339
1963	362	377	376	363	321	303	238	327	366	395	2,364	204	5,994
1964	222	227	227	226	225	225	225	1,912	350	215	237	251	4,542
1965	258	260	257	173	229	211	378	199	3,976	2,912	1,126	377	10,356
1966	212	377	368	431	1,336	2,956	2,151	1,394	1,431	1,031	4,151	2,995	18,832
1967	2,994	2,993	306	747	1,197	18,846	53,303	20,350	1,115	925	3,643	2,672	109,091
1968	430	436	368	363	342	1,928	322	366	3,429	370	1,034	2,158	11,544
1969	1,482	715	358	128,084	188,359	78,226	17,932	5,643	1,051	812	1,009	1,077	424,749
1970	395	356	352	309	297	2,186	338	362	378	3,589	3,037	1,085	12,684
1971	1,529	864	247	301	328	342	359	376	3,428	3,038	3,036	1,926	15,774
1972	1,504	812	244	334	345	370	372	3,413	3,020	212	1,523	2,341	14,491
1973	1,596	158	198	667	1,328	15,660	7,670	1,167	1,253	968	1,118	1,152	32,935
1974	453	778	364	546	280	441	463	1,404	1,501	1,040	1,177	1,480	9,928
1975	1,313	349	316	326	2,285	5,367	4,966	1,161	1,252	926	1,115	1,148	20,524
1976	372	377	377	375	1,946	318	335	361	3,430	3,038	3,027	2,306	16,263
1977	1,351	355	362	365	367	203	211	220	228	2,667	215	227	6,769
1978	240	245	245	687	10,330	145,578	35,267	7,452	1,041	622	941	1,071	203,718
1979	357	362	349	312	670	21,177	11,033	1,150	1,170	923	1,129	1,163	39,794
1980	854	655	354	276	67,729	40,858	7,000	1,117	1,115	865	1,122	1,153	123,099
1981	433	428	377	319	290	2,408	237	319	354	419	1,212	2,269	9,065
1982	1,544	750	353	340	348	1,953	340	313	372	3,656	3,038	3,035	16,042
1983	400	374	364	14,059	57,338	196,356	56,416	29,397	5,124	546	653	893	361,920
1984	288	337	13,141	4,828	1,686	467	2,001	1,392	1,436	993	1,166	1,209	28,944
1985	1,051	675	306	356	334	338	362	377	3,428	3,029	688	2,244	13,187
1986	1,104	196	199	175	767	2,035	1,952	1,235	1,389	1,014	1,171	1,216	12,453
1987	1,115	361	364	352	368	1,949	351	363	373	392	2,014	1,076	9,080
1988	366	380	378	343	366	1,924	319	191	3,594	2,239	1,654	2,048	13,800
1989	195	211	220	221	211	219	223	227	1,135	2,210	594	218	5,886
1990	233	240	242	243	243	238	240	1,361	212	478	310	296	4,338
1991	434	319	249	248	247	711	1,975	1,590	1,966	1,610	2,416	1,096	12,862
1992	330	217	208	159	1,036	2,608	1,845	1,220	1,311	969	4,032	3,037	16,972
1993	1,010	780	360	26,050	113,851	65,385	28,710	6,367	1,038	656	973	1,121	246,300
AVG	904	459	473	3,290	8,829	16,744	6,623	2,130	1,315	1,465	1,740	1,480	45,452
MEDIAN	429	361	322	342	370	560	355	1,134	1,115	960	1,178	1,171	13,737

Alternative 5B

SANTA YNEZ RIVER AT 154 BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	300	300	300	300	52,797	129,234	18,272	5,180	1,131	794	988	1,005	210,601
1919	351	308	300	1,163	1,252	1,249	300	300	300	3,581	360	1,919	11,383
1920	1,329	464	300	300	300	567	300	300	300	3,646	300	2,449	10,556
1921	1,509	840	150	150	181	234	150	150	150	150	4,541	2,102	10,307
1922	2,321	670	1,397	810	2,529	2,966	7,611	1,230	1,260	861	1,008	1,045	23,708
1923	300	300	463	1,223	1,275	1,217	300	300	300	300	4,040	2,961	12,979
1924	2,849	571	300	300	300	300	300	300	300	150	1,765	1,896	9,330
1925	1,286	381	150	150	150	150	195	150	150	1,077	2,550	406	6,794
1926	150	150	150	150	449	186	2,172	1,230	1,394	936	1,083	1,717	9,766
1927	4,318	365	218	207	3,831	10,886	4,331	1,230	1,299	876	1,031	1,073	29,664
1928	300	300	300	1,153	1,486	1,362	300	300	300	3,610	2,961	2,930	15,302
1929	2,914	300	300	300	300	300	300	300	3,353	2,780	1,276	2,208	14,630
1930	1,488	446	150	150	150	326	150	150	150	1,095	1,646	150	6,051
1931	150	150	150	150	150	150	150	1,290	205	150	150	150	2,994
1932	150	150	847	386	2,222	2,951	1,968	1,310	1,380	956	1,081	1,726	15,126
1933	610	150	150	501	300	150	150	150	3,346	2,917	2,507	1,789	12,720
1934	150	150	150	503	254	150	150	150	3,601	2,203	2,221	2,310	11,992
1935	150	150	150	549	244	605	932	1,230	1,385	952	3,912	2,495	12,754
1936	1,031	776	150	150	1,419	323	285	150	150	150	2,146	326	7,057
1937	150	150	150	272	2,927	11,123	17,253	1,230	1,209	857	1,023	1,057	37,402
1938	373	746	300	1,162	33,200	190,967	16,284	2,246	1,131	754	977	1,001	249,141
1939	342	341	300	1,268	1,344	1,475	300	300	300	3,372	2,958	2,936	15,237
1940	300	300	300	300	305	300	300	300	300	3,715	2,937	1,745	11,101
1941	1,376	150	411	1,264	60,794	199,689	123,216	18,828	3,073	615	717	829	410,963
1942	300	300	1,065	654	485	893	6,421	552	378	300	304	878	12,530
1943	300	300	300	47,254	29,574	68,069	10,575	1,230	1,173	800	982	1,002	161,558
1944	320	310	300	300	18,614	36,716	4,871	1,230	1,185	863	997	1,036	66,742
1945	361	300	300	300	860	4,520	2,684	1,230	1,375	926	1,061	1,094	15,012
1946	1,110	636	300	300	300	336	481	1,367	1,409	3,301	2,964	2,940	15,444
1947	2,931	300	300	300	300	300	300	3,252	2,969	2,938	2,908	2,891	19,688
1948	2,683	1,188	150	150	150	150	150	150	630	1,003	150	150	6,703
1949	150	150	150	150	150	1,959	150	1,608	236	150	150	150	5,153
1950	150	150	150	150	1,834	150	150	2,911	155	150	150	150	6,250
1951	0	0	0	0	0	0	0	496	0	0	0	29	525
1952	0	0	0	3,570	1,940	3,764	10,610	1,230	1,335	869	977	1,353	25,648
1953	817	300	633	2,188	300	300	300	300	300	3,686	2,964	2,378	14,465
1954	1,908	300	300	680	1,299	582	300	300	300	3,915	2,715	2,743	15,342
1955	1,757	738	150	169	150	150	150	150	150	1,806	2,893	455	8,719
1956	150	150	1,756	2,283	404	227	317	189	150	150	1,600	957	8,333
1957	174	150	150	150	170	150	150	150	3,952	688	2,699	730	9,313
1958	194	230	150	187	1,949	2,951	38,280	9,542	1,131	749	956	1,010	57,330
1959	347	342	303	300	2,302	300	300	300	300	3,647	2,960	1,889	13,290
1960	1,566	871	300	300	1,876	300	300	300	300	150	2,410	150	8,823
1961	150	150	150	150	150	150	150	1,510	252	150	150	150	3,261
1962	150	187	150	173	7,085	2,951	1,968	1,230	1,376	928	1,064	1,507	18,769
1963	300	300	300	300	531	480	300	300	300	300	2,083	150	5,644
1964	150	150	150	150	150	150	150	1,677	294	150	150	150	3,471
1965	150	150	150	183	150	150	719	150	3,649	2,785	1,029	321	9,585
1966	150	734	716	865	1,472	2,951	2,089	1,346	1,356	940	3,975	2,927	19,521
1967	2,910	2,901	524	1,663	1,472	18,873	53,533	20,719	1,131	859	3,492	2,611	110,688
1968	351	349	300	300	300	1,868	300	300	3,252	300	848	1,960	10,428
1969	1,358	652	300	131,128	192,576	79,723	18,445	5,828	1,131	768	926	977	433,812
1970	324	300	300	300	300	2,395	306	300	300	3,380	2,958	897	12,061
1971	1,357	804	344	300	300	300	300	300	3,236	2,961	2,939	1,664	14,805
1972	1,348	738	349	300	300	300	300	3,246	2,959	150	1,293	2,136	13,419
1973	1,467	150	150	1,526	3,279	16,162	7,880	1,230	1,222	889	1,014	1,041	36,009
1974	369	674	300	1,124	300	555	476	1,332	1,397	941	1,060	1,300	9,828
1975	1,172	300	528	300	2,859	6,620	5,111	1,230	1,225	857	1,010	1,036	22,248
1976	300	300	300	300	1,927	300	300	300	3,260	2,967	2,932	2,030	15,217
1977	1,213	300	300	300	300	150	150	150	150	2,354	159	150	5,675
1978	150	150	150	1,522	13,768	149,276	36,421	7,678	1,131	630	880	976	212,731
1979	300	300	300	500	1,083	21,529	11,365	1,230	1,165	857	1,024	1,050	40,703
1980	755	569	300	411	69,887	42,110	7,167	1,230	1,131	810	1,015	1,039	126,424
1981	356	347	301	300	300	3,167	324	300	300	328	1,002	2,068	9,092
1982	1,414	684	300	300	300	1,950	596	300	300	3,466	2,964	2,941	15,515
1983	300	300	637	15,687	59,567	198,927	57,864	30,208	5,357	615	658	836	370,956
1984	300	300	13,186	4,932	1,742	503	1,968	1,333	1,353	906	1,047	1,078	28,648
1985	881	591	300	300	300	300	300	300	3,235	2,951	571	1,976	12,005
1986	975	150	150	150	1,751	2,951	1,968	1,230	1,320	923	1,053	1,085	13,707
1987	942	300	300	300	300	1,935	300	300	300	300	1,743	932	7,951
1988	300	300	300	300	300	1,898	300	150	3,417	2,173	1,431	1,862	12,731
1989	150	150	150	150	150	150	150	150	920	1,992	517	150	4,779
1990	150	150	150	150	150	150	150	1,114	150	372	209	187	3,080
1991	302	207	150	150	150	1,583	1,980	1,527	1,806	1,473	2,244	1,013	12,583
1992	263	150	150	150	2,461	2,951	1,968	1,230	1,260	890	3,858	2,967	18,297
1993	892	676	300	27,036	116,182	66,737	29,303	6,577	1,131	650	900	1,012	251,396
AVG	803	392	483	3,473	9,377	17,222	6,799	2,116	1,246	1,363	1,608	1,347	46,230
MEDIAN	345	300	300	300	467	749	300	1,172	1,131	883	1,060	1,054	13,135

Alternative 5B

SANTA YNEZ RIVER ABOVE ALISAL BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	9	13	29	61	59,197	134,099	20,067	5,796	1,358	615	615	595	222,455
1919	90	90	119	858	1,163	1,173	197	181	126	2,919	90	1,000	8,005
1920	750	258	166	157	411	1,358	550	231	134	2,976	52	1,399	8,443
1921	898	560	29	127	255	418	96	70	9	3	3,456	1,776	7,698
1922	1,340	397	3,544	2,190	7,908	5,016	8,337	1,452	1,131	615	615	595	33,140
1923	51	49	801	1,052	1,243	1,108	312	222	158	97	3,179	2,633	10,906
1924	2,495	228	93	116	147	311	176	149	106	0	802	1,076	5,700
1925	729	174	21	20	20	63	283	37	11	402	1,553	127	3,441
1926	0	0	2	2	838	217	6,210	1,308	1,131	615	615	876	11,814
1927	3,629	689	325	348	12,610	11,974	4,931	1,311	1,131	615	615	595	38,774
1928	41	52	84	799	1,835	1,492	249	192	149	2,962	2,638	2,534	13,025
1929	2,506	30	59	99	214	313	273	155	2,807	2,502	529	1,320	10,805
1930	903	232	25	23	28	691	71	37	5	420	812	0	3,246
1931	0	0	0	0	5	0	0	555	10	0	0	0	571
1932	0	0	1,584	577	7,057	3,862	2,088	1,230	1,131	615	615	882	19,642
1933	285	0	0	1,097	390	104	84	36	2,780	2,628	2,133	800	10,337
1934	0	0	0	1,023	414	145	33	13	2,954	1,924	1,206	1,453	9,163
1935	5	0	0	1,236	426	1,566	2,651	1,287	1,131	615	3,165	2,199	14,281
1936	408	444	15	19	4,134	741	631	92	20	0	1,055	49	7,608
1937	0	0	0	380	8,924	16,341	18,372	1,444	1,131	615	615	595	48,417
1938	90	365	122	864	38,524	205,659	17,613	2,204	1,154	615	615	595	268,421
1939	90	90	166	1,172	1,450	1,898	421	228	151	2,771	2,639	2,546	13,622
1940	19	21	38	172	505	437	292	161	96	2,986	2,592	853	8,174
1941	744	19	789	3,387	74,521	222,371	133,834	20,156	3,309	734	615	595	461,074
1942	187	200	2,215	1,236	717	1,499	6,822	754	358	152	90	238	14,468
1943	52	92	118	52,678	31,761	74,506	11,422	1,427	1,131	615	615	595	175,011
1944	90	90	197	329	22,944	39,178	5,388	1,494	1,131	615	615	595	72,665
1945	90	203	161	198	2,425	5,168	3,019	1,244	1,131	615	615	595	15,463
1946	458	337	527	208	289	611	863	1,230	1,131	2,767	2,656	2,558	13,634
1947	2,533	177	201	133	201	196	168	2,829	2,757	2,628	2,500	2,434	16,758
1948	2,238	429	6	7	8	10	8	1	257	315	0	0	3,278
1949	0	0	0	0	0	1,481	0	815	30	0	0	0	2,326
1950	0	0	1	0	1,091	2	0	1,716	1	0	0	0	2,811
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	11,177	1,472	9,586	10,538	1,375	1,131	615	615	617	37,127
1953	480	167	1,075	2,612	407	318	283	164	122	3,016	2,637	2,004	13,285
1954	948	83	88	736	1,250	1,198	482	157	139	3,179	2,380	1,646	12,285
1955	1,123	479	31	166	103	78	66	92	4	948	1,912	174	5,174
1956	0	0	3,563	5,353	806	394	643	321	53	25	688	331	12,177
1957	0	0	0	11	142	145	83	55	3,245	349	1,677	375	6,083
1958	2	8	0	193	4,849	8,378	48,456	10,850	1,403	615	615	595	75,963
1959	90	90	90	218	2,966	414	284	200	147	2,986	2,630	992	11,107
1960	923	583	132	174	1,762	196	265	161	115	0	1,265	0	5,574
1961	0	7	7	0	0	0	0	707	34	0	0	0	754
1962	0	0	18	44	19,361	4,850	2,316	1,243	1,131	615	615	734	30,925
1963	65	55	74	122	838	773	408	248	152	55	1,083	0	3,873
1964	0	0	0	0	0	0	0	875	75	0	0	0	949
1965	0	0	0	51	4	4	1,280	14	2,293	1,965	488	63	6,163
1966	0	1,094	1,273	1,934	1,781	3,028	1,968	1,230	1,131	615	3,227	2,611	19,892
1967	2,556	2,562	1,309	4,419	2,823	19,625	54,672	22,381	1,194	615	2,900	2,341	117,397
1968	90	90	116	149	232	1,826	293	160	2,779	91	243	1,097	7,167
1969	787	406	135	145,627	212,039	86,547	20,150	6,562	1,404	615	615	595	475,482
1970	90	126	154	307	381	3,386	279	180	129	2,747	2,638	272	10,689
1971	678	576	663	328	254	251	207	153	2,747	2,689	2,564	757	11,865
1972	702	448	709	242	226	167	165	2,866	2,767	2	504	1,241	10,041
1973	876	88	24	3,724	10,015	17,938	8,624	1,475	1,131	615	615	595	45,720
1974	90	315	115	2,685	407	901	587	1,230	1,131	615	615	595	9,286
1975	595	116	876	240	4,326	9,953	5,632	1,490	1,131	615	615	595	26,185
1976	60	61	83	106	1,858	271	241	180	2,797	2,705	2,560	1,040	11,962
1977	621	102	113	129	143	50	37	24	3	1,391	0	0	2,614
1978	0	0	0	3,191	24,119	163,611	40,167	8,508	1,442	615	615	595	242,862
1979	100	103	154	982	2,270	22,809	12,552	1,502	1,131	615	615	595	43,428
1980	374	265	138	802	78,208	46,299	7,814	1,672	1,202	615	615	595	138,598
1981	90	90	90	235	363	5,475	629	298	189	90	325	1,193	9,066
1982	841	434	146	202	210	2,131	1,600	344	138	2,860	2,656	2,558	14,119
1983	21	94	1,680	20,296	66,402	210,882	63,112	33,466	6,146	762	615	595	404,072
1984	291	176	13,275	5,310	2,004	705	1,990	1,230	1,131	615	615	595	27,937
1985	309	297	235	171	236	244	199	149	2,738	2,679	192	1,000	8,450
1986	439	11	25	87	4,333	5,191	2,132	1,276	1,131	615	615	595	16,449
1987	343	90	109	163	146	1,885	199	163	123	61	839	346	4,468
1988	57	50	71	165	142	1,988	288	72	2,915	1,927	651	1,059	9,385
1989	3	0	0	1	31	17	12	6	363	1,191	189	0	1,813
1990	0	0	0	0	0	0	0	317	0	16	0	0	333
1991	0	0	0	0	0	3,524	1,968	1,230	1,131	831	1,393	595	10,672
1992	26	0	13	130	7,315	4,283	2,607	1,353	1,131	615	3,140	2,655	23,268
1993	464	332	131	30,916	124,308	72,428	31,723	7,460	1,491	615	615	595	271,077
AVG	459	193	502	4,131	11,318	19,023	7,505	2,151	1,064	1,031	1,122	855	49,354
MEDIAN	90	90	90	205	822	1,278	516	631	1,131	615	615	595	11,839

Alternative 5B

SANTA YNEZ RIVER NEAR BUELLTON (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	4	68,310	135,767	21,941	6,622	1,751	564	457	431	235,846
1919	4	9	56	680	1,110	1,136	95	100	38	2,571	0	533	6,331
1920	354	89	74	54	612	1,994	917	222	49	2,606	0	813	7,784
1921	433	300	0	146	405	722	90	52	0	0	2,872	1,536	6,556
1922	743	167	6,531	4,067	13,212	7,389	9,282	1,763	1,075	490	426	379	45,523
1923	0	0	1,412	1,055	1,307	1,027	359	186	94	24	2,732	2,405	10,601
1924	2,262	67	11	31	56	418	108	62	24	0	393	591	4,023
1925	334	31	0	0	0	46	505	6	0	127	976	0	2,025
1926	0	0	0	0	1,564	359	9,658	1,541	978	444	354	417	15,316
1927	3,062	1,116	504	582	21,409	12,598	5,669	1,435	1,028	485	417	361	48,666
1928	0	0	10	589	2,106	1,672	219	121	65	2,600	2,421	2,288	12,091
1929	2,252	0	0	21	244	449	346	97	2,478	2,315	182	755	9,138
1930	442	58	0	0	0	1,268	40	0	0	130	354	0	2,292
1931	0	0	0	0	0	0	0	200	0	0	0	0	200
1932	0	0	3,121	1,195	10,087	5,304	2,275	1,216	937	417	359	424	25,335
1933	80	0	0	2,064	606	114	74	0	2,451	2,439	1,901	318	10,047
1934	0	0	0	1,939	650	222	0	0	2,567	1,729	649	823	8,579
1935	0	0	0	2,296	740	2,567	4,449	1,455	970	421	2,713	1,980	17,590
1936	100	209	0	0	6,955	1,325	910	75	0	0	558	0	10,132
1937	0	0	0	745	16,925	22,292	19,794	1,719	1,134	501	420	367	63,898
1938	0	170	53	678	45,873	215,248	19,260	2,138	1,288	629	459	421	286,216
1939	6	6	159	1,285	1,718	2,523	596	194	69	2,447	2,441	2,315	13,759
1940	0	0	0	189	938	744	391	108	16	2,596	2,369	403	7,754
1941	330	0	1,374	6,369	85,090	241,980	141,859	21,864	3,705	1,025	723	581	504,902
1942	214	239	3,894	2,104	1,057	2,342	7,427	1,037	411	105	35	31	18,898
1943	0	11	35	57,518	34,283	80,016	12,418	1,694	1,185	561	457	419	188,597
1944	15	14	208	484	26,776	41,622	5,993	1,856	1,171	493	446	378	79,455
1945	1	261	138	195	4,499	5,695	3,494	1,310	968	446	400	346	17,753
1946	149	147	949	193	360	678	1,452	1,194	948	2,448	2,464	2,332	13,315
1947	2,297	236	261	88	206	176	102	2,534	2,607	2,457	2,278	2,179	15,421
1948	1,982	104	0	0	0	0	0	0	99	56	0	0	2,241
1949	0	0	0	0	0	1,577	0	415	0	0	0	0	1,992
1950	0	0	0	0	951	0	0	1,039	0	0	0	0	1,990
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	18,904	1,825	18,927	11,630	1,723	981	504	474	248	55,218
1953	277	110	1,786	3,357	572	368	245	65	31	2,636	2,403	1,751	13,600
1954	420	0	0	808	1,287	2,038	753	53	53	2,732	2,134	963	11,239
1955	563	217	0	109	75	40	22	100	0	489	1,208	5	2,829
1956	0	0	6,248	8,383	1,330	608	949	542	8	8	286	37	18,400
1957	0	0	0	0	177	217	84	45	2,801	150	1,024	111	4,609
1958	0	0	0	258	8,935	15,692	60,087	12,322	1,804	532	446	395	100,473
1959	1	0	2	232	4,085	585	237	115	80	2,614	2,411	500	10,863
1960	451	317	13	60	1,683	86	224	60	24	0	696	0	3,614
1961	0	0	0	0	0	0	0	264	0	0	0	0	264
1962	0	0	0	0	34,328	7,505	2,801	1,260	922	424	358	306	47,905
1963	0	0	0	8	1,279	1,181	567	239	85	0	541	0	3,901
1964	0	0	0	0	0	0	0	380	0	0	0	0	380
1965	0	0	0	17	0	0	2,032	0	1,489	1,259	97	0	4,894
1966	0	1,650	2,088	3,441	2,267	3,181	1,747	1,100	959	418	2,758	2,373	21,982
1967	2,296	2,309	2,478	8,334	4,110	20,063	55,064	23,680	1,201	465	2,666	2,194	124,860
1968	6	2	55	103	264	1,957	341	66	2,480	10	44	616	5,942
1969	374	194	20	163,134	230,185	94,929	21,420	7,373	1,760	528	481	440	520,837
1970	13	100	113	447	589	4,520	234	88	44	2,432	2,447	38	11,066
1971	297	415	884	433	253	200	132	58	2,441	2,528	2,350	343	10,335
1972	306	222	1,187	251	206	76	77	2,581	2,630	0	176	707	8,420
1973	430	50	0	6,102	18,587	19,597	9,513	1,635	1,038	455	425	374	58,204
1974	0	129	35	4,992	598	1,407	778	1,211	947	430	384	242	11,153
1975	238	5	1,398	224	6,442	14,516	6,283	1,848	1,039	470	426	374	33,262
1976	0	0	1	13	1,988	276	203	91	2,491	2,532	2,336	543	10,474
1977	232	0	3	16	31	0	0	0	0	866	0	0	1,148
1978	0	0	0	5,301	38,433	181,400	44,830	9,581	1,781	711	572	427	283,036
1979	25	32	118	1,789	4,005	24,705	13,982	1,854	1,115	472	418	361	48,875
1980	169	94	38	1,433	89,201	51,466	8,585	2,097	1,264	503	430	383	155,662
1981	1	0	4	273	548	8,803	1,047	351	157	10	71	680	11,947
1982	414	216	30	122	154	2,416	2,919	406	48	2,540	2,454	2,325	14,044
1983	0	60	3,002	27,080	75,244	218,177	67,010	36,383	7,292	1,076	786	582	436,692
1984	471	168	13,961	5,715	2,284	933	1,944	1,088	952	446	409	354	28,724
1985	62	119	243	109	235	235	144	57	2,439	2,514	47	537	6,740
1986	128	0	0	82	7,924	8,335	2,373	1,265	1,031	443	399	348	22,327
1987	78	0	11	78	45	1,927	109	65	33	0	432	61	2,840
1988	0	0	0	112	57	2,305	330	18	2,582	1,760	276	558	7,997
1989	0	0	0	0	9	0	0	0	114	722	22	0	866
1990	0	0	0	0	0	0	0	39	0	0	0	0	39
1991	0	0	0	0	0	6,779	2,469	1,170	704	419	803	276	12,621
1992	0	0	0	202	14,034	6,168	3,410	1,532	1,097	450	2,703	2,428	32,024
1993	220	132	38	36,548	134,352	78,997	34,776	8,317	1,841	641	555	416	296,834
AVG	296	129	691	5,040	13,627	20,920	8,277	2,281	998	873	884	607	54,624
MEDIAN	5	1	4	213	1,084	1,624	766	393	950	479	439	381	11,593

Alternative 5B

SANTA YNEZ RIVER ABOVE SALSIPUEDES CREEK CONFLUENCE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	77,294	135,579	24,007	7,780	2,263	493	225	159	247,800
1919	0	0	0	358	897	1,061	26	48	0	2,046	0	6	4,444
1920	0	0	0	0	606	2,088	1,249	234	0	2,055	0	79	6,310
1921	0	4	0	55	403	907	84	42	0	0	1,934	1,166	4,595
1922	70	0	8,784	5,965	17,702	9,906	10,584	2,302	1,135	384	188	103	57,123
1923	0	0	1,572	969	1,341	1,017	477	211	68	0	2,031	2,049	9,736
1924	1,897	0	0	0	0	427	45	2	0	0	0	10	2,381
1925	0	0	0	0	0	0	515	0	0	0	118	0	633
1926	0	0	0	0	1,660	303	11,002	1,786	845	244	60	0	15,901
1927	2,139	1,270	584	796	29,309	13,026	6,714	1,728	1,022	359	155	65	57,166
1928	0	0	0	237	1,882	1,728	213	80	3	2,083	2,086	1,899	10,211
1929	1,852	0	0	0	176	486	371	48	2,074	2,052	0	54	7,114
1930	0	0	0	0	0	1,555	1	0	0	0	0	0	1,556
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	3,768	1,145	10,425	6,810	2,496	1,291	773	201	66	0	26,975
1933	0	0	0	2,595	686	112	69	0	2,054	2,177	1,543	0	9,236
1934	0	0	0	2,319	657	246	0	0	2,069	1,455	45	81	6,873
1935	0	0	0	2,894	932	3,245	5,943	1,742	871	215	2,063	1,659	19,564
1936	0	0	0	0	8,783	1,933	1,093	97	0	0	19	0	11,925
1937	0	0	0	705	24,499	28,033	21,667	2,215	1,266	398	174	83	79,041
1938	0	0	0	372	53,403	221,402	21,363	2,237	1,570	668	245	157	301,416
1939	0	0	47	1,238	1,930	3,218	831	222	21	2,025	2,137	1,943	13,612
1940	0	0	0	81	1,179	964	487	82	0	2,042	2,027	0	6,862
1941	0	0	1,565	9,060	88,843	258,205	147,333	23,837	4,163	1,302	744	471	535,522
1942	160	194	4,811	2,781	1,349	3,030	8,162	1,407	498	50	0	0	22,442
1943	0	0	0	60,529	37,287	85,042	13,742	2,096	1,344	503	246	162	200,951
1944	0	0	92	509	28,962	44,099	6,859	2,388	1,310	380	210	90	84,899
1945	0	166	41	131	6,670	6,112	4,243	1,531	895	270	120	40	20,219
1946	0	0	1,158	130	412	500	2,175	1,254	810	2,049	2,171	1,972	12,631
1947	1,922	176	233	35	183	170	70	2,296	2,470	2,225	1,936	1,774	13,491
1948	1,578	0	0	0	0	0	0	0	0	0	0	0	1,578
1949	0	0	0	0	0	824	0	0	0	0	0	0	824
1950	0	0	0	0	189	0	0	47	0	0	0	0	236
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	26,393	1,005	27,314	12,221	2,063	760	321	237	0	70,315
1953	21	0	1,813	3,854	761	475	213	15	0	2,121	2,053	1,365	12,692
1954	0	0	0	589	1,120	2,559	1,056	0	0	2,110	1,768	163	9,365
1955	9	0	0	0	0	0	0	56	0	3	233	0	301
1956	0	0	6,741	8,909	1,721	824	1,151	841	0	0	0	0	20,186
1957	0	0	0	0	7	108	13	0	2,095	0	171	0	2,395
1958	0	0	0	69	11,628	22,684	71,961	14,253	2,357	407	202	127	123,689
1959	0	0	0	115	4,822	738	159	47	30	2,078	2,068	2	10,061
1960	0	10	0	0	1,259	0	109	0	0	0	11	0	1,390
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	46,773	8,394	2,909	1,115	622	166	45	0	60,024
1963	0	0	0	0	911	1,000	450	134	3	0	0	0	2,498
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	1,263	0	244	243	0	0	1,750
1966	0	907	1,935	4,361	2,482	3,354	1,579	1,041	838	205	2,076	2,023	20,800
1967	1,909	1,940	3,566	12,002	5,472	20,712	55,715	25,194	1,239	319	2,282	1,950	132,301
1968	0	0	0	14	237	2,052	418	10	2,163	0	0	17	4,911
1969	0	0	0	182,825	249,459	105,364	22,324	8,329	2,156	410	280	208	571,354
1970	0	17	20	523	801	5,601	218	45	2	2,027	2,154	0	11,408
1971	0	112	744	450	214	138	75	5	2,126	2,312	2,019	0	8,195
1972	0	0	1,394	210	172	18	27	2,326	2,504	0	0	40	6,690
1973	0	0	0	6,852	26,940	20,818	10,728	1,845	975	303	175	88	68,723
1974	0	0	0	6,613	762	1,833	1,005	1,275	815	227	97	0	12,629
1975	0	0	1,260	117	7,843	18,229	7,081	2,363	945	308	180	91	38,417
1976	0	0	0	0	1,777	224	140	16	2,120	2,275	1,972	11	8,536
1977	0	0	0	0	0	0	0	0	0	63	0	0	63
1978	0	0	0	5,248	51,203	200,998	50,149	10,997	2,169	772	446	158	322,141
1979	0	0	11	2,280	5,477	26,521	15,842	2,359	1,103	296	143	54	54,086
1980	0	0	0	1,732	100,092	57,413	9,688	2,615	1,324	351	181	93	173,488
1981	0	0	0	140	593	11,694	1,515	454	149	0	0	18	14,563
1982	0	0	0	0	33	2,537	4,316	489	0	2,086	2,139	1,948	13,548
1983	0	0	4,011	32,757	84,010	223,674	69,591	39,092	8,684	1,379	896	494	464,587
1984	563	94	14,397	6,294	2,754	1,334	2,024	1,058	860	276	137	51	29,842
1985	0	0	70	10	159	186	101	2	2,102	2,280	0	5	4,914
1986	0	0	0	0	10,274	10,565	2,728	1,258	1,007	268	127	49	26,275
1987	0	0	0	0	0	1,609	23	0	0	0	0	0	1,632
1988	0	0	0	0	0	2,249	281	0	2,053	1,489	0	0	6,073
1989	0	0	0	0	0	0	0	0	0	40	0	0	40
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	8,992	2,392	894	168	1	68	0	12,514
1992	0	0	0	79	20,246	8,210	4,488	1,861	1,162	265	2,092	2,100	40,503
1993	1	0	0	42,101	145,553	86,807	38,779	9,324	2,201	603	423	156	325,947
AVG	159	64	771	5,756	15,582	22,595	9,007	2,479	954	680	595	332	58,975
MEDIAN	0	0	0	116	968	1,780	1,031	228	792	286	149	18	12,220

Alternative 5B

SANTA YNEZ RIVER AT LOMPOC NARROWS (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	54	83,154	144,219	25,699	8,326	2,672	670	289	218	265,302
1919	68	67	73	414	1,087	1,249	19	133	0	1,946	0	0	5,057
1920	23	47	55	59	842	3,030	1,662	323	84	1,974	0	22	8,120
1921	0	0	0	158	634	1,292	166	122	27	64	1,795	1,122	5,381
1922	23	0	12,076	7,500	22,255	11,823	11,440	2,522	1,227	462	159	71	69,557
1923	0	0	2,549	1,178	1,633	1,106	618	304	156	79	1,933	2,007	11,564
1924	1,849	0	66	71	74	692	132	84	79	0	0	0	3,048
1925	0	0	0	0	0	10	730	49	49	0	17	0	855
1926	0	0	10	20	2,476	670	15,662	2,198	930	317	35	0	22,317
1927	1,964	1,908	960	1,084	35,421	14,451	7,357	1,934	1,107	431	122	33	66,772
1928	0	49	56	276	2,575	2,146	305	167	86	2,003	2,042	1,844	11,550
1929	1,796	0	61	74	258	679	563	131	2,010	2,016	0	3	7,592
1930	0	0	0	0	21	1,922	77	69	0	0	0	0	2,089
1931	0	0	0	0	62	20	37	0	0	0	0	0	119
1932	0	0	5,392	1,568	16,635	7,786	2,923	1,486	851	219	38	0	36,900
1933	0	0	0	3,267	1,050	203	163	83	1,987	2,140	1,493	0	10,387
1934	0	0	0	3,071	1,085	434	85	32	1,996	1,419	7	18	8,147
1935	0	0	0	3,669	1,315	4,266	7,584	1,946	952	234	1,973	1,620	23,559
1936	0	0	0	48	11,067	2,455	1,538	193	37	0	0	0	15,338
1937	0	0	0	984	29,702	32,627	22,957	2,434	1,361	475	144	53	90,736
1938	0	0	55	400	58,126	235,308	22,657	2,338	1,673	751	312	220	321,840
1939	0	0	199	1,477	2,325	3,801	1,134	317	110	1,962	2,095	1,889	15,309
1940	0	0	0	208	1,571	1,367	705	169	33	1,959	1,980	0	7,993
1941	0	0	2,288	11,640	108,116	277,073	156,986	25,527	4,878	1,800	1,124	744	590,176
1942	438	472	8,215	4,461	2,260	4,857	9,290	1,919	793	231	167	55	33,158
1943	66	157	165	63,415	39,245	88,983	14,704	2,512	1,543	684	315	227	212,016
1944	74	73	359	884	33,115	46,628	7,500	2,810	1,509	460	277	63	93,753
1945	21	321	209	305	7,526	6,722	4,473	1,636	881	247	90	14	22,446
1946	0	0	1,239	199	497	1,296	2,482	1,343	887	1,993	2,131	1,921	13,988
1947	1,867	331	413	118	368	283	159	2,253	2,445	2,185	1,880	1,710	14,012
1948	1,515	0	0	0	0	0	0	0	0	0	0	0	1,515
1949	0	0	0	0	0	1,916	0	0	0	0	0	0	1,916
1950	0	0	0	0	555	2	0	0	0	0	0	0	557
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	32,930	1,267	36,012	12,515	2,096	753	321	253	0	86,147
1953	55	212	3,670	4,904	959	588	363	51	31	2,023	2,002	1,309	16,167
1954	0	0	0	649	1,382	3,938	1,257	0	76	2,001	1,717	91	11,112
1955	0	0	0	275	147	68	85	120	1	0	93	0	790
1956	0	0	12,858	16,085	2,831	1,334	1,895	1,142	87	79	0	1	36,311
1957	0	0	1	44	342	268	95	73	1,985	1	87	0	2,896
1958	1	0	0	309	16,916	29,651	80,416	15,138	2,770	583	280	187	146,251
1959	68	66	68	280	6,177	1,036	360	135	114	1,995	2,022	0	12,321
1960	0	0	3	49	1,747	84	411	77	0	0	0	0	2,370
1961	0	47	85	2	3	8	0	0	0	0	0	0	144
1962	1	0	114	436	65,393	12,134	3,529	1,408	712	237	21	0	83,983
1963	0	2	36	54	2,660	2,609	1,319	513	182	71	0	0	7,446
1964	0	0	1	3	4	6	7	0	0	0	0	0	22
1965	0	0	0	337	23	83	2,716	80	223	176	1	0	3,639
1966	1	3,540	4,318	6,691	3,862	3,871	1,745	1,225	913	220	1,974	1,978	30,338
1967	1,858	1,888	4,031	15,926	5,934	21,130	56,630	25,656	1,431	298	2,206	1,915	138,903
1968	0	20	69	87	305	2,208	513	4	2,098	0	1	0	5,307
1969	0	0	0	190,943	257,779	108,154	24,160	8,965	2,562	571	348	271	593,753
1970	74	93	190	696	987	6,348	311	38	0	1,939	2,109	0	12,785
1971	0	54	1,032	609	399	223	170	1	2,052	2,272	1,966	0	8,777
1972	0	0	1,528	268	240	8	17	2,247	2,474	0	0	0	6,783
1973	0	101	1	10,934	33,715	23,587	11,581	2,147	1,158	376	186	56	83,842
1974	18	16	62	9,255	1,068	2,744	1,408	1,467	894	246	108	0	17,285
1975	2	11	2,725	293	11,276	24,993	8,015	2,780	1,228	397	244	103	52,066
1976	66	65	68	72	2,315	422	340	101	2,064	2,240	1,919	0	9,672
1977	0	3	5	43	51	70	0	55	0	2	0	0	230
1978	0	0	0	9,539	66,397	213,004	54,199	11,955	2,574	1,052	610	234	359,564
1979	147	163	182	3,353	7,618	29,191	16,826	2,777	1,389	383	154	64	62,247
1980	18	16	73	2,369	108,757	61,596	10,436	3,032	1,614	507	194	103	188,715
1981	21	19	65	396	862	15,362	2,026	654	240	31	13	0	19,689
1982	0	5	43	137	93	2,688	4,957	583	37	2,019	2,099	1,897	14,557
1983	0	62	4,342	41,368	93,640	233,629	74,810	41,016	9,541	1,879	1,179	669	502,135
1984	844	372	15,773	6,822	3,076	1,551	2,225	1,152	892	253	104	22	33,086
1985	0	10	389	89	328	371	182	0	2,030	2,241	0	0	5,638
1986	0	1	35	110	15,034	16,102	3,149	1,556	1,097	246	97	22	37,449
1987	7	16	61	157	72	2,340	109	35	0	0	0	0	2,797
1988	0	0	18	114	51	2,230	373	80	1,983	1,454	0	0	6,304
1989	0	0	0	0	3	2	1	0	0	0	0	0	6
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	12,810	2,252	710	0	0	0	0	15,773
1992	0	0	2	10	24,758	9,365	4,672	2,038	1,236	330	1,997	2,054	46,463
1993	0	0	138	45,488	153,103	90,065	39,960	9,863	2,506	782	491	126	342,522
AVG	170	134	1,137	6,694	17,850	24,621	9,814	2,689	1,044	710	591	328	65,781
MEDIAN	0	0	56	287	1,348	2,285	1,364	418	866	319	115	0	14,000

Alternative 5C

SANTA YNEZ RIVER BELOW HILTON CREEK (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	476	453	433	414	47,567	127,927	17,774	5,003	1,061	839	1,086	1,108	204,142
1919	428	378	365	1,273	1,296	1,294	351	361	374	3,790	441	2,163	12,513
1920	1,460	515	342	356	273	329	239	352	378	3,857	375	2,717	11,193
1921	1,642	911	197	163	162	183	196	206	229	235	4,837	2,165	11,126
1922	2,576	736	615	395	1,048	2,412	7,035	1,187	1,310	934	1,113	1,166	20,527
1923	382	390	302	1,299	1,307	1,283	314	346	364	378	4,272	3,037	13,674
1924	3,022	673	382	378	372	309	369	376	384	394	1,887	2,092	10,636
1925	1,411	595	200	211	219	206	171	220	229	1,229	2,801	553	8,046
1926	211	222	222	222	270	166	927	1,234	1,490	1,029	1,203	1,920	9,116
1927	4,466	225	171	169	1,553	9,303	4,165	1,220	1,359	952	1,139	1,198	25,919
1928	383	386	378	1,272	1,385	1,336	332	354	364	3,805	3,038	3,026	16,059
1929	3,017	401	394	380	343	310	326	372	3,546	2,801	1,495	2,411	15,796
1930	1,617	503	200	210	216	220	205	219	229	1,338	1,861	205	7,022
1931	223	233	237	238	219	231	229	1,518	266	226	246	259	4,125
1932	265	264	438	250	949	2,728	1,945	1,343	1,458	1,049	1,195	1,925	13,809
1933	679	208	217	294	277	355	194	216	3,538	2,994	2,993	2,053	14,019
1934	204	219	226	292	193	165	220	227	3,821	2,890	2,392	2,463	13,312
1935	192	209	218	308	188	327	450	1,268	1,489	1,055	4,097	2,646	12,446
1936	1,196	875	205	212	633	215	201	198	223	235	2,478	399	7,069
1937	221	231	235	205	1,220	5,978	16,930	1,173	1,237	924	1,128	1,177	30,659
1938	459	876	366	1,273	31,689	187,385	15,924	2,249	1,137	795	1,075	1,106	244,334
1939	417	425	347	1,314	1,331	1,378	274	345	367	3,560	3,037	3,035	15,831
1940	403	406	403	350	239	265	326	375	390	3,940	3,019	1,986	12,103
1941	1,525	191	260	588	56,272	193,829	120,510	18,361	2,956	555	722	879	396,648
1942	322	324	525	413	400	577	6,339	486	383	350	372	1,071	11,561
1943	370	361	361	45,990	28,932	66,502	10,302	1,171	1,190	849	1,081	1,109	158,217
1944	391	384	329	288	17,370	35,994	4,713	1,158	1,207	936	1,098	1,149	65,016
1945	446	325	349	344	470	4,302	2,625	1,251	1,460	1,016	1,180	1,226	14,994
1946	1,296	718	239	347	328	274	410	1,459	1,518	3,455	3,038	3,035	16,118
1947	3,036	342	338	374	347	358	372	3,430	3,037	3,028	3,017	3,015	20,693
1948	2,908	1,432	206	216	222	228	232	238	772	1,246	222	240	8,162
1949	250	253	252	245	244	1,956	211	1,812	291	218	240	254	6,224
1950	260	261	244	250	1,908	200	215	3,174	194	213	236	251	7,408
1951	26	25	25	24	23	23	22	842	24	23	22	213	1,291
1952	22	22	29	1,561	2,147	1,559	6,802	1,172	1,418	945	1,069	1,659	18,404
1953	944	317	359	2,041	279	317	327	369	377	3,887	3,038	2,398	14,655
1954	2,171	357	369	676	1,323	337	268	370	374	4,139	2,779	3,016	16,179
1955	1,886	802	194	155	177	197	204	194	230	2,091	3,112	514	9,757
1956	207	220	765	952	243	177	213	165	210	218	1,885	1,111	6,366
1957	228	214	217	205	160	155	190	203	4,189	778	2,943	800	10,283
1958	255	303	218	166	833	1,234	33,425	9,142	1,044	776	1,040	1,114	49,552
1959	422	421	378	330	2,085	274	322	356	369	3,850	3,038	2,124	13,969
1960	1,713	943	359	350	1,912	351	321	367	377	396	2,739	202	10,030
1961	221	215	215	229	228	226	227	1,754	315	222	243	256	4,351
1962	262	303	172	168	2,771	2,225	1,870	1,230	1,449	1,012	1,174	1,716	14,353
1963	362	376	376	363	321	303	238	327	366	395	2,362	204	5,992
1964	222	227	227	226	225	225	225	1,912	350	215	237	251	4,542
1965	258	260	257	173	229	211	378	199	3,976	2,909	1,127	377	10,353
1966	212	377	368	431	1,336	2,956	2,151	1,394	1,431	1,031	4,151	2,995	18,832
1967	2,994	2,993	306	747	1,197	16,729	53,310	20,330	1,115	926	3,646	2,683	106,976
1968	430	436	368	362	342	1,928	322	366	3,429	370	1,035	2,158	11,545
1969	1,482	715	358	127,823	188,394	78,219	17,924	5,623	1,051	812	1,009	1,077	424,489
1970	395	356	352	309	297	2,186	338	362	378	3,589	3,037	1,085	12,684
1971	1,529	864	247	301	328	342	359	376	3,428	3,038	3,036	1,926	15,774
1972	1,504	812	244	334	345	370	372	3,413	3,020	377	1,358	2,350	14,500
1973	1,597	158	199	667	1,328	15,146	7,653	1,167	1,253	969	1,118	1,152	32,407
1974	453	778	364	546	280	441	463	1,404	1,501	1,040	1,177	4,389	12,837
1975	361	656	315	333	2,284	2,857	4,957	1,164	1,257	929	1,118	1,150	17,381
1976	372	378	377	376	1,946	318	335	361	3,430	3,038	2,539	2,384	15,853
1977	1,042	358	364	366	368	367	208	218	226	2,731	204	227	6,679
1978	240	245	245	687	10,410	145,614	35,264	7,427	1,041	622	941	1,071	203,807
1979	357	362	349	312	585	21,188	11,015	1,150	1,170	923	1,129	1,163	39,703
1980	854	655	354	276	67,612	40,857	6,987	1,117	1,115	865	1,122	1,153	122,970
1981	433	428	377	319	290	2,408	237	319	354	419	1,212	2,269	9,065
1982	1,544	750	353	340	348	1,953	340	313	372	3,656	3,038	3,035	16,042
1983	400	374	364	13,684	57,349	196,392	56,422	29,378	5,102	546	653	893	361,556
1984	288	337	13,090	4,824	1,679	467	2,001	1,392	1,436	993	1,166	1,209	28,881
1985	1,051	675	306	356	334	338	362	377	3,428	3,029	688	2,244	13,187
1986	1,115	357	196	173	767	2,033	1,951	1,234	1,387	1,013	1,170	1,215	12,612
1987	1,100	361	365	352	368	1,949	351	363	373	392	2,015	1,812	9,801
1988	357	374	374	340	363	1,924	318	353	3,465	205	1,977	2,333	12,384
1989	311	207	217	218	209	218	222	226	875	2,219	695	220	5,837
1990	234	241	243	243	243	238	241	1,361	212	478	310	296	4,343
1991	434	319	249	248	247	711	1,978	1,592	1,967	1,582	2,426	1,097	12,850
1992	330	217	208	159	1,036	2,608	1,845	1,220	1,312	969	4,032	3,037	16,973
1993	1,001	3,018	366	20,915	113,879	65,394	28,690	6,343	1,038	656	973	1,121	243,392
AVG	892	496	472	3,213	8,771	16,612	6,535	2,130	1,309	1,452	1,739	1,536	45,157
MEDIAN	425	368	322	340	370	522	355	1,134	1,088	948	1,178	1,187	13,742

Alternative 5C

SANTA YNEZ RIVER AT 154 BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	300	300	300	300	49,070	129,261	18,256	5,158	1,131	794	988	1,005	206,862
1919	351	308	300	1,163	1,252	1,249	300	300	300	3,581	360	1,920	11,384
1920	1,329	464	300	300	300	567	300	300	300	3,646	300	2,449	10,555
1921	1,509	840	150	150	181	234	150	150	150	150	4,541	2,093	10,299
1922	2,322	670	1,397	810	2,529	2,951	7,187	1,230	1,261	862	1,008	1,045	23,272
1923	300	300	463	1,223	1,275	1,217	300	300	300	300	4,040	2,961	12,979
1924	2,932	560	300	300	300	300	300	300	300	300	1,618	1,903	9,413
1925	1,285	533	150	150	150	150	195	150	150	995	2,550	486	6,944
1926	150	150	150	150	449	186	2,172	1,230	1,392	935	1,082	1,705	9,753
1927	4,318	365	218	207	3,803	9,514	4,313	1,230	1,300	877	1,032	1,074	28,249
1928	300	300	300	1,153	1,486	1,362	300	300	300	3,611	2,961	2,930	15,303
1929	2,914	300	300	300	300	300	300	300	3,353	2,729	1,281	2,208	14,584
1930	1,488	446	150	150	150	326	150	150	150	1,095	1,646	150	6,052
1931	150	150	150	150	150	150	150	1,290	205	150	150	150	2,994
1932	150	150	847	386	2,214	2,951	1,968	1,310	1,380	956	1,081	1,715	15,107
1933	602	150	150	501	300	300	150	150	3,330	2,918	2,895	1,782	13,227
1934	150	150	150	503	254	150	150	150	3,593	2,812	2,130	2,284	12,476
1935	150	150	150	549	244	604	932	1,230	1,385	952	3,912	2,579	12,837
1936	1,020	785	150	150	1,419	323	285	150	150	150	2,145	326	7,053
1937	150	150	150	272	2,927	7,373	17,199	1,230	1,211	858	1,024	1,058	33,603
1938	374	760	300	1,163	33,063	190,994	16,271	2,225	1,131	754	977	1,001	249,013
1939	342	341	300	1,268	1,344	1,475	300	300	300	3,372	2,958	2,936	15,237
1940	300	300	300	300	305	300	300	300	300	3,715	2,937	1,745	11,101
1941	1,376	150	418	1,264	60,454	199,720	123,221	18,808	3,050	615	717	829	410,624
1942	300	300	1,065	654	485	818	6,408	552	378	300	304	880	12,443
1943	300	300	300	47,150	29,583	68,071	10,562	1,230	1,173	800	982	1,002	161,452
1944	320	310	300	300	18,510	36,709	4,860	1,230	1,185	863	997	1,036	66,620
1945	361	300	300	300	860	4,391	2,667	1,230	1,375	926	1,061	1,094	14,867
1946	1,112	635	300	300	300	336	481	1,367	1,409	3,301	2,964	2,940	15,446
1947	2,931	300	300	300	300	300	300	3,252	2,969	2,938	2,908	2,896	19,693
1948	2,787	1,178	150	150	150	150	150	150	624	1,008	150	150	6,798
1949	150	150	150	150	150	1,959	150	1,608	236	150	150	150	5,153
1950	150	150	150	150	1,834	150	150	2,911	155	150	150	150	6,250
1951	0	0	0	0	0	0	0	496	0	0	0	29	525
1952	0	0	0	3,570	1,940	3,706	6,889	1,230	1,371	888	990	1,480	22,065
1953	874	300	634	2,189	300	300	300	300	300	3,684	2,964	2,311	14,455
1954	1,908	300	300	680	1,299	582	300	300	300	3,916	2,703	2,747	15,334
1955	1,758	738	150	169	150	150	150	150	150	1,806	2,893	455	8,719
1956	150	150	1,756	2,283	404	227	317	189	150	150	1,600	957	8,333
1957	174	150	150	150	170	150	150	150	3,952	688	2,699	730	9,313
1958	194	230	150	187	1,949	2,951	36,013	9,518	1,131	749	956	1,010	55,040
1959	348	342	303	300	2,302	300	300	300	300	3,648	2,960	1,890	13,292
1960	1,566	871	300	300	1,876	300	300	300	300	300	2,426	150	8,989
1961	150	150	150	150	150	150	150	1,510	252	150	150	150	3,262
1962	150	187	150	173	7,085	2,951	1,968	1,230	1,374	927	1,063	1,524	18,782
1963	300	300	300	300	531	480	300	300	300	300	2,082	150	5,643
1964	150	150	150	150	150	150	150	1,677	294	150	150	150	3,471
1965	150	150	150	183	150	150	719	150	3,649	2,782	1,029	321	9,583
1966	150	734	716	865	1,472	2,951	2,089	1,346	1,356	940	3,975	2,927	19,521
1967	2,910	2,901	524	1,663	1,472	16,766	53,525	20,705	1,131	859	3,495	2,622	108,573
1968	351	349	300	300	300	1,868	300	300	3,252	300	850	1,960	10,429
1969	1,358	652	300	130,867	192,612	79,716	18,437	5,809	1,131	768	926	977	433,552
1970	324	300	300	300	300	2,395	306	300	300	3,380	2,958	897	12,061
1971	1,357	804	344	300	300	300	300	300	3,236	2,961	2,939	1,664	14,805
1972	1,348	738	349	300	300	300	300	3,246	2,959	300	1,147	2,142	13,429
1973	1,467	150	150	1,526	3,279	15,650	7,862	1,230	1,222	889	1,014	1,041	35,480
1974	369	674	300	1,124	300	555	476	1,333	1,397	941	1,060	4,200	12,728
1975	300	570	518	300	2,849	4,128	5,084	1,230	1,229	859	1,012	1,037	19,116
1976	300	300	300	300	1,927	300	300	300	3,260	2,967	2,449	2,102	14,806
1977	917	300	300	300	300	300	150	150	150	2,419	150	150	5,586
1978	150	150	150	1,523	13,847	149,313	36,419	7,653	1,131	630	880	976	212,822
1979	300	300	300	500	1,001	21,536	11,348	1,230	1,165	857	1,024	1,050	40,611
1980	756	569	300	411	69,770	42,109	7,154	1,230	1,131	810	1,015	1,039	126,294
1981	356	347	301	300	300	3,167	324	300	300	328	1,002	2,068	9,092
1982	1,414	684	300	300	300	1,950	596	300	300	3,466	2,964	2,941	15,515
1983	300	300	637	15,315	59,574	198,967	57,866	30,190	5,335	615	658	836	370,592
1984	300	300	13,136	4,927	1,734	503	1,968	1,333	1,353	906	1,047	1,078	28,585
1985	882	591	300	300	300	300	300	300	3,235	2,951	571	1,976	12,005
1986	985	300	150	150	1,754	2,951	1,968	1,230	1,318	922	1,052	1,085	13,866
1987	928	300	300	300	300	1,935	300	300	300	300	1,743	1,638	8,643
1988	300	300	300	300	300	1,901	300	300	3,300	150	1,734	2,147	11,331
1989	260	150	150	150	150	150	150	150	734	1,948	607	150	4,749
1990	150	150	150	150	150	150	150	1,113	150	371	209	187	3,080
1991	302	207	150	150	150	1,583	1,983	1,528	1,807	1,446	2,253	1,014	12,571
1992	263	150	150	150	2,461	2,951	1,968	1,230	1,260	891	3,858	2,967	18,298
1993	884	2,934	300	21,907	116,166	66,785	29,262	6,557	1,131	650	900	1,012	248,488
AVG	792	429	483	3,396	9,319	17,090	6,711	2,115	1,241	1,349	1,607	1,402	45,935
MEDIAN	333	300	300	300	467	711	300	1,172	1,131	883	1,060	1,066	13,260

Alternative 5C

SANTA YNEZ RIVER ABOVE ALISAL BRIDGE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	9	13	29	61	55,454	134,126	20,051	5,775	1,358	615	615	595	218,701
1919	90	90	119	858	1,163	1,173	197	181	126	2,919	90	1,001	8,006
1920	750	258	166	157	411	1,358	550	231	134	2,976	52	1,399	8,443
1921	898	560	29	127	255	418	96	70	9	3	3,456	1,769	7,690
1922	1,341	397	3,544	2,190	7,908	5,002	7,916	1,451	1,131	615	615	595	32,704
1923	51	49	801	1,052	1,243	1,108	312	221	158	97	3,179	2,633	10,906
1924	2,575	221	93	116	147	311	176	149	106	55	728	1,088	5,764
1925	733	297	25	23	22	65	288	38	12	348	1,545	182	3,578
1926	0	0	2	2	843	219	6,216	1,310	1,131	615	615	868	11,820
1927	3,628	689	325	348	12,584	10,612	4,908	1,309	1,131	615	615	595	37,360
1928	40	52	84	799	1,835	1,492	249	192	149	2,962	2,638	2,533	13,025
1929	2,506	30	59	99	214	313	273	155	2,807	2,452	532	1,320	10,759
1930	903	232	25	23	28	691	71	37	5	420	812	0	3,247
1931	0	0	0	0	5	0	0	555	10	0	0	0	571
1932	0	0	1,584	578	7,050	3,862	2,088	1,230	1,131	615	615	872	19,625
1933	278	0	0	1,096	390	217	88	39	2,776	2,631	2,503	805	10,824
1934	0	0	0	1,026	415	146	33	13	2,948	2,508	1,145	1,428	9,664
1935	5	0	0	1,235	426	1,565	2,651	1,287	1,131	615	3,166	2,279	14,359
1936	402	451	15	19	4,134	741	631	92	20	0	1,054	49	7,608
1937	0	0	0	380	8,924	12,640	18,279	1,443	1,131	615	615	595	44,622
1938	90	376	122	865	38,387	205,686	17,601	2,184	1,154	615	615	595	268,289
1939	90	90	166	1,172	1,450	1,898	421	228	151	2,771	2,639	2,546	13,622
1940	19	21	38	172	505	437	292	161	96	2,986	2,592	853	8,174
1941	744	19	795	3,388	74,182	222,403	133,838	20,136	3,286	734	615	595	460,735
1942	187	200	2,215	1,236	717	1,428	6,806	754	358	152	90	239	14,381
1943	52	92	118	52,574	31,769	74,508	11,409	1,427	1,131	615	615	595	174,905
1944	90	90	197	329	22,841	39,170	5,377	1,494	1,131	615	615	595	72,544
1945	90	203	161	198	2,425	5,042	3,001	1,244	1,131	615	615	595	15,319
1946	459	337	527	208	289	611	863	1,230	1,131	2,767	2,656	2,558	13,635
1947	2,533	177	201	133	201	196	168	2,829	2,757	2,628	2,500	2,438	16,762
1948	2,336	424	6	7	8	10	8	1	253	319	0	0	3,371
1949	0	0	0	0	0	1,481	0	815	30	0	0	0	2,327
1950	0	0	1	0	1,091	2	0	1,716	1	0	0	0	2,811
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	11,177	1,472	9,533	6,983	1,322	1,131	615	615	705	33,552
1953	529	169	1,079	2,616	408	318	283	164	122	3,014	2,637	1,940	13,279
1954	946	82	88	735	1,249	1,198	482	157	139	3,180	2,368	1,649	12,273
1955	1,123	479	31	166	103	78	66	92	4	948	1,912	174	5,175
1956	0	0	3,563	5,353	806	394	643	321	53	25	688	331	12,177
1957	0	0	0	11	142	145	83	55	3,245	349	1,677	375	6,083
1958	2	8	0	193	4,849	8,378	46,198	10,820	1,402	615	615	595	73,675
1959	90	90	90	218	2,966	414	284	200	147	2,986	2,630	993	11,108
1960	923	583	132	174	1,762	196	265	161	115	51	1,324	0	5,685
1961	0	7	7	0	0	0	0	721	36	0	0	0	772
1962	0	0	19	45	19,361	4,859	2,320	1,245	1,131	615	615	748	30,958
1963	65	55	75	122	839	774	408	249	152	55	1,082	0	3,877
1964	0	0	0	0	0	0	0	875	75	0	0	0	950
1965	0	0	0	51	4	4	1,281	14	2,293	1,963	489	63	6,161
1966	0	1,094	1,273	1,934	1,781	3,028	1,968	1,230	1,131	615	3,227	2,611	19,892
1967	2,556	2,562	1,309	4,419	2,823	17,532	54,647	22,371	1,194	615	2,902	2,352	115,282
1968	90	90	116	150	232	1,826	293	160	2,779	91	243	1,098	7,167
1969	787	406	135	145,366	212,075	86,540	20,142	6,543	1,404	615	615	595	475,222
1970	90	126	154	307	381	3,386	279	180	129	2,747	2,638	272	10,689
1971	678	576	663	328	254	251	207	153	2,747	2,689	2,564	757	11,865
1972	702	448	709	242	226	167	165	2,866	2,767	77	424	1,246	10,041
1973	877	88	24	3,725	10,016	17,430	8,605	1,475	1,131	615	615	595	45,197
1974	90	315	115	2,685	407	901	587	1,230	1,131	615	615	3,385	12,075
1975	80	273	834	224	4,283	7,476	5,581	1,484	1,131	615	615	595	23,190
1976	59	61	82	106	1,858	271	240	180	2,797	2,705	2,100	1,085	11,544
1977	393	92	105	123	137	157	39	25	4	1,451	0	0	2,526
1978	0	0	0	3,193	24,199	163,650	40,163	8,484	1,442	615	615	595	242,956
1979	100	103	154	982	2,193	22,811	12,535	1,502	1,131	615	615	595	43,337
1980	375	265	138	802	78,091	46,299	7,802	1,672	1,202	615	615	595	138,468
1981	90	90	90	235	363	5,475	629	298	189	90	325	1,193	9,066
1982	841	434	146	202	210	2,131	1,600	344	138	2,860	2,656	2,558	14,119
1983	21	94	1,680	19,930	66,401	210,927	63,109	33,451	6,124	762	615	595	403,709
1984	291	176	13,226	5,305	1,996	704	1,990	1,230	1,131	615	615	595	27,874
1985	310	297	235	171	236	244	199	149	2,738	2,679	192	1,000	8,450
1986	446	99	30	93	4,356	5,203	2,136	1,278	1,131	615	615	595	16,597
1987	334	89	109	163	146	1,884	199	163	123	61	840	892	5,003
1988	78	65	85	179	153	2,012	294	189	2,829	6	856	1,312	8,061
1989	61	1	1	5	38	23	16	9	367	1,088	241	0	1,850
1990	0	0	0	0	0	0	0	312	0	15	0	0	327
1991	0	0	0	0	0	3,522	1,968	1,230	1,131	809	1,398	595	10,653
1992	26	0	13	130	7,314	4,283	2,607	1,353	1,131	615	3,140	2,655	23,267
1993	457	2,623	126	25,781	124,268	72,481	31,679	7,440	1,491	615	615	595	268,172
AVG	453	228	501	4,054	11,259	18,893	7,419	2,150	1,062	1,014	1,122	905	49,059
MEDIAN	90	90	90	205	823	1,278	516	638	1,131	615	615	595	11,843

Alternative 5C

SANTA YNEZ RIVER NEAR BUELLTON (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	4	64,586	135,789	21,923	6,600	1,751	563	457	430	232,103
1919	4	8	56	680	1,110	1,136	95	100	38	2,571	0	534	6,331
1920	354	89	74	54	612	1,994	917	222	49	2,606	0	813	7,784
1921	433	300	0	146	405	722	90	52	0	0	2,872	1,529	6,548
1922	744	167	6,531	4,067	13,212	7,375	8,867	1,762	1,075	490	426	379	45,092
1923	0	0	1,411	1,055	1,307	1,027	359	186	94	24	2,732	2,405	10,601
1924	2,338	62	11	31	56	418	108	62	24	0	342	604	4,057
1925	339	112	0	0	0	50	510	7	0	94	971	17	2,101
1926	0	0	0	0	1,573	363	9,668	1,544	979	445	355	411	15,338
1927	3,062	1,116	504	582	21,383	11,253	5,645	1,433	1,027	485	416	360	47,267
1928	0	0	10	589	2,105	1,672	219	120	65	2,600	2,421	2,288	12,090
1929	2,252	0	0	21	244	449	346	97	2,478	2,266	184	755	9,092
1930	442	59	0	0	0	1,268	40	0	0	130	354	0	2,292
1931	0	0	0	0	0	0	0	200	0	0	0	0	200
1932	0	0	3,121	1,195	10,080	5,304	2,275	1,216	937	417	359	417	25,320
1933	76	0	0	2,063	605	205	78	1	2,449	2,443	2,258	325	10,503
1934	0	0	0	1,945	653	223	0	0	2,562	2,294	604	804	9,086
1935	0	0	0	2,295	739	2,566	4,448	1,454	970	421	2,713	2,058	17,666
1936	96	215	0	0	6,956	1,325	910	75	0	0	557	0	10,133
1937	0	0	0	745	16,925	18,629	19,697	1,716	1,133	500	419	366	60,131
1938	0	178	53	678	45,736	215,274	19,247	2,118	1,287	629	459	420	286,080
1939	6	6	159	1,285	1,718	2,523	596	194	69	2,447	2,441	2,315	13,759
1940	0	0	0	189	938	744	391	108	16	2,596	2,369	403	7,754
1941	330	0	1,380	6,370	84,752	242,011	141,863	21,845	3,683	1,025	723	581	504,563
1942	214	239	3,894	2,104	1,057	2,273	7,412	1,036	411	105	35	32	18,813
1943	0	11	35	57,415	34,291	80,017	12,406	1,694	1,185	561	457	419	188,490
1944	15	14	208	484	26,675	41,614	5,982	1,856	1,171	493	446	378	79,334
1945	1	261	138	195	4,499	5,572	3,476	1,310	968	446	400	346	17,611
1946	150	146	949	193	360	678	1,452	1,194	948	2,448	2,464	2,332	13,316
1947	2,297	236	261	88	206	176	102	2,534	2,607	2,457	2,278	2,183	15,425
1948	2,076	102	0	0	0	0	0	0	96	58	0	0	2,332
1949	0	0	0	0	0	1,577	0	415	0	0	0	0	1,992
1950	0	0	0	0	951	0	0	1,039	0	0	0	0	1,990
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	18,904	1,825	18,874	8,145	1,669	978	500	470	309	51,674
1953	316	111	1,789	3,361	573	369	245	66	31	2,634	2,403	1,690	13,587
1954	418	0	0	807	1,286	2,037	753	53	53	2,733	2,123	965	11,226
1955	564	217	0	109	75	40	22	100	0	489	1,208	5	2,829
1956	0	0	6,248	8,383	1,330	608	949	542	8	8	286	37	18,400
1957	0	0	0	0	177	217	84	45	2,801	150	1,024	111	4,609
1958	0	0	0	258	8,935	15,692	57,841	12,291	1,803	532	446	394	98,194
1959	1	0	2	232	4,085	585	237	115	80	2,614	2,411	500	10,862
1960	451	317	13	60	1,683	86	224	60	24	0	753	0	3,671
1961	0	0	0	0	0	0	0	278	0	0	0	0	278
1962	0	0	0	1	34,340	7,516	2,806	1,262	923	424	358	317	47,947
1963	0	0	0	9	1,281	1,182	568	240	86	0	541	0	3,905
1964	0	0	0	0	0	0	0	380	0	0	0	0	380
1965	0	0	0	17	0	0	2,033	0	1,489	1,257	97	0	4,892
1966	0	1,651	2,088	3,441	2,267	3,181	1,747	1,100	959	418	2,758	2,373	21,982
1967	2,296	2,309	2,478	8,334	4,110	17,990	55,035	23,668	1,200	465	2,667	2,204	122,758
1968	6	2	55	102	264	1,957	341	66	2,479	10	44	616	5,942
1969	374	194	20	162,873	230,220	94,922	21,411	7,355	1,759	528	481	440	520,577
1970	13	100	113	447	589	4,520	234	88	44	2,432	2,447	38	11,066
1971	297	415	884	433	253	200	132	58	2,441	2,528	2,350	343	10,335
1972	306	222	1,187	251	206	76	77	2,581	2,630	5	127	717	8,386
1973	434	51	0	6,106	18,590	19,095	9,494	1,635	1,038	455	425	374	57,696
1974	0	129	35	4,992	598	1,407	778	1,211	947	430	384	2,877	13,789
1975	0	89	1,353	208	6,396	12,066	6,227	1,840	1,038	469	425	372	30,482
1976	0	0	0	13	1,986	276	202	91	2,491	2,532	1,891	577	10,058
1977	81	0	0	11	25	49	0	0	0	916	0	0	1,082
1978	0	0	0	5,304	38,514	181,441	44,827	9,557	1,781	711	572	427	283,133
1979	25	32	118	1,789	3,930	24,706	13,965	1,853	1,115	472	418	361	48,785
1980	170	94	38	1,433	89,084	51,465	8,573	2,097	1,264	503	430	383	155,533
1981	1	0	4	273	548	8,803	1,047	351	157	10	71	680	11,947
1982	414	216	30	122	154	2,416	2,919	406	48	2,540	2,454	2,325	14,044
1983	0	60	3,002	26,717	75,243	218,221	67,007	36,368	7,270	1,076	786	582	436,331
1984	471	168	13,912	5,709	2,276	933	1,944	1,088	952	446	409	354	28,662
1985	62	119	243	109	235	235	144	57	2,439	2,514	47	537	6,740
1986	133	0	0	90	7,961	8,352	2,379	1,268	1,032	444	400	349	22,408
1987	73	0	10	78	45	1,926	109	65	33	0	433	449	3,223
1988	0	0	0	131	71	2,344	339	101	2,507	0	423	762	6,677
1989	0	0	0	0	13	0	0	0	181	634	49	0	878
1990	0	0	0	0	0	0	0	36	0	0	0	0	36
1991	0	0	0	0	0	6,777	2,468	1,170	704	401	806	276	12,604
1992	0	0	0	202	14,033	6,168	3,409	1,532	1,097	450	2,703	2,428	32,021
1993	215	2,395	36	31,467	134,304	79,045	34,731	8,297	1,841	640	555	416	293,942
AVG	294	161	690	4,964	13,569	20,790	8,192	2,279	997	855	884	651	54,326
MEDIAN	3	1	3	205	1,084	1,625	766	393	950	471	439	399	12,018

Alternative 5C

SANTA YNEZ RIVER ABOVE SALSIPUEDES CREEK CONFLUENCE (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	73,601	135,576	23,988	7,758	2,262	493	225	159	244,061
1919	0	0	0	358	897	1,061	26	48	0	2,047	0	6	4,443
1920	0	0	0	0	606	2,088	1,249	234	0	2,055	0	79	6,310
1921	0	4	0	55	403	907	84	42	0	0	1,934	1,160	4,588
1922	70	0	8,785	5,965	17,702	9,892	10,169	2,300	1,135	384	188	103	56,692
1923	0	0	1,572	969	1,341	1,017	476	211	68	0	2,031	2,049	9,735
1924	1,969	0	0	0	0	427	45	2	0	0	0	9	2,453
1925	0	0	0	0	0	0	528	0	0	0	116	0	644
1926	0	0	0	0	1,671	307	11,017	1,790	847	245	60	0	15,937
1927	2,138	1,269	584	796	29,283	11,687	6,688	1,725	1,021	358	154	64	55,767
1928	0	0	0	237	1,882	1,727	213	79	3	2,083	2,086	1,899	10,209
1929	1,852	0	0	0	176	486	371	48	2,074	2,005	0	54	7,067
1930	0	0	0	0	0	1,555	1	0	0	0	0	0	1,556
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	3,768	1,145	10,418	6,810	2,495	1,291	773	201	66	0	26,967
1933	0	0	0	2,591	685	181	72	0	2,056	2,183	1,879	0	9,647
1934	0	0	0	2,334	664	250	0	0	2,068	1,992	32	73	7,413
1935	0	0	0	2,891	930	3,244	5,942	1,741	871	215	2,063	1,732	19,629
1936	0	0	0	0	8,786	1,934	1,093	97	0	0	18	0	11,929
1937	0	0	0	705	24,500	24,394	21,559	2,210	1,264	396	173	82	75,282
1938	0	0	0	372	53,269	221,427	21,350	2,217	1,570	668	245	157	301,276
1939	0	0	47	1,238	1,930	3,218	831	222	21	2,025	2,137	1,943	13,612
1940	0	0	0	81	1,179	964	487	82	0	2,042	2,027	0	6,862
1941	0	0	1,570	9,061	88,506	258,234	147,337	23,817	4,141	1,302	744	471	535,184
1942	160	194	4,811	2,781	1,349	2,962	8,147	1,406	498	50	0	0	22,357
1943	0	0	0	60,426	37,296	85,044	13,729	2,096	1,344	503	246	162	200,844
1944	0	0	92	509	28,862	44,090	6,848	2,388	1,310	380	210	90	84,779
1945	0	166	41	131	6,670	5,991	4,225	1,530	895	270	120	40	20,077
1946	0	0	1,158	131	412	500	2,175	1,254	810	2,049	2,171	1,972	12,631
1947	1,922	176	233	35	183	170	70	2,296	2,470	2,225	1,936	1,778	13,495
1948	1,665	0	0	0	0	0	0	0	0	0	0	0	1,665
1949	0	0	0	0	0	824	0	0	0	0	0	0	824
1950	0	0	0	0	189	0	0	47	0	0	0	0	237
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	26,393	1,005	27,262	8,874	1,975	739	306	225	0	66,780
1953	38	0	1,825	3,866	764	477	214	16	0	2,122	2,053	1,310	12,685
1954	0	0	0	588	1,119	2,557	1,056	0	0	2,110	1,758	164	9,351
1955	9	0	0	0	0	0	0	56	0	3	233	0	301
1956	0	0	6,741	8,909	1,721	824	1,151	841	0	0	0	0	20,186
1957	0	0	0	0	7	108	13	0	2,095	0	171	0	2,395
1958	0	0	0	69	11,628	22,684	69,721	14,220	2,355	407	202	127	121,412
1959	0	0	0	115	4,821	738	159	47	30	2,079	2,068	3	10,059
1960	0	10	0	0	1,259	0	109	0	0	0	28	0	1,406
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	46,785	8,405	2,924	1,122	625	168	46	0	60,076
1963	0	0	0	0	917	1,004	452	135	4	0	0	0	2,511
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	1,265	0	245	242	0	0	1,752
1966	0	907	1,935	4,361	2,482	3,354	1,579	1,041	838	205	2,076	2,023	20,801
1967	1,909	1,940	3,566	12,002	5,472	18,648	55,682	25,181	1,238	319	2,284	1,959	130,200
1968	0	0	0	14	237	2,052	418	10	2,163	0	0	17	4,911
1969	0	0	0	182,564	249,494	105,357	22,316	8,310	2,156	410	280	208	571,094
1970	0	17	20	523	801	5,601	218	45	2	2,027	2,154	0	11,408
1971	0	112	744	450	214	138	75	5	2,126	2,312	2,019	0	8,195
1972	0	0	1,394	210	172	18	27	2,326	2,504	0	0	38	6,688
1973	0	0	0	6,846	26,936	20,317	10,708	1,844	975	303	175	87	68,191
1974	0	0	0	6,613	762	1,833	1,005	1,275	815	227	97	2,066	14,694
1975	0	0	1,314	133	7,887	15,853	7,035	2,358	945	308	180	91	36,105
1976	0	0	0	0	1,775	224	139	16	2,120	2,275	1,554	19	8,122
1977	0	0	0	0	0	0	0	0	0	74	0	0	74
1978	0	0	0	5,251	51,284	201,008	50,148	10,975	2,169	772	446	158	322,211
1979	0	0	11	2,280	5,405	26,521	15,825	2,359	1,103	296	143	54	53,997
1980	0	0	0	1,732	99,976	57,412	9,675	2,615	1,324	350	181	93	173,359
1981	0	0	0	140	593	11,694	1,515	454	149	0	0	18	14,563
1982	0	0	0	0	33	2,537	4,316	489	0	2,086	2,139	1,948	13,548
1983	0	0	4,011	32,398	84,005	223,717	69,588	39,076	8,662	1,379	895	494	464,226
1984	563	94	14,349	6,288	2,746	1,334	2,024	1,058	860	276	137	51	29,780
1985	0	0	70	10	159	186	101	2	2,102	2,280	0	5	4,914
1986	0	0	0	0	10,316	10,584	2,736	1,262	1,009	268	128	49	26,351
1987	0	0	0	0	0	1,608	23	0	0	0	0	0	1,631
1988	0	0	0	0	0	2,388	319	7	2,050	0	0	48	4,812
1989	0	0	0	0	0	0	0	0	0	28	0	0	28
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	8,990	2,413	902	173	0	70	0	12,548
1992	0	0	0	80	20,248	8,210	4,488	1,861	1,162	265	2,092	2,100	40,505
1993	0	2,049	0	37,236	145,478	86,855	38,734	9,304	2,201	602	423	156	323,037
AVG	162	91	772	5,683	15,525	22,467	8,924	2,475	953	667	594	360	58,672
MEDIAN	0	0	0	123	967	1,780	1,031	228	792	273	149	39	12,238

Alternative 5C

SANTA YNEZ RIVER AT LOMPOC NARROWS (acre-feet/month)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	54	79,462	144,216	25,679	8,304	2,671	670	289	218	261,563
1919	68	67	73	414	1,086	1,248	19	133	0	1,946	0	0	5,056
1920	23	47	55	59	842	3,030	1,662	323	84	1,974	0	22	8,120
1921	0	0	0	158	634	1,292	166	122	27	64	1,795	1,116	5,374
1922	23	0	12,076	7,500	22,255	11,808	11,026	2,520	1,227	462	158	71	69,126
1923	0	0	2,549	1,178	1,633	1,106	618	304	156	79	1,933	2,007	11,563
1924	1,921	0	67	71	74	692	132	84	79	0	0	0	3,120
1925	0	0	0	0	0	10	742	49	49	0	16	0	866
1926	0	0	10	20	2,486	674	15,677	2,201	931	318	35	0	22,353
1927	1,963	1,908	960	1,084	35,394	13,112	7,331	1,931	1,106	431	122	33	65,374
1928	0	49	56	275	2,574	2,146	305	167	86	2,003	2,042	1,844	11,547
1929	1,796	0	61	74	257	679	563	131	2,010	1,970	0	3	7,545
1930	0	0	0	0	21	1,922	77	69	0	0	0	0	2,089
1931	0	0	0	0	62	20	37	0	0	0	0	0	119
1932	0	0	5,392	1,569	16,628	7,786	2,923	1,486	851	219	38	0	36,892
1933	0	0	0	3,262	1,049	269	168	84	1,990	2,146	1,826	0	10,793
1934	0	0	0	3,086	1,093	438	85	32	1,996	1,953	1	13	8,697
1935	0	0	0	3,665	1,310	4,262	7,583	1,946	952	234	1,973	1,692	23,617
1936	0	0	0	48	11,071	2,456	1,538	194	37	0	0	0	15,343
1937	0	0	0	983	29,702	28,987	22,849	2,429	1,358	473	142	52	86,978
1938	0	0	55	401	57,992	235,333	22,645	2,318	1,673	751	312	220	321,699
1939	0	0	199	1,477	2,325	3,801	1,134	317	110	1,962	2,095	1,889	15,309
1940	0	0	0	208	1,571	1,367	705	169	33	1,959	1,980	0	7,993
1941	0	0	2,293	11,641	107,780	277,103	156,990	25,507	4,856	1,800	1,124	744	589,837
1942	438	472	8,215	4,461	2,260	4,789	9,274	1,918	792	231	167	55	33,073
1943	66	157	165	63,311	39,253	88,984	14,691	2,512	1,543	684	315	227	211,910
1944	74	73	359	884	33,014	46,619	7,489	2,810	1,509	460	277	63	93,633
1945	21	321	209	305	7,526	6,600	4,455	1,635	881	247	90	14	22,305
1946	0	0	1,239	199	497	1,296	2,482	1,343	887	1,993	2,131	1,921	13,989
1947	1,867	331	413	118	368	283	159	2,253	2,445	2,185	1,880	1,714	14,016
1948	1,601	0	0	0	0	0	0	0	0	0	0	0	1,601
1949	0	0	0	0	0	1,917	0	0	0	0	0	0	1,917
1950	0	0	0	0	555	2	0	0	0	0	0	0	557
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	32,930	1,267	35,959	9,168	2,008	735	307	242	0	82,616
1953	67	213	3,684	4,916	962	590	364	51	31	2,024	2,003	1,254	16,158
1954	0	0	0	648	1,381	3,937	1,257	0	76	2,001	1,707	92	11,097
1955	0	0	0	275	147	68	85	120	1	0	93	0	790
1956	0	0	12,858	16,085	2,831	1,334	1,895	1,142	87	79	0	1	36,311
1957	0	0	1	44	342	268	95	73	1,985	1	87	0	2,896
1958	1	0	0	309	16,916	29,651	78,176	15,104	2,768	582	280	187	143,974
1959	68	66	68	280	6,176	1,036	360	135	114	1,995	2,022	0	12,320
1960	0	0	3	49	1,747	84	411	77	0	0	0	0	2,370
1961	0	51	88	2	4	9	0	0	0	0	0	0	153
1962	1	0	116	438	65,405	12,148	3,544	1,415	715	239	22	0	84,042
1963	0	2	36	54	2,665	2,613	1,322	515	182	71	0	0	7,461
1964	0	0	1	3	4	6	7	0	0	0	0	0	22
1965	0	0	0	337	24	83	2,718	80	224	175	1	0	3,641
1966	1	3,540	4,318	6,691	3,862	3,871	1,745	1,225	913	220	1,974	1,978	30,339
1967	1,858	1,888	4,031	15,926	5,934	19,067	56,596	25,643	1,430	298	2,207	1,924	136,802
1968	0	20	69	87	305	2,208	513	4	2,098	0	1	0	5,307
1969	0	0	0	190,682	257,814	108,147	24,152	8,947	2,562	571	348	271	593,494
1970	74	93	190	696	987	6,348	311	38	0	1,939	2,109	0	12,785
1971	0	54	1,032	609	399	223	170	1	2,052	2,272	1,966	0	8,777
1972	0	0	1,528	268	240	8	17	2,247	2,474	0	0	0	6,783
1973	0	101	1	10,928	33,710	23,086	11,561	2,147	1,158	376	185	56	83,309
1974	18	16	62	9,254	1,068	2,744	1,408	1,467	894	246	108	1,950	19,234
1975	24	22	2,835	316	11,339	22,619	7,969	2,775	1,228	397	244	102	49,871
1976	66	65	68	72	2,313	422	340	101	2,064	2,240	1,505	0	9,255
1977	0	4	5	44	51	71	0	55	0	6	0	0	236
1978	0	0	0	9,542	66,477	213,021	54,197	11,933	2,574	1,053	610	235	359,642
1979	147	163	182	3,353	7,546	29,192	16,810	2,776	1,389	383	154	64	62,158
1980	18	16	73	2,369	108,642	61,595	10,423	3,032	1,614	507	194	103	188,585
1981	21	19	65	396	862	15,362	2,026	654	240	31	13	0	19,689
1982	0	5	43	137	93	2,688	4,957	583	37	2,019	2,099	1,897	14,557
1983	0	62	4,342	41,009	93,636	233,672	74,807	41,000	9,519	1,879	1,179	669	501,774
1984	844	372	15,724	6,817	3,068	1,551	2,225	1,152	892	253	104	22	33,024
1985	0	10	389	89	328	371	182	0	2,030	2,241	0	0	5,638
1986	0	1	35	110	15,075	16,121	3,157	1,560	1,098	247	98	22	37,525
1987	7	16	61	157	72	2,340	109	35	0	0	0	0	2,796
1988	0	0	18	114	51	2,366	411	87	1,981	0	0	0	5,028
1989	0	0	0	0	3	2	1	0	0	0	0	0	6
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	12,808	2,274	719	0	0	0	0	15,801
1992	0	0	2	10	24,760	9,365	4,679	2,039	1,236	331	1,997	2,054	46,473
1993	0	1,982	155	40,673	153,028	90,113	39,915	9,843	2,505	782	491	125	339,613
AVG	172	161	1,139	6,621	17,794	24,492	9,731	2,685	1,043	697	589	354	65,478
MEDIAN	0	0	56	293	1,345	2,353	1,365	419	866	302	115	2	14,002

Appendix B

Monthly Cachuma Project Deliveries
(simulation, 1918-1993)

New Alternatives 5B and 5C

Cachuma Project Deliveries in Acre-feet - Alternative 5B
(SYRHM simulation 1918-1993)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1919	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1920	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1921	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1922	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1923	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1924	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1925	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,536	2,856	3,465	3,290	2,536	25,163
1926	1,817	1,270	1,226	1,160	1,095	1,565	1,967	2,631	2,963	3,595	3,414	2,631	25,335
1927	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1928	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1929	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1930	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,415	2,719	3,299	3,132	2,415	24,459
1931	1,730	1,209	1,167	1,105	1,042	1,490	1,873	1,813	2,041	2,476	2,351	1,813	20,110
1932	1,299	907	876	829	782	1,624	2,041	2,631	2,963	3,595	3,414	2,631	23,593
1933	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1934	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,515	2,832	3,436	3,263	2,515	25,040
1935	1,802	1,259	1,216	1,151	1,085	1,552	1,951	2,584	2,909	3,530	3,351	2,584	24,974
1936	1,851	1,293	1,249	1,182	1,115	1,594	2,004	2,485	2,798	3,395	3,223	2,485	24,674
1937	1,780	1,244	1,201	1,137	1,072	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,334
1938	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1939	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1940	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1941	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1942	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1943	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1944	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1945	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1946	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1947	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1948	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1949	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,114	2,381	2,889	2,743	2,114	22,721
1950	1,515	1,059	1,022	967	913	1,305	1,640	1,600	1,802	2,186	2,076	1,600	17,685
1951	1,146	801	773	732	691	987	1,241	1,181	1,330	1,613	1,532	1,181	13,208
1952	846	591	571	540	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	22,583
1953	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1954	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1955	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1956	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,497	2,811	3,411	3,239	2,497	24,934
1957	1,789	1,250	1,207	1,142	1,078	1,541	1,937	2,033	2,290	2,778	2,638	2,033	21,714
1958	1,457	1,018	983	930	878	1,255	2,041	2,631	2,963	3,595	3,414	2,631	23,796
1959	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1960	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1961	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,535	2,854	3,463	3,288	2,535	25,155
1962	1,816	1,269	1,225	1,160	1,094	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,464
1963	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1964	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1965	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,332	2,627	3,187	3,026	2,332	23,983
1966	1,671	1,168	1,127	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,206
1967	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1968	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1969	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1970	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1971	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1972	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1973	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1974	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1975	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1976	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1977	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1978	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1979	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1980	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1981	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1982	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1983	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1984	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1985	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1986	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1987	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1988	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1989	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,310	2,601	3,156	2,996	2,310	23,851
1990	1,655	1,156	1,116	1,057	997	1,425	1,792	1,721	1,938	2,351	2,232	1,721	19,161
1991	1,233	862	832	787	743	1,062	1,335	2,145	2,415	2,930	2,782	2,145	19,269
1992	1,537	1,074	1,037	981	926	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,453
1993	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
AVG	1,817	1,269	1,226	1,162	1,104	1,591	2,007	2,536	2,855	3,464	3,289	2,536	24,855
MEDIAN	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714

Cachuma Project Deliveries in Acre-feet - Alternative 5C (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1919	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1920	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1921	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1922	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1923	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1924	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1925	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,597	2,925	3,549	3,369	2,597	25,517
1926	1,861	1,300	1,256	1,188	1,121	1,603	2,015	2,631	2,963	3,595	3,414	2,631	25,578
1927	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1928	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1929	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1930	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,489	2,803	3,401	3,229	2,489	24,892
1931	1,784	1,246	1,203	1,139	1,074	1,536	1,931	1,913	2,154	2,614	2,482	1,913	20,991
1932	1,371	958	925	875	826	1,624	2,041	2,631	2,963	3,595	3,414	2,631	23,854
1933	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1934	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,540	2,860	3,471	3,295	2,540	25,186
1935	1,820	1,272	1,228	1,162	1,096	1,568	1,971	2,591	2,917	3,540	3,361	2,591	25,116
1936	1,856	1,297	1,252	1,185	1,118	1,599	2,010	2,496	2,810	3,410	3,238	2,496	24,767
1937	1,788	1,250	1,206	1,142	1,077	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,363
1938	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1939	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1940	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1941	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1942	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1943	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1944	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1945	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1946	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1947	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1948	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1949	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,205	2,482	3,012	2,860	2,205	23,243
1950	1,579	1,104	1,066	1,009	951	1,360	1,710	1,708	1,923	2,333	2,215	1,708	18,667
1951	1,224	855	826	781	737	1,054	1,325	1,297	1,460	1,771	1,682	1,297	14,308
1952	929	649	627	593	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	22,833
1953	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1954	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1955	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1956	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,559	2,882	3,496	3,320	2,559	25,295
1957	1,833	1,281	1,237	1,171	1,104	1,579	1,985	2,115	2,381	2,889	2,743	2,115	22,434
1958	1,515	1,059	1,022	967	913	1,305	2,041	2,631	2,963	3,595	3,414	2,631	24,057
1959	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1960	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1961	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,596	2,924	3,548	3,368	2,596	25,512
1962	1,860	1,300	1,255	1,188	1,121	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,624
1963	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1964	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1965	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,392	2,694	3,268	3,103	2,392	24,329
1966	1,714	1,198	1,156	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,307
1967	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1968	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1969	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1970	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1971	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1972	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1973	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1974	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1975	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1976	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1977	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1978	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1979	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1980	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1981	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1982	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1983	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1984	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1985	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1986	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1987	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1988	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
1989	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,392	2,694	3,269	3,103	2,392	24,330
1990	1,714	1,198	1,156	1,094	1,033	1,476	1,856	1,829	2,060	2,499	2,373	1,829	20,117
1991	1,310	916	884	837	789	1,129	1,419	2,203	2,481	3,010	2,858	2,203	20,038
1992	1,578	1,103	1,065	1,008	951	1,624	2,041	2,631	2,963	3,595	3,414	2,631	24,604
1993	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714
AVG	1,827	1,277	1,233	1,168	1,110	1,597	2,013	2,550	2,872	3,484	3,308	2,550	24,988
MEDIAN	1,885	1,317	1,272	1,204	1,136	1,624	2,041	2,631	2,963	3,595	3,414	2,631	25,714

Appendix C

Monthly Cachuma Project Shortages
(simulation, 1918-1993)

New Alternatives 5B and 5C

Cachuma Project Shortages in Acre-feet - Alternative 5B
(SYRHM simulation 1918-1993)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	0	0	0	0	0	0	0	0	0
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	0	0	0	0	0	0	0
1921	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	95	107	130	124	95	551
1926	68	48	46	44	41	59	74	0	0	0	0	0	379
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	217	244	296	281	217	1,255
1931	155	108	105	99	94	134	168	819	922	1,119	1,062	819	5,604
1932	587	410	396	375	353	0	0	0	0	0	0	0	2,121
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	116	131	159	151	116	674
1935	83	58	56	53	50	72	90	48	54	65	62	48	740
1936	34	24	23	22	21	30	37	147	165	200	190	147	1,040
1937	105	73	71	67	63	0	0	0	0	0	0	0	380
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	517	582	706	671	517	2,993
1950	370	259	250	236	223	319	401	1,031	1,161	1,409	1,338	1,031	8,029
1951	739	516	498	472	445	636	800	1,451	1,634	1,982	1,882	1,451	12,506
1952	1,039	726	701	664	0	0	0	0	0	0	0	0	3,131
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	135	152	184	175	135	780
1957	97	67	65	62	58	83	104	598	674	817	776	598	4,000
1958	429	299	289	274	258	369	0	0	0	0	0	0	1,918
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	97	109	132	125	97	559
1962	69	48	47	44	42	0	0	0	0	0	0	0	250
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	299	337	408	388	299	1,731
1966	214	150	144	0	0	0	0	0	0	0	0	0	508
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	322	362	440	417	322	1,863
1990	230	161	156	147	139	199	250	911	1,025	1,244	1,181	911	6,553
1991	652	456	440	417	393	562	706	487	548	665	631	487	6,445
1992	349	244	235	223	210	0	0	0	0	0	0	0	1,261
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	69	48	46	42	31	32	35	96	108	131	124	96	859
MEDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0

Cachuma Project Shortages in Acre-feet - Alternative 5C (SYRHM simulation 1918-1993)													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1918	0	0	0	0	0	0	0	0	0	0	0	0	0
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	0	0	0	0	0	0	0
1921	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	34	38	47	44	34	197
1926	24	17	16	16	15	21	26	0	0	0	0	0	136
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	142	160	194	184	142	822
1931	102	71	69	65	61	88	110	718	809	981	932	718	4,723
1932	514	360	347	329	310	0	0	0	0	0	0	0	1,860
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	91	103	125	118	91	528
1935	65	46	44	42	39	56	71	41	46	56	53	41	598
1936	29	20	20	19	18	25	32	136	153	185	176	136	947
1937	97	68	66	62	59	0	0	0	0	0	0	0	351
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	427	481	583	554	427	2,471
1950	306	214	206	195	184	263	331	924	1,040	1,262	1,198	924	7,047
1951	662	462	446	423	399	570	716	1,335	1,503	1,824	1,732	1,335	11,406
1952	956	668	645	611	0	0	0	0	0	0	0	0	2,881
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	72	81	99	94	72	419
1957	52	36	35	33	31	45	56	517	582	706	670	517	3,280
1958	370	259	250	236	223	319	0	0	0	0	0	0	1,657
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	35	39	48	45	35	202
1962	25	17	17	16	15	0	0	0	0	0	0	0	90
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	239	269	327	310	239	1,385
1966	171	120	116	0	0	0	0	0	0	0	0	0	407
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	239	269	327	310	239	1,384
1990	171	120	116	109	103	148	185	802	903	1,096	1,041	802	5,597
1991	575	402	388	367	346	495	622	428	483	585	556	428	5,676
1992	307	215	207	196	185	0	0	0	0	0	0	0	1,110
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	58	41	39	36	26	27	28	81	92	111	105	81	726
MEDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix D

Annual State Water Project Water
Deliveries to South Coast
(simulation, 1942-1993)

New Alternatives 5B and 5C

SUMMARY OF STATE WATER PROJECT DELIVERIES
FOR ALTERNATIVE 5B
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1)]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2)]	ID No. 1 Exchange Shortage [3)]	Reduced Delivery due to Spill [4)]	ID No. 1 Exchange	SWP in Cachuma [5)]	SWP in Outlet Works [6)]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	1,868	2,571	8,392	521	11,483
1943	13,750	2,571	89%	100%	3,173	2,571	2,831	1,421	6,822
1944	13,750	2,571	92%	100%	2,467	2,571	5,367	1,500	9,438
1945	13,750	2,571	90%	100%	1,645	2,571	6,589	1,659	10,819
1946	13,750	2,571	88%	100%	0	2,571	6,589	4,988	14,148
1947	13,750	2,571	75%	100%	0	2,571	3,203	4,888	10,662
1948	13,750	2,571	67%	100%	0	2,571	4,007	2,588	9,166
1949	13,750	2,571	65%	88%	0	2,272	5,649	1,055	8,976
1950	13,750	2,571	67%	69%	0	1,768	6,162	1,236	9,167
1951	13,750	2,571	88%	51%	0	1,321	10,196	515	12,031
1952	13,750	2,571	96%	88%	1,820	2,258	5,022	1,647	8,927
1953	13,750	2,571	90%	100%	0	2,571	9,207	3,065	14,843
1954	13,750	2,571	83%	100%	0	2,571	5,892	2,995	11,458
1955	13,750	2,571	69%	100%	0	2,571	4,123	2,855	9,549
1956	13,750	2,571	90%	97%	0	2,493	8,174	1,494	12,161
1957	13,750	2,571	88%	84%	0	2,171	5,863	3,101	11,135
1958	13,750	2,571	90%	93%	1,677	2,379	7,350	1,171	10,900
1959	13,750	2,571	88%	100%	0	2,571	7,283	3,162	13,016
1960	13,750	2,571	63%	100%	0	2,571	3,749	2,274	8,594
1961	13,750	2,571	61%	98%	0	2,515	4,848	1,040	8,403
1962	13,750	2,571	78%	99%	0	2,546	3,216	2,047	7,810
1963	13,750	2,571	94%	100%	0	2,571	12,415	885	15,871
1964	13,750	2,571	88%	100%	0	2,571	9,285	175	12,031
1965	13,750	2,571	82%	93%	0	2,398	5,642	3,227	11,267
1966	13,750	2,571	96%	98%	0	2,520	3,591	3,177	9,288
1967	13,750	2,571	96%	100%	3,545	2,571	2,705	5,665	10,942
1968	13,750	2,571	89%	100%	0	2,571	7,153	2,684	12,409
1969	13,750	2,571	93%	100%	4,230	2,571	2,705	2,044	7,321
1970	13,750	2,571	89%	100%	0	2,571	8,760	2,168	13,499
1971	13,750	2,571	94%	100%	0	2,571	5,157	5,523	13,251
1972	13,750	2,571	88%	100%	0	2,571	4,945	3,857	11,373
1973	13,750	2,571	82%	100%	1,453	2,571	3,453	2,333	8,356
1974	13,750	2,571	94%	100%	0	2,571	7,793	2,171	12,535
1975	13,750	2,571	96%	100%	1,773	2,571	4,015	2,142	8,728
1976	13,750	2,571	88%	100%	0	2,571	7,732	5,506	15,809
1977	13,750	2,571	33%	100%	0	2,571	888	1,364	4,823
1978	13,750	2,571	68%	100%	2,231	2,571	3,421	922	6,914
1979	13,750	2,571	85%	100%	2,214	2,571	3,271	1,515	7,357
1980	13,750	2,571	82%	100%	2,875	2,571	2,705	2,179	7,455
1981	13,750	2,571	83%	100%	0	2,571	9,572	1,485	13,628
1982	13,750	2,571	94%	100%	0	2,571	6,004	4,412	12,986
1983	13,750	2,571	100%	100%	5,544	2,571	4,716	384	7,671
1984	13,750	2,571	100%	100%	2,779	2,571	3,345	1,632	7,548
1985	13,750	2,571	96%	100%	0	2,571	6,292	5,291	14,154
1986	13,750	2,571	81%	100%	699	2,571	4,958	2,178	9,706
1987	13,750	2,571	69%	100%	0	2,571	7,928	1,666	12,166
1988	13,750	2,571	43%	100%	0	2,571	1,433	1,958	5,962
1989	13,750	2,571	58%	93%	0	2,385	3,749	1,887	8,021
1990	13,750	2,571	46%	75%	0	1,916	3,189	1,197	6,302
1991	13,750	2,571	29%	75%	0	1,927	0	2,084	4,011
1992	13,750	2,571	31%	95%	0	2,445	44	1,713	4,202
1993	13,750	2,571	76%	100%	3,282	2,571	2,460	1,835	6,866
AVG	13,750	2,571	80%	96%	832	2,470	5,251	2,317	10,038

NOTES

1) Based on total South Coast contractual agreements with CCWA not including drought buffers and additional water (4,500 afy) contracted by Goleta.

2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities. The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

SUMMARY OF STATE WATER PROJECT DELIVERIES FOR ALTERNATIVE 5C (ACRE-FEET/YEAR)									
	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1)]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2)]	ID No. 1 Exchange Shortage [3)]	Reduced Delivery due to Spill [4)]	ID No. 1 Exchange	SWP in Cachuma [5)]	SWP in Outlet Works [6)]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	919	2,571	9,341	522	12,434
1943	13,750	2,571	89%	100%	3,173	2,571	2,830	1,421	6,821
1944	13,750	2,571	92%	100%	2,467	2,571	5,367	1,500	9,438
1945	13,750	2,571	90%	100%	1,645	2,571	6,589	1,660	10,820
1946	13,750	2,571	88%	100%	0	2,571	6,589	4,989	14,149
1947	13,750	2,571	75%	100%	0	2,571	3,203	4,887	10,661
1948	13,750	2,571	67%	100%	0	2,571	4,004	2,591	9,166
1949	13,750	2,571	65%	90%	0	2,324	5,595	1,057	8,976
1950	13,750	2,571	67%	73%	0	1,866	6,080	1,220	9,166
1951	13,750	2,571	88%	56%	0	1,431	10,086	515	12,031
1952	13,750	2,571	96%	89%	1,816	2,283	5,014	1,735	9,032
1953	13,750	2,571	90%	100%	0	2,571	9,207	2,965	14,743
1954	13,750	2,571	83%	100%	0	2,571	5,892	2,995	11,458
1955	13,750	2,571	69%	100%	0	2,571	4,124	2,854	9,549
1956	13,750	2,571	90%	98%	0	2,529	8,144	1,491	12,165
1957	13,750	2,571	88%	87%	0	2,243	5,819	3,094	11,156
1958	13,750	2,571	90%	94%	1,673	2,405	7,317	1,167	10,889
1959	13,750	2,571	88%	100%	0	2,571	7,274	3,162	13,007
1960	13,750	2,571	63%	100%	0	2,571	3,749	2,274	8,594
1961	13,750	2,571	61%	99%	0	2,551	4,817	1,035	8,403
1962	13,750	2,571	78%	100%	0	2,562	3,209	2,055	7,827
1963	13,750	2,571	94%	100%	0	2,571	12,398	885	15,854
1964	13,750	2,571	88%	100%	0	2,571	9,285	175	12,031
1965	13,750	2,571	82%	95%	0	2,433	5,612	3,223	11,268
1966	13,750	2,571	96%	98%	0	2,530	3,588	3,177	9,295
1967	13,750	2,571	96%	100%	3,545	2,571	2,705	5,666	10,942
1968	13,750	2,571	89%	100%	0	2,571	7,153	2,685	12,409
1969	13,750	2,571	93%	100%	4,230	2,571	2,705	2,044	7,321
1970	13,750	2,571	89%	100%	0	2,571	8,760	2,168	13,498
1971	13,750	2,571	94%	100%	0	2,571	5,157	5,523	13,251
1972	13,750	2,571	88%	100%	0	2,571	4,945	3,778	11,295
1973	13,750	2,571	82%	100%	1,453	2,571	3,531	2,333	8,435
1974	13,750	2,571	94%	100%	0	2,571	7,793	2,754	13,118
1975	13,750	2,571	96%	100%	1,773	2,571	4,058	1,816	8,445
1976	13,750	2,571	88%	100%	0	2,571	7,732	5,449	15,752
1977	13,750	2,571	33%	100%	0	2,571	1,251	1,357	5,178
1978	13,750	2,571	68%	100%	2,231	2,571	3,324	1,019	6,914
1979	13,750	2,571	85%	100%	2,214	2,571	3,271	1,515	7,357
1980	13,750	2,571	82%	100%	2,875	2,571	2,705	2,179	7,455
1981	13,750	2,571	83%	100%	0	2,571	9,571	1,485	13,628
1982	13,750	2,571	94%	100%	0	2,571	6,004	4,412	12,986
1983	13,750	2,571	100%	100%	5,544	2,571	4,716	384	7,671
1984	13,750	2,571	100%	100%	2,779	2,571	3,345	1,632	7,548
1985	13,750	2,571	96%	100%	0	2,571	6,292	5,291	14,154
1986	13,750	2,571	81%	100%	699	2,571	4,953	2,202	9,725
1987	13,750	2,571	69%	100%	0	2,571	7,917	1,701	12,189
1988	13,750	2,571	43%	100%	0	2,571	1,391	1,958	5,920
1989	13,750	2,571	58%	95%	0	2,433	3,653	1,935	8,021
1990	13,750	2,571	46%	78%	0	2,011	3,096	1,195	6,302
1991	13,750	2,571	29%	78%	0	2,004	296	1,711	4,010
1992	13,750	2,571	31%	96%	0	2,460	0	1,741	4,201
1993	13,750	2,571	76%	100%	3,282	2,571	1,337	2,958	6,866
AVG	13,750	2,571	80%	97%	814	2,484	5,246	2,337	10,068

NOTES

1) Based on total South Coast contractual agreements with CCWA not including drought buffers and additional water (4,500 afy) contracted by Goleta.

2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities. The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

Draft Technical Memorandum No. 6
Santa Ynez River Flow Analysis for
Impact Assessment on Steelhead

STETSON ENGINEERS INC.

D R A F T
TECHNICAL MEMORANDUM No. 6

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TO: David Fee, URS
Gina Morimoto, ENTRIX

DATE: April 24, 2006
rev. August 22, 2006

FROM: Curtis Lawler

JOB NO: 1893

RE: Santa Ynez River Flow Analysis for Impact Assessment on Steelhead

1. INTRODUCTION

This technical memorandum was prepared to provide hydrologic data in connection with the impact assessment on Alternatives 5B and 5C. The two additional alternatives (Alternatives 5B and 5C) were identified for the revised Draft Environmental Impact Report on Consideration of Modifications to the U.S. Bureau of Reclamation's Water Right Permits 11308 and 11310 (Applications 11331 and 11332) to Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir) dated August 2003. The Draft Technical Memorandum No. 5 (Re: Hydrologic Impact Analysis of Possible Cachuma Operations Alternatives) provides a detailed discussion on how these alternatives (Alternatives 5B and 5C) were analyzed using the Santa Ynez River Hydrology Model (SYRHM). Draft Technical Memorandum No. 5 includes the results on: (1) Cachuma Reservoir operations; (2) Santa Ynez River flows; (3) above Narrows groundwater storage; (4) water rights releases; (5) Cachuma Project water supply; (6) State Water Project deliveries; and (7) sensitivity analysis.

Tables A-1 and A-2 (Appendix A) of this memorandum provide the simulated monthly flows for Alternatives 5B and 5C for the period from 1918 through 1993. This technical memorandum provides additional hydrologic data used in assessing impacts on steelhead including daily flow data generated from the monthly flow output of the SYRHM for the two additional alternatives (Alternatives 5B and 5C). The daily flow data is utilized to assess impacts on passage flows. The daily flow analysis uses the monthly results from the SYRHM as presented in Draft Technical Memorandum No. 5. Monthly flows from the SYRHM were converted to daily flows based on daily variations of gaged flow in Salsipuedes Creek (WY 1942-1993). The same procedures as used in the Biological Assessment (BA) and Fish Management Plan (FMP) were used in utilizing the daily flow data for the impact analysis. Hydrologic impacts analyzed in this technical memorandum are coordinated with the work of ENTRIX.

2. EFFECTS ON SPAWNING AND REARING HABITAT

Table 1 shows the exceedance flows for various alternatives and for various seasons within the year based on the daily flow data. The daily flow exceedances in Table 1 generally match the monthly flow frequency curves presented in Figures 5A, 5B, and 5C and Table 11 of Draft Technical Memorandum No. 5. The relative difference between Alternatives 5B and 5C is insignificant because they operate under the same operational release criteria for fish. The most significant differences between Alternatives 3B and 5B and between Alternatives 3C and 5C are shown in Table 1 for the months of April through September for the 50% exceedance. These months (April-September) are affected the most because the trigger to switch to the 3A2 operations under Alternatives 5B and 5C (see Draft Technical Memorandum No. 5) is usually not reached until around March and then ends in September. These months show a comparative increase in flows of 6 to 10 cfs in the reach from Bradbury Dam to Highway 154 Bridge at the 50% exceedance for Alternative 5B and 5C in comparison to Alternatives 3B and 3C, respectively. This is primarily due to the 3A2 criteria that flow targets have to be met all the way to Alisal Bridge under Alternatives 5B and 5C. Table 1 also shows that during low flow periods (80% exceedance) Alternatives 5B and 5C are basically the same as Alternatives 3B and 3C because they operate under the same criteria for releases for fish. Because of similarities in the results of daily and monthly flow analyses, comparisons of rearing and spawning flows in the August 2003 DEIR were based on the simulated monthly flows which has a longer period of record (76 years) than the daily flows (52 years). However, due to the flashy nature of the Santa Ynez River, passage flows for steelhead occur primarily during storms and spill events, so daily flows are used for the passage analysis described below.

TABLE 1
FLOW EXCEEDANCES FOR EIR ALTERNATIVES
USING SANTA YNEZ RIVER HYDROLOGY MODEL AND DAILY FLOW ANALYSIS [1)]
(all flows in cfs)

Alt 2

	Flow Exceedance 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	2.6	3.3	46.3
Jan-Mar	2.5	3.2	19.7
April-Jun	3.1	5.1	55.7
Jul-Sep	3.7	10.4	45.3
Oct-Dec	2.9	3.4	7.0
Highway 154 to Refugio Road			
Jan-April	2.0	2.5	50.7
Jan-Mar	2.0	2.5	26.7
April-Jun	2.5	4.8	52.5
Jul-Sep	2.5	9.5	42.6
Oct-Dec	1.5	2.5	5.5
Refugio Road to Alisal Bridge			
Jan-April	0.2	2.5	70.3
Jan-Mar	0.1	2.3	39.9
April-Jun	0.4	4.7	45.8
Jul-Sep	0.0	4.8	29.0
Oct-Dec	0.0	0.1	4.2

Alt 3B

	Flow Exceedance 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.5	5.5	51.7
Jan-Mar	3.3	5.4	30.8
April-Jun	5.0	6.3	55.5
Jul-Sep	6.0	11.7	46.9
Oct-Dec	3.6	5.8	9.5
Highway 154 to Refugio Road			
Jan-April	2.7	5.0	59.6
Jan-Mar	2.7	5.0	36.5
April-Jun	4.9	5.0	52.8
Jul-Sep	4.9	10.1	42.7
Oct-Dec	2.4	4.9	8.4
Refugio Road to Alisal Bridge			
Jan-April	1.1	4.5	76.7
Jan-Mar	0.8	4.1	54.7
April-Jun	2.3	5.2	46.2
Jul-Sep	0.8	6.1	31.2
Oct-Dec	0.0	1.5	5.5

Alt 3C

	Flow Exceedance 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.5	5.5	49.9
Jan-Mar	3.3	5.4	29.9
April-Jun	5.0	6.3	55.5
Jul-Sep	6.2	11.7	46.3
Oct-Dec	3.8	5.9	9.6
Highway 154 to Refugio Road			
Jan-April	2.7	5.0	59.3
Jan-Mar	2.7	5.0	35.9
April-Jun	4.9	5.0	52.8
Jul-Sep	4.9	10.1	42.9
Oct-Dec	2.5	4.9	8.5
Refugio Road to Alisal Bridge			
Jan-April	1.1	4.5	75.7
Jan-Mar	0.8	4.1	53.6
April-Jun	2.3	5.2	46.2
Jul-Sep	0.8	6.1	31.1
Oct-Dec	0.0	1.5	5.5

Alt 4B

	Flow Exceedance 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.6	5.5	47.7
Jan-Mar	3.4	5.4	27.3
April-Jun	4.8	6.2	28.0
Jul-Sep	6.3	11.2	35.2
Oct-Dec	3.7	5.8	12.3
Highway 154 to Refugio Road			
Jan-April	2.8	5.0	54.2
Jan-Mar	2.8	5.0	32.1
April-Jun	4.9	5.0	24.7
Jul-Sep	4.9	9.8	30.6
Oct-Dec	2.5	4.9	11.2
Refugio Road to Alisal Bridge			
Jan-April	1.5	4.6	70.9
Jan-Mar	1.2	4.1	51.2
April-Jun	1.9	4.5	19.0
Jul-Sep	0.8	5.3	15.4
Oct-Dec	0.0	1.5	7.1

Alt 5B

	Flow Exceedance 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.8	5.5	48.0
Jan-Mar	3.8	5.3	42.5
April-Jun	5.0	17.8	55.5
Jul-Sep	6.5	18.3	45.0
Oct-Dec	3.8	5.8	12.0
Highway 154 to Refugio Road			
Jan-April	2.5	5.0	50.8
Jan-Mar	2.5	5.0	48.0
April-Jun	5.0	16.5	53.0
Jul-Sep	5.0	16.5	44.0
Oct-Dec	2.5	5.0	11.0
Refugio Road to Alisal Bridge			
Jan-April	0.5	4.8	70.0
Jan-Mar	0.3	4.0	51.5
April-Jun	2.3	14.3	46.5
Jul-Sep	1.5	10.0	31.0
Oct-Dec	0.0	1.5	5.8

Alt 5C

	Flow Exceedance 80%	50%	20%
Bradbury Dam to Highway 154			
Jan-April	3.8	5.8	48.0
Jan-Mar	3.8	5.5	35.5
April-Jun	5.0	16.0	51.5
Jul-Sep	6.3	18.3	45.0
Oct-Dec	3.8	5.8	12.0
Highway 154 to Refugio Road			
Jan-April	2.5	5.0	50.5
Jan-Mar	2.5	5.0	48.0
April-Jun	5.0	16.5	53.0
Jul-Sep	5.0	16.5	44.0
Oct-Dec	2.5	5.0	10.8
Refugio Road to Alisal Bridge			
Jan-April	0.5	4.8	69.8
Jan-Mar	0.3	4.0	51.5
April-Jun	2.3	14.3	46.5
Jul-Sep	1.3	10.0	31.0
Oct-Dec	0.0	1.5	5.8

1) Monthly flows from the Santa Ynez River Model were converted to daily flows
based on daily variations of gaged flow in Salsipuedes Creek (1941-1993) and releases from Cachuma Reservoir.

3. EFFECTS ON PASSSAGE

Tables 2A and 2B show the summary of passage days generated for each of the alternatives. A passage day is defined as a condition when natural flows of the Santa Ynez River at Solvang were 25 cfs or greater during the period from January through April. In general, Table 2A shows that in wet years all of the alternatives analyzed have many passage days; and in normal and dry years, Alternatives 3B, 3C, 4B, 5B and 5C have more passage days than Alternative 2 (Baseline) because these five alternatives have passage flow releases as set forth in the Biological Opinion (BO). The criteria for the quantity and timing of passage releases used in Alternatives 3B, 3C, and 4B were also used for the new alternatives (Alternatives 5B and 5C) for consistency.

The passage releases for the 3A2 operations under Alternatives 5B and 5C occur in different years than the BO passage supplementation. This is because the criteria for the different operations are based on different hydrologic year types. BO passage releases (Alternatives 3B, 3C, 4B, 5B, and 5C) are targeted for normal years after a spill year; the 3A2 releases (Alternatives 5B and 5C) are targeted for wet and above-normal years which could be (and often are) a spill year. The BO passage releases augment passage flows in normal years after spill years, and the 3A2 operations increases passage flows in years of spill and/or wet or above-normal years.

However, Table 2A shows that the expected increase of passage days in spill years due to the 3A2 operations do not necessarily show up in Alternatives 5B and 5C because the 3A2 operations more likely do not trigger until the prime season for passage (February through March) is over. Also when the 3A2 operations are triggered, there is often a spill so that there is not an increase in the number of passage days like water years 1943, 1969, 1983, and 1993 under Alternatives 5B and 5C. However, wet years that do not have a spill show a significant increase in the number of passage days like water years 1966 and 1992 under Alternatives 5B and 5C.

TABLE 2A
SUMMARY OF PASSAGE DAYS UNDER EIR ALTERNATIVES
JANUARY THROUGH APRIL

YEAR	Hydrologic Year Type Classification 1)	ALT 2 # of Passage Days 2)	Indicator of > 14 days	ALT 3B # of Passage Days	Indicator of > 14 days	ALT 3C # of Passage Days	Indicator of > 14 days	ALT 4B # of Passage Days	Indicator of > 14 days	ALT 5B # of Passage Days	Indicator of > 14 days	ALT 5C # of Passage Days	Indicator of > 14 days
1942	normal	47	X	41	X	41	X	40	X	40	X	40	X
1943	wet	120	X	120	X	120	X	120	X	120	X	120	X
1944	wet	90	X	91	X	91	X	89	X	89	X	88	X
1945	wet	66	X	66	X	66	X	66	X	66	X	66	X
1946	normal	33	X	25	X	23	X	7		6		6	
1947	normal	0		0		0		0		0		0	
1948	dry	0		0		0		0		0		0	
1949	dry	1		14	X	14	X	15	X	16	X	16	X
1950	dry	0		14	X	14	X	14	X	14	X	14	X
1951	dry	0		0		0		0		0		0	
1952	wet	76	X	73	X	73	X	73	X	98	X	98	X
1953	normal	5		18	X	18	X	19	X	19	X	19	X
1954	normal	9		24	X	24	X	24	X	24	X	24	X
1955	dry	0		0		0		1		1		1	
1956	normal	11		11		11		11		11		11	
1957	dry	0		0		0		0		1		1	
1958	wet	68	X	70	X	70	X	70	X	75	X	75	X
1959	normal	4		15	X	15	X	15	X	15	X	15	X
1960	dry	1		15	X	15	X	15	X	15	X	15	X
1961	dry	0		0		0		0		0		0	
1962	wet	39	X	42	X	42	X	42	X	81	X	81	X
1963	dry	5		6		6		6		6		6	
1964	dry	0		0		0		0		0		0	
1965	normal	5		5		5		5		5		5	
1966	wet	11		11		11		11		72	X	72	X
1967	wet	97	X	97	X	97	X	97	X	96	X	96	X
1968	dry	1		15	X	15	X	15	X	15	X	15	X
1969	wet	104	X	104	X	104	X	104	X	104	X	104	X
1970	normal	9		17	X	17	X	17	X	16	X	16	X
1971	normal	0		1		1		1		0		0	
1972	dry	0		0		0		0		0		0	
1973	wet	86	X	87	X	87	X	87	X	87	X	87	X
1974	normal	28	X	12		12		10		9		9	
1975	normal	67	X	74	X	74	X	74	X	73	X	73	X
1976	dry	1		16	X	16	X	16	X	16	X	16	X
1977	dry	0		0		0		0		0		0	
1978	wet	92	X	92	X	92	X	91	X	91	X	91	X
1979	wet	85	X	84	X	81	X	76	X	76	X	76	X
1980	wet	95	X	95	X	95	X	95	X	95	X	95	X
1981	normal	11		22	X	22	X	22	X	21	X	21	X
1982	normal	6		19	X	19	X	19	X	19	X	19	X
1983	wet	100	X	100	X	100	X	100	X	100	X	100	X
1984	normal	60	X	60	X	60	X	60	X	74	X	74	X
1985	dry	0		0		0		0		0		0	
1986	wet	61	X	62	X	62	X	57	X	58	X	58	X
1987	dry	2		15	X	15	X	15	X	16	X	16	X
1988	dry	0		15	X	15	X	15	X	15	X	15	X
1989	dry	0		0		0		0		0		0	
1990	dry	0		0		0		0		0		0	
1991	normal	11		11		11		11		23	X	23	X
1992	wet	28	X	29	X	29	X	31	X	65	X	65	X
1993	wet	120	X	120	X	120	X	120	X	120	X	119	X
AVG 42-93		32		35		35		34		38		38	
SUM 42-93			21		33		33		32		34		34
			40%		63%		63%		62%		65%		65%

Notes

1) A wet, normal, or dry year represents a third of the years analyzed of the inflow into Lake Cachuma using USGS Los Laureles gage data.

2) Passage days are defined as number of days when flows at Solvang were 25 cfs or greater, January through April

TABLE 2B

SUMMARY OF PASSAGE DAYS UNDER EIR ALTERNATIVES

JANUARY THROUGH APRIL

For Years When Passage Supplementation Releases Are Made

		Alt 2		Alt 3B		Alt 3C		Alt 4B		Alt 5B		Alt 5C	
YEAR	**Hydrologic Year Type Classification 1)**	**# of Passage Days 2)**	**Indicator of > 14 days**	**# of Passage Days**	**Indicator of > 14 days**	**# of Passage Days**	**Indicator of > 14 days**	**# of Passage Days**	**Indicator of > 14 days**	**# of Passage Days**	**Indicator of > 14 days**	**# of Passage Days**	**Indicator of > 14 days**
1949	dry	1		14	X	14	X	15	X	16	X	16	X
1950	dry	0		14	X	14	X	14	X	14	X	14	X
1953	normal	5		18	X	18	X	19	X	19	X	19	X
1954	normal	9		24	X	24	X	24	X	24	X	24	X
1959	normal	4		15	X	15	X	15	X	15	X	15	X
1960	dry	1		15	X	15	X	15	X	15	X	15	X
1968	dry	1		15	X	15	X	15	X	15	X	15	X
1970	normal	9		17	X	17	X	17	X	16	X	16	X
1975	normal	67	X	74	X	74	X	74	X	73	X	73	X
1976	dry	1		16	X	16	X	16	X	16	X	16	X
1981	normal	11		22	X	22	X	22	X	21	X	21	X
1982	normal	6		19	X	19	X	19	X	19	X	19	X
1987	dry	2		15	X	15	X	15	X	16	X	16	X
1988	dry	0		15	X	15	X	15	X	15	X	15	X
AVG 42-93		8		21		21		21		21		21	
SUM 42-93			1		14		14		14		14		14
			7%		100%		100%		100%		100%		100%

Notes

1) A wet, normal, or dry year represents a third of the years analyzed of the inflow into Lake Cachuma using USGS Los Laureles gage data.

2) Passage days are defined as number of days when flows at Solvang were 25 cfs or greater, January through April

4. EFFECTS ON FISH IN CACHUMA LAKE

Tables B-1 and B-2 (Appendix B) show the simulated monthly Cachuma Reservoir storage, elevation and surcharge for the two new alternatives (Alternatives 5B and 5C) for the period 1918 through 1993. Lake elevations may affect shallow lake habitat in Cachuma Reservoir and ability of resident fish to migrate into tributaries for spawning and rearing.

Appendix A

Table A-1								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Oct-17	0	8.00	7.75	5.00	0.25	0.00	0.00	0.00
Nov-17	0	7.75	7.50	5.00	0.25	0.00	0.00	0.00
Dec-17	0	7.25	7.00	5.00	0.50	0.00	0.00	0.00
Jan-18	0	6.75	6.75	5.00	1.00	0.00	0.00	1.00
Feb-18	0	903.25	923.75	950.75	1066.00	1230.00	1391.75	1497.25
Mar-18	1	2067.50	2080.00	2101.75	2181.00	2208.00	2205.00	2345.50
Apr-18	1	293.75	299.00	307.00	337.25	368.75	403.50	432.00
May-18	1	79.75	81.75	84.25	94.25	107.75	126.50	135.50
Jun-18	1	16.75	17.75	19.00	22.75	29.50	38.00	45.00
Jul-18	1	13.50	13.75	13.00	10.00	9.25	8.00	11.00
Aug-18	1	17.75	17.75	16.00	10.00	7.50	3.75	4.75
Sep-18	1	18.75	18.50	17.00	10.00	7.25	2.75	3.75
Oct-18	0	7.00	7.00	5.75	1.50	0.00	0.00	1.00
Nov-18	0	6.25	6.25	5.25	1.50	0.25	0.00	1.25
Dec-18	0	6.00	6.00	5.00	2.00	1.00	0.00	1.25
Jan-19	0	20.75	20.75	19.00	14.00	11.00	5.75	6.75
Feb-19	0	23.00	23.25	22.50	21.00	20.00	16.25	19.50
Mar-19	0	20.75	21.00	20.25	19.00	18.50	17.25	20.25
Apr-19	0	6.00	6.00	5.00	3.25	1.50	0.50	0.25
May-19	0	6.00	5.75	5.00	3.00	1.75	0.75	2.25
Jun-19	0	6.50	6.25	5.00	2.00	0.75	0.00	0.00
Jul-19	0	62.00	61.75	58.25	47.50	41.75	33.25	31.75
Aug-19	0	7.25	7.25	5.75	1.50	0.00	0.00	0.00
Sep-19	0	36.75	36.25	32.25	16.75	9.00	0.00	0.00
Oct-19	0	23.75	23.75	21.50	12.25	5.75	0.00	0.25
Nov-19	0	8.75	8.75	7.75	4.25	1.50	0.00	0.75
Dec-19	0	5.50	5.50	5.00	2.75	1.25	0.00	1.00
Jan-20	0	5.75	5.75	5.00	2.50	1.00	0.00	1.00
Feb-20	0	4.00	4.75	5.25	7.25	10.75	10.50	14.75
Mar-20	0	2.50	5.25	9.25	22.00	32.50	34.00	49.25
Apr-20	0	3.00	4.00	5.00	9.25	15.50	21.00	28.00
May-20	0	5.50	5.75	5.00	3.75	3.50	3.75	5.25
Jun-20	0	6.50	6.25	5.00	2.25	0.75	0.00	1.50
Jul-20	0	63.00	62.75	59.25	48.50	42.50	33.50	32.00
Aug-20	0	6.25	6.00	5.00	0.75	0.00	0.00	0.00
Sep-20	0	46.00	45.75	41.25	23.50	13.75	1.25	0.25
Oct-20	0	26.75	26.75	24.50	14.50	7.00	0.00	0.00
Nov-20	0	15.50	15.25	14.00	9.50	5.00	0.00	0.00
Dec-20	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-21	0	2.25	2.75	2.50	2.00	2.25	1.00	2.50
Feb-21	0	2.25	3.00	3.25	4.50	7.25	7.25	11.50
Mar-21	0	2.00	3.00	3.75	6.75	11.75	14.75	21.00
Apr-21	0	3.25	3.25	2.50	1.50	1.50	1.50	2.75
May-21	0	3.25	3.25	2.50	1.25	0.75	0.75	2.00
Jun-21	0	4.00	3.75	2.50	0.25	0.00	0.00	0.50
Jul-21	0	4.00	3.75	2.50	0.00	0.00	0.00	1.00
Aug-21	0	79.00	78.75	73.75	56.25	46.75	31.50	29.25
Sep-21	0	36.50	36.50	35.25	29.75	25.75	19.50	18.75
Oct-21	0	42.25	41.75	37.75	21.75	12.00	1.25	0.25
Nov-21	0	12.50	12.25	11.25	6.75	2.75	0.00	0.00
Dec-21	0	2.00	10.00	22.75	57.75	106.25	142.75	196.50
Jan-22	0	2.00	6.50	13.25	35.50	66.25	97.00	122.00
Feb-22	1	2.50	18.75	45.50	142.50	238.00	318.75	400.75
Mar-22	1	33.50	39.50	48.25	81.50	120.25	161.00	192.25
Apr-22	1	123.00	125.50	128.00	140.00	156.00	177.75	192.25
May-22	1	18.50	19.25	20.00	23.50	28.75	37.50	41.00
Jun-22	1	21.75	22.00	21.25	19.00	18.00	19.00	20.75
Jul-22	1	15.25	15.25	14.00	10.00	8.00	6.25	7.50
Aug-22	1	18.25	18.00	16.50	10.00	7.00	3.00	2.50
Sep-22	1	19.75	19.50	17.50	10.00	6.25	1.75	1.25
Oct-22	0	6.25	6.25	5.00	0.75	0.00	0.00	0.00
Nov-22	0	6.75	6.50	5.00	0.75	0.00	0.00	0.00
Dec-22	0	2.75	5.00	7.50	13.00	23.00	25.50	41.50
Jan-23	0	20.75	21.25	20.00	17.00	17.25	15.75	19.25
Feb-23	0	23.00	23.50	23.00	22.50	23.50	24.25	29.50
Mar-23	0	20.75	20.75	19.75	18.00	16.75	16.50	18.00
Apr-23	0	5.00	5.25	5.00	5.25	6.00	8.00	10.50
May-23	0	5.50	5.75	5.00	3.50	3.00	3.50	5.00

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Jun-23	0	6.25	6.00	5.00	2.75	1.50	1.25	2.75
Jul-23	0	6.25	6.25	5.00	1.50	0.50	0.00	1.25
Aug-23	0	69.75	69.50	65.75	51.75	44.50	33.00	31.50
Sep-23	0	51.00	51.00	49.75	44.25	40.50	34.50	33.75
Oct-23	0	48.00	47.75	46.25	40.50	36.75	30.75	30.00
Nov-23	0	11.75	11.50	9.50	3.75	1.00	0.00	0.00
Dec-23	0	6.25	6.25	5.00	1.50	0.25	0.00	1.00
Jan-24	0	6.25	6.25	5.00	2.00	0.50	0.00	1.25
Feb-24	0	6.50	6.50	5.25	2.50	1.00	0.00	1.25
Mar-24	0	4.50	5.00	5.00	5.00	6.75	7.00	11.25
Apr-24	0	6.25	6.25	5.00	3.00	1.75	0.75	2.25
May-24	0	6.25	6.00	5.00	2.50	1.00	0.00	1.25
Jun-24	0	6.50	6.50	5.00	1.75	0.50	0.00	1.25
Jul-24	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Aug-24	0	33.75	33.50	28.75	13.00	6.50	0.00	0.00
Sep-24	0	35.25	35.00	31.75	18.00	10.00	0.25	0.00
Oct-24	0	23.00	23.00	21.00	11.75	5.50	0.00	0.00
Nov-24	0	7.50	7.25	6.50	3.00	0.50	0.00	0.00
Dec-24	0	3.25	3.25	2.50	0.25	0.00	0.00	0.00
Jan-25	0	3.50	3.50	2.50	0.25	0.00	0.00	0.00
Feb-25	0	4.00	4.00	2.75	0.25	0.00	0.00	0.00
Mar-25	0	3.25	3.25	2.50	1.00	0.75	0.00	0.25
Apr-25	0	2.00	3.00	3.25	4.75	8.50	8.75	12.25
May-25	0	3.50	3.50	2.50	0.50	0.00	0.00	0.75
Jun-25	0	4.00	3.75	2.50	0.25	0.00	0.00	0.75
Jul-25	0	21.75	21.50	17.50	6.50	2.00	0.00	0.00
Aug-25	0	45.75	45.50	41.50	25.25	15.75	2.00	0.25
Sep-25	0	8.00	8.00	6.75	2.25	0.00	0.00	0.00
Oct-25	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Nov-25	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Dec-25	0	3.75	3.75	2.50	0.00	0.00	0.00	0.25
Jan-26	0	3.75	3.50	2.50	0.00	0.00	0.00	0.25
Feb-26	0	2.25	4.75	8.00	15.00	28.25	30.00	44.50
Mar-26	0	2.00	2.75	3.00	3.50	5.75	5.00	11.00
Apr-26	0	2.25	15.50	36.50	104.25	162.25	185.00	263.25
May-26	1	19.25	20.00	20.00	21.25	25.00	29.00	35.75
Jun-26	1	25.00	25.00	23.50	19.00	16.50	14.25	15.75
Jul-26	1	16.75	16.75	15.25	10.00	7.25	4.00	5.25
Aug-26	1	19.75	19.50	17.50	10.00	5.75	1.00	0.50
Sep-26	1	32.75	32.50	28.75	14.75	7.00	0.00	0.00
Oct-26	0	72.75	72.75	70.25	59.00	49.75	34.75	32.00
Nov-26	0	2.00	3.75	6.25	11.50	18.75	21.25	32.00
Dec-26	0	2.00	2.75	3.50	5.25	8.25	9.50	15.50
Jan-27	0	2.00	2.75	3.25	5.75	9.50	13.00	17.75
Feb-27	0	3.75	28.50	69.00	227.00	385.50	527.75	637.75
Mar-27	1	170.50	173.75	177.00	194.75	205.00	211.75	235.00
Apr-27	1	68.25	70.25	72.75	82.75	95.25	112.75	123.75
May-27	1	19.25	19.75	20.00	21.25	23.25	28.00	31.50
Jun-27	1	22.75	22.75	21.75	19.00	17.25	17.25	18.50
Jul-27	1	15.50	15.50	14.25	10.00	8.00	5.75	7.00
Aug-27	1	18.75	18.50	16.75	10.00	6.75	2.50	2.00
Sep-27	1	20.25	20.25	18.00	10.00	6.00	1.00	0.50
Oct-27	0	6.25	6.25	5.00	0.75	0.00	0.00	0.00
Nov-27	0	6.50	6.50	5.00	1.00	0.00	0.00	0.75
Dec-27	0	6.25	6.25	5.00	1.25	0.25	0.00	1.00
Jan-28	0	20.75	20.75	18.75	13.00	9.50	3.75	4.50
Feb-28	0	22.00	24.00	25.75	32.00	36.50	32.75	44.75
Mar-28	0	20.75	21.75	22.25	24.25	27.25	28.00	35.00
Apr-28	0	5.50	5.50	5.00	4.25	3.75	3.50	5.25
May-28	0	5.75	5.75	5.00	3.25	2.00	1.25	2.75
Jun-28	0	6.25	6.00	5.00	2.50	1.00	0.00	1.50
Jul-28	0	62.00	61.75	58.75	48.25	42.25	34.00	32.50
Aug-28	0	49.50	49.50	48.25	43.00	39.50	34.00	33.25
Sep-28	0	51.00	50.75	49.25	42.50	38.50	32.00	31.00
Oct-28	0	49.25	49.00	47.50	40.75	36.50	30.00	29.25
Nov-28	0	6.75	6.75	5.00	0.50	0.00	0.00	0.00
Dec-28	0	6.50	6.50	5.00	1.00	0.00	0.00	1.00
Jan-29	0	6.25	6.25	5.00	1.50	0.25	0.00	1.25

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Feb-29	0	5.75	6.25	5.50	3.75	4.50	3.25	4.75
Mar-29	0	4.50	5.00	5.00	5.00	7.25	8.00	11.00
Apr-29	0	5.00	5.50	5.00	4.50	5.75	6.25	9.50
May-29	0	6.00	6.00	5.00	2.50	1.50	0.75	2.25
Jun-29	0	59.75	59.50	56.25	47.25	41.75	34.75	33.75
Jul-29	0	46.50	46.50	45.25	40.75	37.75	33.25	32.75
Aug-29	0	24.50	24.25	20.75	8.50	3.00	0.00	0.00
Sep-29	0	40.75	40.50	37.00	22.25	12.75	1.00	0.00
Oct-29	0	26.50	26.25	24.25	14.75	7.25	0.00	0.00
Nov-29	0	8.50	8.50	7.50	4.00	1.00	0.00	0.00
Dec-29	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-30	0	3.50	3.50	2.50	0.25	0.00	0.00	0.00
Feb-30	0	4.00	4.00	2.75	0.50	0.00	0.00	0.25
Mar-30	0	2.00	3.50	5.25	11.25	20.50	25.25	31.25
Apr-30	0	3.50	3.50	2.50	1.25	0.75	0.00	1.25
May-30	0	3.50	3.50	2.50	0.50	0.00	0.00	1.00
Jun-30	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jul-30	0	22.00	21.75	17.75	6.75	2.00	0.00	0.00
Aug-30	0	30.50	30.25	26.75	13.25	5.75	0.00	0.00
Sep-30	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Oct-30	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Nov-30	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Dec-30	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jan-31	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Feb-31	0	4.00	4.00	2.75	0.00	0.00	0.00	1.00
Mar-31	0	3.75	3.75	2.50	0.00	0.00	0.00	0.25
Apr-31	0	4.00	3.75	2.50	0.00	0.00	0.00	0.50
May-31	0	25.00	24.75	21.00	9.00	3.25	0.00	0.00
Jun-31	0	4.50	4.50	3.50	0.25	0.00	0.00	0.00
Jul-31	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Aug-31	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Sep-31	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Oct-31	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Nov-31	0	4.50	4.50	2.50	0.00	0.00	0.00	0.00
Dec-31	0	2.00	7.00	13.75	25.75	50.75	61.25	87.75
Jan-32	0	2.00	4.00	6.25	9.50	19.50	18.50	25.50
Feb-32	0	2.50	16.75	38.50	122.75	175.25	181.25	289.25
Mar-32	1	41.00	44.25	48.00	62.75	86.25	110.75	126.75
Apr-32	1	31.75	32.75	33.00	35.00	38.25	42.00	49.00
May-32	1	21.50	21.75	21.25	20.00	19.75	21.00	24.25
Jun-32	1	24.50	24.50	23.25	19.00	15.75	13.00	14.25
Jul-32	1	17.25	17.00	15.50	10.00	6.75	3.25	3.50
Aug-32	1	19.50	19.50	17.50	10.00	5.75	1.00	0.50
Sep-32	1	32.75	32.50	29.00	14.75	7.00	0.00	0.00
Oct-32	0	11.25	11.25	10.00	4.75	1.25	0.00	0.00
Nov-32	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Dec-32	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Jan-33	0	2.00	4.75	8.25	17.75	33.50	42.25	53.25
Feb-33	0	4.00	5.00	5.50	7.00	11.00	12.25	19.00
Mar-33	0	3.00	3.00	2.50	1.75	1.75	1.75	3.25
Apr-33	0	3.25	3.25	2.50	1.50	1.25	1.25	2.75
May-33	0	3.50	3.50	2.50	0.50	0.00	0.00	1.25
Jun-33	0	60.00	59.75	56.25	46.75	41.25	34.50	33.50
Jul-33	0	48.75	48.75	47.50	42.75	39.75	35.50	34.75
Aug-33	0	42.50	42.25	40.75	34.75	31.00	25.00	24.25
Sep-33	0	35.00	34.75	30.00	13.50	5.25	0.00	0.00
Oct-33	0	3.50	3.25	2.50	0.00	0.00	0.00	0.00
Nov-33	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Dec-33	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Jan-34	0	2.00	4.75	8.25	16.75	31.50	37.75	50.00
Feb-34	0	2.25	3.50	4.50	7.50	11.75	11.75	19.50
Mar-34	0	2.25	2.75	2.50	2.25	3.50	4.00	7.00
Apr-34	0	3.75	3.75	2.50	0.50	0.00	0.00	1.50
May-34	0	3.75	3.75	2.50	0.25	0.00	0.00	0.50
Jun-34	0	64.75	64.25	60.50	49.75	43.25	34.75	33.50
Jul-34	0	37.00	37.00	35.75	31.25	28.00	23.75	23.00
Aug-34	0	40.75	40.50	36.00	19.50	10.50	0.75	0.00
Sep-34	0	42.00	41.75	38.75	24.50	13.75	1.25	0.25

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
	Indicator	Cachuma	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River
	that 3A2	Total Discharges	Below	at 154	above Alisal	near	above Salsipuedes	at Lompoc
MONTH	in effect	Downstream	Hilton Creek	Bridge	Bridge	Buellton	Creek Confluence	Narrows
	(1=yes)	cfs	cfs	cfs	cfs	cfs	cfs	cfs
Oct-34	0	3.25	3.00	2.50	0.00	0.00	0.00	0.00
Nov-34	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Dec-34	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Jan-35	0	2.00	5.00	9.00	20.00	37.25	47.00	59.75
Feb-35	0	2.25	3.50	4.50	7.75	13.25	16.75	23.75
Mar-35	0	2.00	5.25	9.75	25.50	41.75	52.75	69.50
Apr-35	0	2.00	7.50	15.75	44.50	74.75	100.00	127.50
May-35	1	20.00	20.50	20.00	21.00	23.75	28.25	31.75
Jun-35	1	25.00	25.00	23.25	19.00	16.25	14.75	16.00
Jul-35	1	17.25	17.25	15.50	10.00	6.75	3.50	3.75
Aug-35	1	66.75	66.75	63.50	51.50	44.00	33.50	32.00
Sep-35	1	43.25	43.00	42.00	37.00	33.25	28.00	27.25
Oct-35	0	19.75	19.75	16.75	6.75	1.50	0.00	0.00
Nov-35	0	14.75	14.50	13.00	7.50	3.50	0.00	0.00
Dec-35	0	3.50	3.25	2.50	0.25	0.00	0.00	0.00
Jan-36	0	3.50	3.50	2.50	0.25	0.00	0.00	0.75
Feb-36	0	2.00	11.00	24.75	71.75	121.00	152.75	192.50
Mar-36	0	2.00	3.50	5.25	12.00	21.50	31.50	40.00
Apr-36	0	2.00	3.50	4.75	10.50	15.25	18.25	25.75
May-36	0	3.25	3.25	2.50	1.50	1.25	1.50	3.25
Jun-36	0	3.75	3.75	2.50	0.25	0.00	0.00	0.50
Jul-36	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Aug-36	0	40.75	40.25	35.00	17.25	9.00	0.25	0.00
Sep-36	0	6.75	6.75	5.50	0.75	0.00	0.00	0.00
Oct-36	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Nov-36	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Dec-36	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jan-37	0	2.00	3.25	4.50	6.25	12.00	11.50	16.00
Feb-37	0	2.50	22.00	52.75	160.75	304.75	441.25	534.75
Mar-37	1	144.00	158.75	181.00	265.75	362.50	456.00	530.50
Apr-37	1	281.00	284.75	290.00	308.75	332.75	364.00	385.75
May-37	1	18.25	19.00	20.00	23.50	28.00	36.00	39.50
Jun-37	1	20.50	20.75	20.25	19.00	19.00	21.25	22.75
Jul-37	1	15.00	15.00	14.00	10.00	8.25	6.50	7.75
Aug-37	1	18.50	18.25	16.75	10.00	6.75	2.75	2.25
Sep-37	1	20.00	19.75	17.75	10.00	6.25	1.50	1.00
Oct-37	0	7.50	7.50	6.00	1.50	0.00	0.00	0.00
Nov-37	0	14.50	14.50	12.50	6.25	2.75	0.00	0.00
Dec-37	0	6.00	6.00	5.00	2.00	0.75	0.00	1.00
Jan-38	0	20.75	20.75	19.00	14.00	11.00	6.00	6.50
Feb-38	0	556.00	573.00	597.75	693.75	826.00	961.50	1046.50
Mar-38	1	3013.00	3047.00	3105.75	3344.75	3500.75	3600.75	3827.00
Apr-38	1	263.75	267.75	273.75	296.00	323.75	359.00	380.75
May-38	1	36.75	37.00	36.50	35.75	34.75	36.50	38.00
Jun-38	1	18.75	19.00	19.00	19.50	21.75	26.50	28.00
Jul-38	1	12.75	13.00	12.25	10.00	10.25	10.75	12.25
Aug-38	1	17.50	17.50	16.00	10.00	7.50	4.00	5.00
Sep-38	1	18.75	18.50	16.75	10.00	7.00	2.75	3.75
Oct-38	0	7.00	6.75	5.50	1.50	0.00	0.00	0.00
Nov-38	0	7.25	7.25	5.75	1.50	0.00	0.00	0.00
Dec-38	0	5.50	5.75	5.00	2.75	2.50	0.75	3.25
Jan-39	0	20.75	21.25	20.50	19.00	21.00	20.25	24.00
Feb-39	0	23.00	24.00	24.25	26.00	31.00	34.75	41.75
Mar-39	0	20.75	22.50	24.00	30.75	41.00	52.25	61.75
Apr-39	0	4.00	4.50	5.00	7.00	10.00	14.00	19.00
May-39	0	5.50	5.50	5.00	3.75	3.25	3.50	5.25
Jun-39	0	6.25	6.25	5.00	2.50	1.25	0.25	1.75
Jul-39	0	58.00	58.00	54.75	45.00	39.75	33.00	32.00
Aug-39	0	49.50	49.50	48.00	43.00	39.75	34.75	34.00
Sep-39	0	51.00	51.00	49.25	42.75	39.00	32.75	31.75
Oct-39	0	6.75	6.50	5.00	0.25	0.00	0.00	0.00
Nov-39	0	7.00	6.75	5.00	0.25	0.00	0.00	0.00
Dec-39	0	6.75	6.50	5.00	0.75	0.00	0.00	0.00
Jan-40	0	5.50	5.75	5.00	2.75	3.00	1.25	3.50
Feb-40	0	2.75	4.25	5.25	8.75	16.25	20.50	27.25
Mar-40	0	3.25	4.25	5.00	7.00	12.00	15.75	22.25
Apr-40	0	5.00	5.50	5.00	5.00	6.50	8.25	11.75
May-40	0	6.00	6.00	5.00	2.50	1.75	1.25	2.75

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1) in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Jun-40	0	6.75	6.50	5.00	1.50	0.25	0.00	0.50
Jul-40	0	64.25	64.00	60.50	48.50	42.25	33.25	31.75
Aug-40	0	49.25	49.00	47.75	42.25	38.50	33.00	32.25
Sep-40	0	33.75	33.25	29.25	14.25	6.75	0.00	0.00
Oct-40	0	25.00	24.75	22.50	12.00	5.25	0.00	0.00
Nov-40	0	3.25	3.25	2.50	0.25	0.00	0.00	0.00
Dec-40	0	2.00	4.00	6.75	12.75	22.25	25.50	37.25
Jan-41	0	2.50	9.50	20.50	55.00	103.50	147.25	189.25
Feb-41	0	972.50	1019.25	1094.75	1341.75	1532.25	1599.75	1946.75
Mar-41	1	3096.25	3151.75	3247.50	3616.50	3935.50	4199.25	4506.25
Apr-41	1	1997.50	2025.25	2070.75	2249.25	2384.00	2476.00	2638.25
May-41	1	294.75	299.00	306.25	327.75	355.50	387.75	415.25
Jun-41	1	48.75	50.00	51.75	55.50	62.25	70.00	82.00
Jul-41	1	8.00	9.00	10.00	12.00	16.75	21.25	29.25
Aug-41	1	11.25	11.75	11.75	10.00	11.75	12.00	18.25
Sep-41	1	14.50	14.75	14.00	10.00	9.75	8.00	12.50
Oct-41	0	5.00	5.25	5.00	3.00	3.50	2.50	7.25
Nov-41	0	5.00	5.50	5.00	3.25	4.00	3.25	8.00
Dec-41	0	2.75	8.50	17.25	36.00	63.25	78.25	133.50
Jan-42	0	3.75	6.75	10.75	20.00	34.25	45.25	72.50
Feb-42	0	5.75	7.25	8.75	13.00	19.00	24.25	40.75
Mar-42	0	7.75	10.75	14.50	24.50	38.00	49.25	79.00
Apr-42	0	104.50	106.75	108.00	114.75	124.75	137.25	156.00
May-42	0	7.00	8.00	9.00	12.25	16.75	23.00	31.25
Jun-42	0	6.00	6.50	6.25	6.00	7.00	8.50	13.25
Jul-42	0	5.50	5.75	5.00	2.50	1.75	0.75	3.75
Aug-42	0	6.00	6.00	5.00	1.50	0.50	0.00	2.75
Sep-42	0	18.25	18.00	14.75	4.00	0.50	0.00	1.00
Oct-42	0	6.00	6.00	5.00	0.75	0.00	0.00	1.00
Nov-42	0	6.00	6.00	5.00	1.50	0.25	0.00	2.75
Dec-42	0	5.75	5.75	5.00	2.00	0.50	0.00	2.75
Jan-43	0	735.50	749.75	768.50	856.75	935.50	984.50	1031.25
Feb-43	1	514.00	520.75	532.50	572.00	617.25	671.50	706.75
Mar-43	1	1065.75	1081.50	1107.00	1211.75	1301.25	1383.00	1447.25
Apr-43	1	170.75	173.25	177.75	192.00	208.75	231.00	247.00
May-43	1	18.25	19.00	20.00	23.25	27.50	34.00	40.75
Jun-43	1	19.75	20.00	19.75	19.00	20.00	22.50	26.00
Jul-43	1	13.75	13.75	13.00	10.00	9.00	8.25	11.25
Aug-43	1	17.75	17.50	16.00	10.00	7.50	4.00	5.25
Sep-43	1	18.75	18.75	16.75	10.00	7.00	2.75	3.75
Oct-43	0	6.50	6.25	5.25	1.50	0.25	0.00	1.25
Nov-43	0	6.50	6.50	5.25	1.50	0.25	0.00	1.25
Dec-43	0	5.00	5.25	5.00	3.25	3.50	1.50	5.75
Jan-44	0	4.00	4.75	5.00	5.25	7.75	8.25	14.50
Feb-44	0	289.75	303.75	323.50	398.75	465.50	503.50	575.75
Mar-44	1	578.25	585.50	597.25	637.25	677.00	717.25	758.25
Apr-44	1	77.75	79.50	81.75	90.50	100.75	115.25	126.00
May-44	1	17.75	18.75	20.00	24.25	30.25	38.75	45.75
Jun-44	1	20.00	20.25	20.00	19.00	19.75	22.00	25.25
Jul-44	1	15.25	15.25	14.00	10.00	8.00	6.25	7.50
Aug-44	1	18.00	17.75	16.25	10.00	7.25	3.50	4.50
Sep-44	1	19.50	19.25	17.50	10.00	6.25	1.50	1.00
Oct-44	0	7.25	7.25	6.00	1.50	0.00	0.00	0.25
Nov-44	0	5.00	5.50	5.00	3.50	4.50	2.75	5.50
Dec-44	0	5.50	5.75	5.00	2.75	2.25	0.75	3.50
Jan-45	0	5.25	5.50	5.00	3.25	3.25	2.00	5.00
Feb-45	0	3.50	8.50	15.50	43.75	81.00	120.00	135.50
Mar-45	0	69.75	72.00	73.50	84.00	92.75	99.50	109.25
Apr-45	1	43.25	44.50	45.00	50.75	58.75	71.25	75.25
May-45	1	20.00	20.25	20.00	20.25	21.25	25.00	26.50
Jun-45	1	24.75	24.50	23.00	19.00	16.25	15.00	14.75
Jul-45	1	16.75	16.50	15.00	10.00	7.25	4.50	4.00
Aug-45	1	19.25	19.25	17.25	10.00	6.50	2.00	1.50
Sep-45	1	20.75	20.50	18.50	10.00	5.75	0.75	0.25
Oct-45	0	21.25	21.00	18.00	7.50	2.50	0.00	0.00
Nov-45	0	12.25	12.00	10.75	5.75	2.50	0.00	0.00
Dec-45	0	2.75	4.00	5.00	8.50	15.50	18.75	20.25
Jan-46	0	5.50	5.75	5.00	3.50	3.25	2.00	3.25

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Feb-46	0	5.50	6.00	5.50	5.25	6.50	7.50	9.00
Mar-46	0	3.25	4.50	5.50	10.00	11.00	8.25	21.00
Apr-46	0	5.50	7.00	8.00	14.50	24.50	36.50	41.75
May-46	1	23.50	23.75	22.25	20.00	19.50	20.50	21.75
Jun-46	1	25.50	25.50	23.75	19.00	16.00	13.50	15.00
Jul-46	1	56.50	56.25	53.75	45.00	39.75	33.25	32.50
Aug-46	1	49.50	49.50	48.25	43.25	40.00	35.25	34.75
Sep-46	1	51.00	51.00	49.50	43.00	39.25	33.25	32.25
Oct-46	0	49.50	49.25	47.75	41.25	37.25	31.25	30.25
Nov-46	0	5.25	5.75	5.00	3.00	4.00	3.00	5.50
Dec-46	0	5.00	5.50	5.00	3.25	4.25	3.75	6.75
Jan-47	0	6.00	6.00	5.00	2.25	1.50	0.50	2.00
Feb-47	0	6.00	6.25	5.50	3.50	3.75	3.25	6.50
Mar-47	0	5.75	5.75	5.00	3.25	2.75	2.75	4.50
Apr-47	0	6.25	6.25	5.00	2.75	1.75	1.25	2.75
May-47	0	56.00	55.75	53.00	46.00	41.25	37.25	36.75
Jun-47	0	51.00	51.00	50.00	46.25	43.75	41.50	41.00
Jul-47	0	49.25	49.25	47.75	42.75	40.00	36.25	35.50
Aug-47	0	49.25	49.00	47.25	40.75	37.00	31.50	30.50
Sep-47	0	50.75	50.50	48.50	41.00	36.50	29.75	28.75
Oct-47	0	45.75	45.50	43.75	36.50	32.25	25.75	24.75
Nov-47	0	24.50	24.25	20.00	7.25	1.75	0.00	0.00
Dec-47	0	3.50	3.25	2.50	0.00	0.00	0.00	0.00
Jan-48	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Feb-48	0	4.00	3.75	2.50	0.25	0.00	0.00	0.00
Mar-48	0	3.75	3.75	2.50	0.25	0.00	0.00	0.00
Apr-48	0	4.00	4.00	2.50	0.25	0.00	0.00	0.00
May-48	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jun-48	0	13.25	13.00	10.50	4.25	1.75	0.00	0.00
Jul-48	0	20.50	20.25	16.25	5.25	1.00	0.00	0.00
Aug-48	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Sep-48	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Oct-48	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Nov-48	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Dec-48	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Jan-49	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Feb-49	0	4.50	4.50	2.75	0.00	0.00	0.00	0.00
Mar-49	0	30.00	31.75	31.75	24.00	25.75	13.50	31.25
Apr-49	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
May-49	0	29.75	29.50	26.25	13.25	6.75	0.00	0.00
Jun-49	0	5.00	5.00	4.00	0.50	0.00	0.00	0.00
Jul-49	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Aug-49	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Sep-49	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Oct-49	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Nov-49	0	4.50	4.50	2.50	0.00	0.00	0.00	0.00
Dec-49	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Jan-50	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Feb-50	0	33.25	34.25	33.00	19.75	17.00	3.50	10.00
Mar-50	0	3.25	3.25	2.50	0.00	0.00	0.00	0.00
Apr-50	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
May-50	0	52.00	51.50	47.25	28.00	17.00	0.75	0.00
Jun-50	0	3.25	3.25	2.50	0.00	0.00	0.00	0.00
Jul-50	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Aug-50	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Sep-50	0	4.25	4.25	2.50	0.00	0.00	0.00	0.00
Oct-50	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Nov-50	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Dec-50	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Jan-51	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Feb-51	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Mar-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Apr-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
May-51	0	14.25	13.75	8.00	0.00	0.00	0.00	0.00
Jun-51	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Jul-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Aug-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Sep-51	0	3.75	3.50	0.50	0.00	0.00	0.00	0.00

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Oct-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Nov-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Dec-51	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Jan-52	0	2.00	25.50	58.00	181.75	307.50	429.25	535.50
Feb-52	1	35.75	37.25	33.75	25.50	31.75	17.50	22.00
Mar-52	1	4.00	26.25	61.25	156.00	307.75	444.25	585.75
Apr-52	1	174.75	177.50	178.25	177.00	195.50	205.50	210.25
May-52	1	17.75	18.75	20.00	22.25	28.00	33.50	34.00
Jun-52	1	22.75	23.00	22.50	19.00	16.50	12.75	12.75
Jul-52	1	14.75	15.00	14.25	10.00	8.25	5.25	5.25
Aug-52	1	17.00	17.00	16.00	10.00	7.75	3.75	4.00
Sep-52	1	25.75	25.50	22.75	10.50	4.25	0.00	0.00
Oct-52	0	14.50	14.50	13.25	7.75	4.50	0.25	1.00
Nov-52	0	5.00	5.25	5.00	2.75	1.75	0.00	3.50
Dec-52	0	2.75	5.75	10.25	17.50	29.00	29.50	59.75
Jan-53	0	30.75	33.25	35.50	42.50	54.50	62.75	79.75
Feb-53	0	4.25	5.00	5.50	7.25	10.25	13.75	17.25
Mar-53	0	4.75	5.25	5.00	5.25	6.00	7.75	9.50
Apr-53	0	5.25	5.50	5.00	4.75	4.00	3.50	6.00
May-53	0	6.00	6.00	5.00	2.75	1.00	0.25	0.75
Jun-53	0	6.50	6.25	5.00	2.00	0.50	0.00	0.50
Jul-53	0	63.50	63.25	60.00	49.00	42.75	34.50	33.00
Aug-53	0	49.50	49.50	48.25	43.00	39.00	33.50	32.50
Sep-53	0	41.50	41.50	40.00	33.75	29.50	23.00	22.00
Oct-53	0	35.50	35.25	31.00	15.50	6.75	0.00	0.00
Nov-53	0	6.00	6.00	5.00	1.50	0.00	0.00	0.00
Dec-53	0	6.00	6.00	5.00	1.50	0.00	0.00	0.00
Jan-54	0	10.25	11.00	11.00	12.00	13.25	9.50	10.50
Feb-54	0	23.00	23.75	23.50	22.50	23.25	20.25	25.00
Mar-54	0	2.75	5.50	9.50	19.50	33.25	41.50	64.00
Apr-54	0	3.75	4.50	5.00	8.00	12.75	17.75	21.25
May-54	0	6.00	6.00	5.00	2.50	0.75	0.00	0.00
Jun-54	0	6.25	6.25	5.00	2.25	1.00	0.00	1.25
Jul-54	0	67.50	67.25	63.75	51.75	44.50	34.25	32.50
Aug-54	0	45.50	45.50	44.25	38.75	34.75	28.75	28.00
Sep-54	0	51.00	50.75	46.00	27.75	16.25	2.75	1.50
Oct-54	0	30.75	30.75	28.50	18.25	9.25	0.25	0.00
Nov-54	0	13.50	13.50	12.50	8.00	3.75	0.00	0.00
Dec-54	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-55	0	2.00	2.50	2.75	2.75	1.75	0.00	4.50
Feb-55	0	3.00	3.25	2.75	1.75	1.25	0.00	2.75
Mar-55	0	3.25	3.25	2.50	1.25	0.75	0.00	1.00
Apr-55	0	3.50	3.50	2.50	1.00	0.25	0.00	1.50
May-55	0	3.00	3.25	2.50	1.50	1.75	1.00	2.00
Jun-55	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jul-55	0	34.25	34.00	29.25	15.50	8.00	0.00	0.00
Aug-55	0	50.75	50.50	47.00	31.00	19.75	3.75	1.50
Sep-55	0	8.75	8.75	7.75	3.00	0.00	0.00	0.00
Oct-55	0	3.50	3.25	2.50	0.00	0.00	0.00	0.00
Nov-55	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Dec-55	0	2.00	12.50	28.50	58.00	101.50	109.75	209.00
Jan-56	0	2.00	15.50	37.25	87.00	136.25	145.00	261.50
Feb-56	0	2.00	4.25	7.00	14.00	23.25	30.00	49.25
Mar-56	0	2.00	3.00	3.75	6.50	10.00	13.50	21.75
Apr-56	0	2.00	3.50	5.25	10.75	16.00	19.25	31.75
May-56	0	2.00	2.75	3.00	5.25	8.75	13.75	18.50
Jun-56	0	3.50	3.50	2.50	1.00	0.25	0.00	1.50
Jul-56	0	3.50	3.50	2.50	0.50	0.25	0.00	1.25
Aug-56	0	31.00	30.75	26.00	11.25	4.75	0.00	0.00
Sep-56	0	18.75	18.75	16.00	5.50	0.50	0.00	0.00
Oct-56	0	3.75	3.75	2.75	0.00	0.00	0.00	0.00
Nov-56	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Dec-56	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Jan-57	0	3.25	3.25	2.50	0.25	0.00	0.00	0.75
Feb-57	0	2.25	3.00	3.00	2.50	3.25	0.25	6.25
Mar-57	0	2.00	2.50	2.50	2.25	3.50	1.75	4.25
Apr-57	0	3.00	3.25	2.50	1.50	1.50	0.25	1.50
May-57	0	3.25	3.25	2.50	1.00	0.75	0.00	1.25

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Jun-57	0	70.75	70.50	66.50	54.50	47.00	35.25	33.25
Jul-57	0	12.75	12.75	11.25	5.75	2.50	0.00	0.00
Aug-57	0	48.25	47.75	44.00	27.25	16.75	2.75	1.50
Sep-57	0	13.50	13.50	12.25	6.25	1.75	0.00	0.00
Oct-57	0	4.25	4.25	3.25	0.00	0.00	0.00	0.00
Nov-57	0	5.25	5.00	3.75	0.25	0.00	0.00	0.00
Dec-57	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Jan-58	0	2.00	2.75	3.00	3.25	4.25	1.00	5.00
Feb-58	0	2.25	15.00	35.00	87.25	161.00	209.25	304.50
Mar-58	1	3.00	20.00	48.00	136.25	255.25	369.00	482.25
Apr-58	1	572.50	600.00	643.25	814.25	1009.75	1209.25	1351.50
May-58	1	145.50	149.00	155.25	176.50	200.50	231.75	246.25
Jun-58	1	16.25	17.50	19.00	23.50	30.25	39.50	46.50
Jul-58	1	12.25	12.50	12.25	10.00	8.75	6.50	9.50
Aug-58	1	17.00	17.00	15.50	10.00	7.25	3.25	4.50
Sep-58	1	18.75	18.75	17.00	10.00	6.75	2.25	3.25
Oct-58	0	7.00	6.75	5.75	1.50	0.00	0.00	1.00
Nov-58	0	7.25	7.00	5.75	1.50	0.00	0.00	1.00
Dec-58	0	6.25	6.25	5.00	1.50	0.00	0.00	1.00
Jan-59	0	5.00	5.25	5.00	3.50	3.75	1.75	4.50
Feb-59	0	34.00	37.50	41.50	53.50	73.50	86.75	111.25
Mar-59	0	3.75	4.50	5.00	6.75	9.50	12.00	16.75
Apr-59	0	5.00	5.50	5.00	4.75	4.00	2.75	6.00
May-59	0	5.75	5.75	5.00	3.25	1.75	0.75	2.25
Jun-59	0	6.25	6.25	5.00	2.50	1.25	0.50	2.00
Jul-59	0	62.75	62.50	59.25	48.50	42.50	33.75	32.50
Aug-59	0	49.50	49.50	48.25	42.75	39.25	33.75	33.00
Sep-59	0	36.00	35.75	31.75	16.75	8.50	0.00	0.00
Oct-59	0	28.00	27.75	25.50	15.00	7.25	0.00	0.00
Nov-59	0	16.00	15.75	14.75	9.75	5.25	0.25	0.00
Dec-59	0	6.00	5.75	5.00	2.25	0.25	0.00	0.00
Jan-60	0	5.75	5.75	5.00	2.75	1.00	0.00	0.75
Feb-60	0	32.50	33.25	32.50	30.75	29.25	22.00	30.25
Mar-60	0	5.75	5.75	5.00	3.25	1.50	0.00	1.25
Apr-60	0	5.00	5.50	5.00	4.50	3.75	1.75	7.00
May-60	0	6.00	6.00	5.00	2.50	1.00	0.00	1.25
Jun-60	0	6.50	6.25	5.00	2.00	0.50	0.00	0.00
Jul-60	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Aug-60	0	45.00	44.50	39.25	20.50	11.25	0.25	0.00
Sep-60	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Oct-60	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Nov-60	0	3.50	3.75	2.50	0.00	0.00	0.00	0.75
Dec-60	0	3.50	3.50	2.50	0.00	0.00	0.00	1.50
Jan-61	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Feb-61	0	4.25	4.00	2.75	0.00	0.00	0.00	0.00
Mar-61	0	3.75	3.75	2.50	0.00	0.00	0.00	0.25
Apr-61	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
May-61	0	28.75	28.50	24.50	11.50	4.25	0.00	0.00
Jun-61	0	5.50	5.25	4.25	0.50	0.00	0.00	0.00
Jul-61	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Aug-61	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Sep-61	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Oct-61	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Nov-61	0	5.25	5.00	3.25	0.00	0.00	0.00	0.00
Dec-61	0	2.25	2.75	2.50	0.25	0.00	0.00	1.75
Jan-62	0	2.00	2.75	2.75	0.75	0.00	0.00	7.00
Feb-62	0	2.50	50.00	127.50	348.50	618.00	842.25	1177.50
Mar-62	1	28.50	36.25	48.00	79.00	122.00	136.50	197.25
Apr-62	1	29.75	31.50	33.00	39.00	47.00	49.00	59.25
May-62	1	19.50	20.00	20.00	20.25	20.50	18.25	23.00
Jun-62	1	24.25	24.50	23.00	19.00	15.50	10.50	12.00
Jul-62	1	16.50	16.50	15.00	10.00	7.00	2.75	3.75
Aug-62	1	19.25	19.00	17.25	10.00	5.75	0.75	0.25
Sep-62	1	28.75	28.50	25.25	12.25	5.25	0.00	0.00
Oct-62	0	6.00	6.00	5.00	1.00	0.00	0.00	0.00
Nov-62	0	6.50	6.25	5.00	1.00	0.00	0.00	0.00
Dec-62	0	6.25	6.00	5.00	1.25	0.00	0.00	0.50
Jan-63	0	6.00	6.00	5.00	2.00	0.25	0.00	1.00

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Feb-63	0	2.75	5.75	9.50	15.00	23.00	16.50	48.00
Mar-63	0	2.75	5.00	7.75	12.50	19.25	16.25	42.50
Apr-63	0	2.75	4.00	5.00	6.75	9.50	7.50	22.25
May-63	0	5.00	5.25	5.00	4.00	4.00	2.25	8.25
Jun-63	0	6.00	6.25	5.00	2.50	1.50	0.00	3.00
Jul-63	0	6.50	6.50	5.00	1.00	0.00	0.00	1.25
Aug-63	0	38.75	38.50	34.00	17.50	8.75	0.00	0.00
Sep-63	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Oct-63	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Nov-63	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Dec-63	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Jan-64	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Feb-64	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Mar-64	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Apr-64	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
May-64	0	31.50	31.00	27.25	14.25	6.25	0.00	0.00
Jun-64	0	6.00	6.00	5.00	1.25	0.00	0.00	0.00
Jul-64	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Aug-64	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Sep-64	0	4.25	4.25	2.50	0.00	0.00	0.00	0.00
Oct-64	0	4.25	4.25	2.50	0.00	0.00	0.00	0.00
Nov-64	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Dec-64	0	4.25	4.25	2.50	0.00	0.00	0.00	0.00
Jan-65	0	2.00	2.75	3.00	0.75	0.25	0.00	5.50
Feb-65	0	4.00	4.00	2.75	0.00	0.00	0.00	0.50
Mar-65	0	3.25	3.50	2.50	0.00	0.00	0.00	1.25
Apr-65	0	2.00	6.25	12.00	21.50	34.25	21.25	45.75
May-65	0	3.00	3.25	2.50	0.25	0.00	0.00	1.25
Jun-65	0	67.25	66.75	61.25	38.50	25.00	4.00	3.75
Jul-65	0	47.50	47.25	45.25	32.00	20.50	4.00	2.75
Aug-65	0	18.50	18.25	16.75	8.00	1.50	0.00	0.00
Sep-65	0	6.50	6.25	5.50	1.00	0.00	0.00	0.00
Oct-65	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Nov-65	0	2.00	6.25	12.25	18.50	27.75	15.25	59.50
Dec-65	0	2.00	6.00	11.75	20.75	34.00	31.50	70.25
Jan-66	1	2.25	7.00	14.00	31.50	56.00	71.00	108.75
Feb-66	1	21.50	24.00	26.50	32.00	40.75	44.75	69.50
Mar-66	1	47.00	48.00	48.00	49.25	51.75	54.50	63.00
Apr-66	1	36.00	36.25	35.00	33.00	29.25	26.50	29.25
May-66	1	22.50	22.75	22.00	20.00	18.00	17.00	20.00
Jun-66	1	24.00	24.00	22.75	19.00	16.00	14.00	15.25
Jul-66	1	16.75	16.75	15.25	10.00	6.75	3.25	3.50
Aug-66	1	67.75	67.50	64.75	52.50	44.75	33.75	32.00
Sep-66	1	50.50	50.25	49.25	44.00	40.00	34.00	33.25
Oct-66	0	48.75	48.75	47.25	41.50	37.25	31.00	30.25
Nov-66	0	50.50	50.25	48.75	43.00	38.75	32.50	31.75
Dec-66	0	2.25	5.00	8.50	21.25	40.25	58.00	65.50
Jan-67	1	2.50	12.25	27.00	71.75	135.50	195.25	259.00
Feb-67	1	17.75	21.50	26.50	50.75	74.00	98.50	106.75
Mar-67	1	304.25	306.50	307.00	319.25	326.25	336.75	343.75
Apr-67	1	892.75	895.75	899.75	918.75	925.50	936.25	951.75
May-67	1	327.00	331.00	337.00	364.00	385.00	409.75	417.25
Jun-67	1	18.25	18.75	19.00	20.00	20.25	20.75	24.00
Jul-67	1	15.25	15.00	14.00	10.00	7.50	5.25	4.75
Aug-67	1	59.25	59.25	56.75	47.25	43.25	37.00	36.00
Sep-67	1	45.00	45.00	44.00	39.25	36.75	32.75	32.25
Oct-67	0	7.00	7.00	5.75	1.50	0.00	0.00	0.00
Nov-67	0	7.50	7.25	5.75	1.50	0.00	0.00	0.25
Dec-67	0	6.00	6.00	5.00	2.00	1.00	0.00	1.25
Jan-68	0	5.75	6.00	5.00	2.50	1.75	0.25	1.50
Feb-68	0	5.75	6.00	5.25	4.00	4.50	4.00	5.25
Mar-68	0	30.75	31.25	30.50	29.75	31.75	33.25	36.00
Apr-68	0	5.25	5.50	5.00	5.00	5.75	7.00	8.75
May-68	0	6.00	6.00	5.00	2.50	1.00	0.25	0.00
Jun-68	0	57.75	57.75	54.75	46.75	41.75	36.25	35.25
Jul-68	0	6.00	6.00	5.00	1.50	0.25	0.00	0.00
Aug-68	0	17.00	16.75	13.75	4.00	0.75	0.00	0.00
Sep-68	0	36.50	36.25	33.00	18.50	10.25	0.25	0.00

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1) in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Oct-68	0	24.25	24.00	22.00	12.75	6.00	0.00	0.00
Nov-68	0	12.00	12.00	11.00	6.75	3.25	0.00	0.00
Dec-68	0	6.00	5.75	5.00	2.25	0.25	0.00	0.00
Jan-69	0	2050.00	2083.00	2132.50	2368.50	2653.00	2973.25	3105.50
Feb-69	1	3347.25	3391.50	3467.50	3818.00	4144.75	4491.75	4641.50
Mar-69	1	1257.25	1272.25	1296.50	1407.50	1543.75	1713.50	1759.00
Apr-69	1	296.25	301.25	310.00	338.75	360.00	375.25	406.00
May-69	1	89.50	91.75	94.75	106.75	120.00	135.50	145.75
Jun-69	1	16.50	17.75	19.00	23.50	29.50	36.25	43.00
Jul-69	1	13.00	13.25	12.50	10.00	8.50	6.75	9.25
Aug-69	1	16.50	16.50	15.00	10.00	7.75	4.50	5.75
Sep-69	1	18.25	18.00	16.50	10.00	7.50	3.50	4.50
Oct-69	0	6.50	6.50	5.25	1.50	0.25	0.00	1.25
Nov-69	0	6.00	6.00	5.00	2.00	1.75	0.25	1.50
Dec-69	0	5.50	5.75	5.00	2.50	1.75	0.25	3.00
Jan-70	0	4.50	5.00	5.00	5.00	7.25	8.50	11.25
Feb-70	0	4.75	5.25	5.50	6.75	10.50	14.50	17.75
Mar-70	0	32.50	35.50	39.00	55.00	73.50	91.00	103.25
Apr-70	0	5.50	5.75	5.25	4.75	4.00	3.75	5.25
May-70	0	6.00	6.00	5.00	3.00	1.50	0.75	0.75
Jun-70	0	6.50	6.25	5.00	2.25	0.75	0.00	0.00
Jul-70	0	58.50	58.25	55.00	44.75	39.50	33.00	31.50
Aug-70	0	49.50	49.50	48.00	43.00	39.75	35.00	34.25
Sep-70	0	18.50	18.25	15.00	4.50	0.75	0.00	0.00
Oct-70	0	25.00	24.75	22.00	11.00	4.75	0.00	0.00
Nov-70	0	14.50	14.50	13.50	9.75	7.00	2.00	1.00
Dec-70	0	2.75	4.00	5.50	10.75	14.50	12.00	16.75
Jan-71	0	4.50	5.00	5.00	5.25	7.00	7.25	10.00
Feb-71	0	5.50	6.00	5.50	4.50	4.50	3.75	7.25
Mar-71	0	5.50	5.50	5.00	4.00	3.25	2.25	3.75
Apr-71	0	6.00	6.00	5.00	3.50	2.25	1.25	2.75
May-71	0	6.25	6.00	5.00	2.50	1.00	0.00	0.00
Jun-71	0	57.75	57.50	54.50	46.25	41.00	35.75	34.50
Jul-71	0	49.50	49.50	48.25	43.75	41.00	37.50	37.00
Aug-71	0	49.50	49.50	47.75	41.75	38.25	32.75	32.00
Sep-71	0	32.75	32.25	28.00	12.75	5.75	0.00	0.00
Oct-71	0	24.75	24.50	22.00	11.50	5.00	0.00	0.00
Nov-71	0	13.75	13.75	12.50	7.50	3.75	0.00	0.00
Dec-71	0	2.50	4.00	5.75	11.50	19.25	22.75	24.75
Jan-72	0	5.25	5.50	5.00	4.00	4.00	3.50	4.25
Feb-72	0	5.75	6.00	5.25	4.00	3.50	3.00	4.25
Mar-72	0	6.00	6.00	5.00	2.75	1.25	0.25	0.00
Apr-72	0	6.25	6.25	5.00	2.75	1.25	0.50	0.25
May-72	0	55.75	55.50	52.75	46.50	42.00	37.75	36.50
Jun-72	0	50.75	50.75	49.75	46.50	44.25	42.00	41.50
Jul-72	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Aug-72	0	25.00	24.75	21.00	8.25	2.75	0.00	0.00
Sep-72	0	39.50	39.25	36.00	20.75	12.00	0.75	0.00
Oct-72	0	26.00	26.00	23.75	14.25	7.00	0.00	0.00
Nov-72	0	2.50	2.75	2.50	1.50	0.75	0.00	1.75
Dec-72	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-73	0	2.00	10.75	24.75	60.50	99.25	111.50	177.75
Feb-73	0	2.50	24.00	59.00	180.25	334.75	485.00	607.00
Mar-73	1	248.50	254.75	262.75	291.75	318.75	338.50	383.50
Apr-73	1	126.50	129.00	132.50	145.00	159.75	180.25	194.75
May-73	1	18.00	19.00	20.00	24.00	26.50	30.00	35.00
Jun-73	1	20.75	21.00	20.50	19.00	17.50	16.50	19.50
Jul-73	1	15.75	15.75	14.50	10.00	7.50	5.00	6.00
Aug-73	1	18.25	18.25	16.50	10.00	7.00	2.75	3.00
Sep-73	1	19.50	19.25	17.50	10.00	6.25	1.50	1.00
Oct-73	0	7.50	7.25	6.00	1.50	0.00	0.00	0.25
Nov-73	0	13.25	13.00	11.25	5.25	2.25	0.00	0.25
Dec-73	0	6.00	6.00	5.00	1.75	0.50	0.00	1.00
Jan-74	0	2.75	9.00	18.25	43.75	81.25	107.50	150.50
Feb-74	0	4.25	5.00	5.50	7.25	10.75	13.75	19.25
Mar-74	0	5.50	7.25	9.00	14.75	23.00	29.75	44.50
Apr-74	0	7.00	7.75	8.00	9.75	13.00	17.00	23.75
May-74	1	22.50	22.75	21.75	20.00	19.75	20.75	23.75

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Jun-74	1	25.25	25.25	23.50	19.00	16.00	13.75	15.00
Jul-74	1	17.00	17.00	15.25	10.00	7.00	3.75	4.00
Aug-74	1	19.25	19.25	17.25	10.00	6.25	1.50	1.75
Sep-74	1	25.00	25.00	21.75	10.00	4.00	0.00	0.00
Oct-74	0	21.50	21.25	19.00	9.75	3.75	0.00	0.00
Nov-74	0	6.00	5.75	5.00	2.00	0.00	0.00	0.25
Dec-74	0	2.75	5.25	8.50	14.25	22.75	20.50	44.25
Jan-75	0	5.00	5.25	5.00	4.00	3.75	2.00	4.75
Feb-75	0	34.00	41.25	51.50	78.00	116.00	141.25	203.00
Mar-75	0	74.50	87.25	107.75	161.75	236.00	296.50	406.50
Apr-75	1	81.25	83.50	86.00	94.75	105.50	119.00	134.75
May-75	1	17.75	19.00	20.00	24.25	30.00	38.50	45.25
Jun-75	1	20.75	21.00	20.50	19.00	17.50	16.00	20.75
Jul-75	1	15.00	15.00	14.00	10.00	7.75	5.00	6.50
Aug-75	1	18.25	18.25	16.50	10.00	7.00	3.00	4.00
Sep-75	1	19.50	19.25	17.50	10.00	6.25	1.50	1.75
Oct-75	0	6.25	6.00	5.00	1.00	0.00	0.00	1.00
Nov-75	0	6.50	6.25	5.00	1.00	0.00	0.00	1.00
Dec-75	0	6.25	6.25	5.00	1.25	0.00	0.00	1.00
Jan-76	0	6.25	6.00	5.00	1.75	0.25	0.00	1.25
Feb-76	0	32.75	33.75	33.50	32.25	34.50	31.00	40.25
Mar-76	0	5.00	5.25	5.00	4.50	4.50	3.75	6.75
Apr-76	0	5.50	5.75	5.00	4.00	3.50	2.25	5.75
May-76	0	6.00	6.00	5.00	3.00	1.50	0.25	1.75
Jun-76	0	57.75	57.75	54.75	47.00	41.75	35.75	34.75
Jul-76	0	49.50	49.50	48.25	44.00	41.25	37.00	36.50
Aug-76	0	49.25	49.25	47.75	41.75	38.00	32.00	31.25
Sep-76	0	39.00	38.75	34.00	17.50	9.25	0.25	0.00
Oct-76	0	22.25	22.00	19.75	10.00	3.75	0.00	0.00
Nov-76	0	6.00	6.00	5.00	1.75	0.00	0.00	0.00
Dec-76	0	6.00	6.00	5.00	1.75	0.00	0.00	0.00
Jan-77	0	6.00	6.00	5.00	2.00	0.25	0.00	0.75
Feb-77	0	6.75	6.50	5.50	2.50	0.50	0.00	1.00
Mar-77	0	3.25	3.25	2.50	0.75	0.00	0.00	1.25
Apr-77	0	3.50	3.50	2.50	0.75	0.00	0.00	0.00
May-77	0	3.75	3.50	2.50	0.50	0.00	0.00	1.00
Jun-77	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jul-77	0	43.75	43.25	38.25	22.75	14.00	1.00	0.00
Aug-77	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Sep-77	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Oct-77	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Nov-77	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Dec-77	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Jan-78	0	2.00	11.25	24.75	52.00	86.25	85.25	155.25
Feb-78	0	147.50	186.00	248.00	434.25	692.00	922.00	1195.50
Mar-78	1	2331.25	2367.50	2427.75	2660.75	2950.25	3269.00	3464.25
Apr-78	1	581.50	592.75	612.00	675.00	753.50	842.75	910.75
May-78	1	118.50	121.25	124.75	138.25	155.75	178.75	194.50
Jun-78	1	16.25	17.50	19.00	24.25	30.00	36.50	43.25
Jul-78	1	9.50	10.00	10.25	10.00	11.50	12.50	17.00
Aug-78	1	15.00	15.25	14.25	10.00	9.25	7.25	10.00
Sep-78	1	18.00	18.00	16.50	10.00	7.25	2.75	4.00
Oct-78	0	5.75	5.75	5.00	1.75	0.50	0.00	2.50
Nov-78	0	6.00	6.00	5.00	1.75	0.50	0.00	2.75
Dec-78	0	5.50	5.75	5.00	2.50	2.00	0.25	3.00
Jan-79	0	2.75	5.00	8.25	16.00	29.00	37.00	54.50
Feb-79	0	6.75	12.00	19.50	40.75	72.00	98.50	137.25
Mar-79	0	339.00	344.50	350.25	371.00	401.75	431.25	474.75
Apr-79	1	182.00	185.50	191.00	211.00	235.00	266.25	282.75
May-79	1	17.75	18.75	20.00	24.50	30.25	38.25	45.25
Jun-79	1	19.25	19.75	19.50	19.00	18.75	18.50	23.25
Jul-79	1	15.00	15.00	14.00	10.00	7.75	4.75	6.25
Aug-79	1	18.50	18.25	16.75	10.00	6.75	2.25	2.50
Sep-79	1	19.75	19.50	17.75	10.00	6.00	1.00	1.00
Oct-79	0	14.00	14.00	12.25	6.00	2.75	0.00	0.25
Nov-79	0	11.00	11.00	9.50	4.50	1.50	0.00	0.25
Dec-79	0	5.75	5.75	5.00	2.25	0.50	0.00	1.25
Jan-80	0	2.75	4.50	6.75	13.00	23.25	28.25	38.50

1) Rounded to nearest 0.25 cfs

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Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Feb-80	0	1152.00	1177.50	1215.00	1359.75	1550.75	1740.00	1890.75
Mar-80	1	652.75	664.50	684.75	753.00	837.00	933.75	1001.75
Apr-80	1	115.50	117.75	120.50	131.25	144.25	162.75	175.50
May-80	1	16.75	18.25	20.00	27.25	34.00	42.50	49.25
Jun-80	1	18.00	18.75	19.00	20.25	21.25	22.25	27.00
Jul-80	1	14.00	14.00	13.25	10.00	8.25	5.75	8.25
Aug-80	1	18.50	18.25	16.50	10.00	7.00	3.00	3.25
Sep-80	1	19.50	19.50	17.50	10.00	6.50	1.50	1.75
Oct-80	0	7.25	7.00	5.75	1.50	0.00	0.00	0.25
Nov-80	0	7.25	7.25	5.75	1.50	0.00	0.00	0.25
Dec-80	0	6.25	6.25	5.00	1.50	0.00	0.00	1.00
Jan-81	0	4.75	5.25	5.00	3.75	4.50	2.25	6.50
Feb-81	0	4.50	5.25	5.50	6.50	9.75	10.75	15.50
Mar-81	0	30.75	39.25	51.50	89.00	143.25	190.25	249.75
Apr-81	0	2.75	4.00	5.50	10.50	17.50	25.50	34.00
May-81	0	4.75	5.25	5.00	4.75	5.75	7.50	10.75
Jun-81	0	5.75	6.00	5.00	3.25	2.75	2.50	4.00
Jul-81	0	7.00	6.75	5.25	1.50	0.25	0.00	0.50
Aug-81	0	20.00	19.75	16.25	5.25	1.25	0.00	0.25
Sep-81	0	38.50	38.25	34.75	20.00	11.50	0.25	0.00
Oct-81	0	25.25	25.00	23.00	13.75	6.75	0.00	0.00
Nov-81	0	12.75	12.50	11.50	7.25	3.75	0.00	0.00
Dec-81	0	5.75	5.75	5.00	2.25	0.50	0.00	0.75
Jan-82	0	5.50	5.50	5.00	3.25	2.00	0.00	2.25
Feb-82	0	6.25	6.25	5.50	3.75	2.75	0.50	1.75
Mar-82	0	30.75	31.75	31.75	34.75	39.25	41.25	43.75
Apr-82	0	2.75	5.75	10.00	27.00	49.00	72.50	83.25
May-82	0	4.75	5.00	5.00	5.50	6.50	8.00	9.50
Jun-82	0	6.25	6.25	5.00	2.25	0.75	0.00	0.50
Jul-82	0	59.75	59.50	56.25	46.50	41.25	34.00	32.75
Aug-82	0	49.50	49.50	48.25	43.25	40.00	34.75	34.25
Sep-82	0	51.00	51.00	49.50	43.00	39.00	32.75	32.00
Oct-82	0	6.75	6.50	5.00	0.25	0.00	0.00	0.00
Nov-82	0	6.25	6.25	5.00	1.50	1.00	0.00	1.00
Dec-82	0	2.50	6.00	10.25	27.25	48.75	65.25	70.50
Jan-83	0	211.00	228.75	255.25	330.00	440.50	532.75	672.75
Feb-83	1	1008.25	1032.50	1072.50	1195.75	1354.75	1512.75	1686.00
Mar-83	1	3168.50	3193.50	3235.25	3429.75	3548.25	3637.75	3799.50
Apr-83	1	933.75	948.00	972.50	1060.75	1126.25	1169.50	1257.25
May-83	1	469.75	478.00	491.25	544.25	591.75	635.75	667.00
Jun-83	1	83.50	86.00	90.00	103.25	122.50	146.00	160.25
Jul-83	1	7.75	8.75	10.00	12.50	17.50	22.50	30.50
Aug-83	1	10.00	10.50	10.75	10.00	12.75	14.50	19.25
Sep-83	1	14.75	15.00	14.00	10.00	9.75	8.25	11.25
Oct-83	0	4.00	4.75	5.00	4.75	7.75	9.25	13.75
Nov-83	0	5.50	5.75	5.00	3.00	2.75	1.50	6.25
Dec-83	0	211.00	213.75	214.50	216.00	227.00	234.25	256.50
Jan-84	0	77.25	78.50	80.25	86.25	93.00	102.25	111.00
Feb-84	0	28.25	29.25	30.25	34.75	39.75	48.00	53.50
Mar-84	0	7.00	7.50	8.25	11.50	15.25	21.75	25.25
Apr-84	1	33.25	33.75	33.00	33.50	32.75	34.00	37.50
May-84	1	22.50	22.75	21.75	20.00	17.75	17.25	18.75
Jun-84	1	24.25	24.25	22.75	19.00	16.00	14.50	15.00
Jul-84	1	16.25	16.25	14.75	10.00	7.25	4.50	4.00
Aug-84	1	19.00	19.00	17.00	10.00	6.75	2.25	1.75
Sep-84	1	20.50	20.25	18.00	10.00	6.00	0.75	0.25
Oct-84	0	17.25	17.00	14.25	5.00	1.00	0.00	0.00
Nov-84	0	11.50	11.25	10.00	5.00	2.00	0.00	0.25
Dec-84	0	4.50	5.00	5.00	3.75	4.00	1.25	6.25
Jan-85	0	5.75	5.75	5.00	2.75	1.75	0.25	1.50
Feb-85	0	5.75	6.00	5.50	4.25	4.25	2.75	6.00
Mar-85	0	5.25	5.50	5.00	4.00	3.75	3.00	6.00
Apr-85	0	6.00	6.00	5.00	3.25	2.50	1.75	3.00
May-85	0	6.25	6.25	5.00	2.50	1.00	0.00	0.00
Jun-85	0	57.75	57.50	54.25	46.00	41.00	35.25	34.00
Jul-85	0	49.25	49.25	48.00	43.50	41.00	37.00	36.50
Aug-85	0	11.25	11.25	9.25	3.25	0.75	0.00	0.00
Sep-85	0	38.00	37.75	33.25	16.75	9.00	0.00	0.00

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Oct-85	0	18.00	18.00	15.75	7.25	2.00	0.00	0.00
Nov-85	0	3.25	3.25	2.50	0.25	0.00	0.00	0.00
Dec-85	0	3.25	3.25	2.50	0.50	0.00	0.00	0.50
Jan-86	0	2.50	2.75	2.50	1.50	1.25	0.00	1.75
Feb-86	0	2.50	13.75	31.50	78.00	142.75	185.00	270.75
Mar-86	1	23.50	33.00	48.00	84.50	135.50	171.75	262.00
Apr-86	1	31.75	32.75	33.00	35.75	40.00	45.75	53.00
May-86	1	19.50	20.00	20.00	20.75	20.50	20.50	25.25
Jun-86	1	23.25	23.25	22.25	19.00	17.25	17.00	18.50
Jul-86	1	16.50	16.50	15.00	10.00	7.25	4.25	4.00
Aug-86	1	19.25	19.00	17.25	10.00	6.50	2.00	1.50
Sep-86	1	20.50	20.50	18.25	10.00	5.75	0.75	0.25
Oct-86	0	18.25	18.25	15.25	5.50	1.25	0.00	0.00
Nov-86	0	6.25	6.00	5.00	1.50	0.00	0.00	0.25
Dec-86	0	6.00	6.00	5.00	1.75	0.25	0.00	1.00
Jan-87	0	5.75	5.75	5.00	2.75	1.25	0.00	2.50
Feb-87	0	6.75	6.75	5.50	2.50	0.75	0.00	1.25
Mar-87	0	30.75	31.75	31.50	30.75	31.25	26.25	38.00
Apr-87	0	6.00	6.00	5.00	3.25	1.75	0.50	1.75
May-87	0	6.00	6.00	5.00	2.75	1.00	0.00	0.50
Jun-87	0	6.25	6.25	5.00	2.00	0.50	0.00	0.00
Jul-87	0	6.50	6.50	5.00	1.00	0.00	0.00	0.00
Aug-87	0	33.00	32.75	28.25	13.75	7.00	0.00	0.00
Sep-87	0	18.25	18.00	15.75	5.75	1.00	0.00	0.00
Oct-87	0	6.00	6.00	5.00	1.00	0.00	0.00	0.00
Nov-87	0	6.50	6.50	5.00	0.75	0.00	0.00	0.00
Dec-87	0	6.25	6.25	5.00	1.25	0.00	0.00	0.25
Jan-88	0	5.25	5.50	5.00	2.75	1.75	0.00	1.75
Feb-88	0	6.25	6.25	5.25	2.50	1.00	0.00	1.00
Mar-88	0	30.50	31.25	30.75	32.25	37.50	36.50	36.25
Apr-88	0	5.00	5.25	5.00	4.75	5.50	4.75	6.25
May-88	0	3.00	3.00	2.50	1.25	0.25	0.00	1.25
Jun-88	0	60.50	60.50	57.50	49.00	43.50	34.50	33.25
Jul-88	0	36.50	36.50	35.25	31.25	28.50	24.25	23.75
Aug-88	0	27.25	27.00	23.25	10.50	4.50	0.00	0.00
Sep-88	0	34.75	34.50	31.25	17.75	9.25	0.00	0.00
Oct-88	0	3.25	3.25	2.50	0.00	0.00	0.00	0.00
Nov-88	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Dec-88	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Jan-89	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Feb-89	0	3.75	3.75	2.75	0.50	0.25	0.00	0.00
Mar-89	0	3.75	3.50	2.50	0.25	0.00	0.00	0.00
Apr-89	0	3.75	3.75	2.50	0.25	0.00	0.00	0.00
May-89	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Jun-89	0	19.25	19.00	15.50	6.00	2.00	0.00	0.00
Jul-89	0	36.25	36.00	32.50	19.25	11.75	0.75	0.00
Aug-89	0	9.75	9.75	8.50	3.00	0.25	0.00	0.00
Sep-89	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Oct-89	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Nov-89	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Dec-89	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Jan-90	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Feb-90	0	4.50	4.25	2.75	0.00	0.00	0.00	0.00
Mar-90	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Apr-90	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
May-90	0	22.50	22.25	18.00	5.25	0.75	0.00	0.00
Jun-90	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Jul-90	0	8.00	7.75	6.00	0.25	0.00	0.00	0.00
Aug-90	0	5.25	5.00	3.50	0.00	0.00	0.00	0.00
Sep-90	0	5.25	5.00	3.25	0.00	0.00	0.00	0.00
Oct-90	0	7.25	7.00	5.00	0.00	0.00	0.00	0.00
Nov-90	0	5.50	5.25	3.50	0.00	0.00	0.00	0.00
Dec-90	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Jan-91	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Feb-91	0	4.50	4.50	2.75	0.00	0.00	0.00	0.00
Mar-91	0	2.00	11.50	25.75	57.25	110.25	146.25	208.25
Apr-91	1	31.75	33.25	33.25	33.00	41.50	40.25	37.75
May-91	1	25.50	25.75	24.75	20.00	19.00	14.50	11.50

1) Rounded to nearest 0.25 cfs

Table A-1								
Simulated Monthly Average Flows[1) in Santa Ynez River under Alternative 5B								
Based on SYRHM , WY 1918-1993								
	Indicator	Cachuma	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River
	that 3A2	Total Discharges	Below	at 154	above Alisal	near	above Salsipuedes	at Lompoc
MONTH	in effect	Downstream	Hilton Creek	Bridge	Bridge	Buellton	Creek Confluence	Narrows
	(1=yes)	cfs	cfs	cfs	cfs	cfs	cfs	cfs
Jun-91	1	33.25	33.00	30.25	19.00	11.75	2.75	0.00
Jul-91	1	26.25	26.25	24.00	13.50	6.75	0.00	0.00
Aug-91	1	39.50	39.25	36.50	22.75	13.00	1.00	0.00
Sep-91	1	18.50	18.50	17.00	10.00	4.75	0.00	0.00
Oct-91	0	5.50	5.25	4.25	0.50	0.00	0.00	0.00
Nov-91	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Dec-91	0	3.25	3.50	2.50	0.25	0.00	0.00	0.00
Jan-92	0	2.00	2.50	2.50	2.00	3.25	1.25	0.25
Feb-92	0	2.25	18.00	42.75	127.25	244.00	352.00	430.50
Mar-92	1	38.00	42.50	48.00	69.75	100.25	133.50	152.25
Apr-92	1	29.00	31.00	33.00	43.75	57.25	75.50	78.50
May-92	1	19.25	19.75	20.00	22.00	25.00	30.25	33.25
Jun-92	1	21.75	22.00	21.25	19.00	18.50	19.50	20.75
Jul-92	1	15.75	15.75	14.50	10.00	7.25	4.25	5.25
Aug-92	1	65.75	65.50	62.75	51.00	44.00	34.00	32.50
Sep-92	1	51.00	51.00	49.75	44.50	40.75	35.25	34.50
Oct-92	0	16.50	16.50	14.50	7.50	3.50	0.00	0.00
Nov-92	0	13.25	13.00	11.25	5.50	2.25	0.00	0.00
Dec-92	0	5.75	5.75	5.00	2.25	0.75	0.00	2.25
Jan-93	0	411.75	423.75	439.75	502.75	594.50	684.75	739.75
Feb-93	1	2025.75	2050.00	2092.00	2238.25	2419.25	2620.75	2756.75
Mar-93	1	1049.75	1063.50	1085.50	1178.00	1284.75	1411.75	1464.75
Apr-93	1	476.50	482.50	492.50	533.00	584.50	651.75	671.50
May-93	1	101.00	103.50	107.00	121.25	135.25	151.75	160.50
Jun-93	1	16.25	17.50	19.00	25.00	31.00	37.00	42.00
Jul-93	1	10.25	10.75	10.50	10.00	10.50	9.75	12.75
Aug-93	1	15.75	15.75	14.75	10.00	9.00	7.00	8.00
Sep-93	1	19.00	18.75	17.00	10.00	7.00	2.50	2.00

1) Rounded to nearest 0.25 cfs

Table A-2

Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5C

Based on SYRHM , WY 1918-1993

MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Oct-17	0	8.00	7.75	5.00	0.25	0.00	0.00	0.00
Nov-17	0	7.75	7.50	5.00	0.25	0.00	0.00	0.00
Dec-17	0	7.25	7.00	5.00	0.50	0.00	0.00	0.00
Jan-18	0	6.75	6.75	5.00	1.00	0.00	0.00	1.00
Feb-18	0	835.75	856.50	883.50	998.50	1163.00	1325.25	1430.75
Mar-18	1	2068.00	2080.50	2102.25	2181.25	2208.50	2205.00	2345.50
Apr-18	1	293.50	298.75	306.75	337.00	368.50	403.25	431.50
May-18	1	79.50	81.25	84.00	94.00	107.25	126.25	135.00
Jun-18	1	16.75	17.75	19.00	22.75	29.50	38.00	45.00
Jul-18	1	13.50	13.75	13.00	10.00	9.25	8.00	11.00
Aug-18	1	17.75	17.75	16.00	10.00	7.50	3.75	4.75
Sep-18	1	18.75	18.50	17.00	10.00	7.25	2.75	3.75
Oct-18	0	7.00	7.00	5.75	1.50	0.00	0.00	1.00
Nov-18	0	6.25	6.25	5.25	1.50	0.25	0.00	1.25
Dec-18	0	6.00	6.00	5.00	2.00	1.00	0.00	1.25
Jan-19	0	20.75	20.75	19.00	14.00	11.00	5.75	6.75
Feb-19	0	23.00	23.25	22.50	21.00	20.00	16.25	19.50
Mar-19	0	20.75	21.00	20.25	19.00	18.50	17.25	20.25
Apr-19	0	6.00	6.00	5.00	3.25	1.50	0.50	0.25
May-19	0	6.00	5.75	5.00	3.00	1.75	0.75	2.25
Jun-19	0	6.50	6.25	5.00	2.00	0.75	0.00	0.00
Jul-19	0	62.00	61.75	58.25	47.50	41.75	33.25	31.75
Aug-19	0	7.25	7.25	5.75	1.50	0.00	0.00	0.00
Sep-19	0	36.75	36.25	32.25	16.75	9.00	0.00	0.00
Oct-19	0	23.75	23.75	21.50	12.25	5.75	0.00	0.25
Nov-19	0	8.75	8.75	7.75	4.25	1.50	0.00	0.75
Dec-19	0	5.50	5.50	5.00	2.75	1.25	0.00	1.00
Jan-20	0	5.75	5.75	5.00	2.50	1.00	0.00	1.00
Feb-20	0	4.00	4.75	5.25	7.25	10.75	10.50	14.75
Mar-20	0	2.50	5.25	9.25	22.00	32.50	34.00	49.25
Apr-20	0	3.00	4.00	5.00	9.25	15.50	21.00	28.00
May-20	0	5.50	5.75	5.00	3.75	3.50	3.75	5.25
Jun-20	0	6.50	6.25	5.00	2.25	0.75	0.00	1.50
Jul-20	0	63.00	62.75	59.25	48.50	42.50	33.50	32.00
Aug-20	0	6.25	6.00	5.00	0.75	0.00	0.00	0.00
Sep-20	0	46.00	45.75	41.25	23.50	13.75	1.25	0.25
Oct-20	0	26.75	26.75	24.50	14.50	7.00	0.00	0.00
Nov-20	0	15.50	15.25	14.00	9.50	5.00	0.00	0.00
Dec-20	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-21	0	2.25	2.75	2.50	2.00	2.25	1.00	2.50
Feb-21	0	2.25	3.00	3.25	4.50	7.25	7.25	11.50
Mar-21	0	2.00	3.00	3.75	6.75	11.75	14.75	21.00
Apr-21	0	3.25	3.25	2.50	1.50	1.50	1.50	2.75
May-21	0	3.25	3.25	2.50	1.25	0.75	0.75	2.00
Jun-21	0	4.00	3.75	2.50	0.25	0.00	0.00	0.50
Jul-21	0	4.00	3.75	2.50	0.00	0.00	0.00	1.00
Aug-21	0	79.00	78.75	73.75	56.25	46.75	31.50	29.25
Sep-21	0	36.50	36.50	35.25	29.75	25.75	19.50	18.75
Oct-21	0	42.25	42.00	37.75	21.75	12.00	1.25	0.25
Nov-21	0	12.50	12.25	11.25	6.75	2.75	0.00	0.00
Dec-21	0	2.00	10.00	22.75	57.75	106.25	142.75	196.50
Jan-22	0	2.00	6.50	13.25	35.50	66.25	97.00	122.00
Feb-22	1	2.50	18.75	45.50	142.50	238.00	318.75	400.75
Mar-22	1	33.25	39.25	48.00	81.25	120.00	161.00	192.00
Apr-22	1	115.75	118.25	120.75	133.00	149.00	171.00	185.25
May-22	1	18.50	19.25	20.00	23.50	28.75	37.50	41.00
Jun-22	1	22.00	22.00	21.25	19.00	18.00	19.00	20.50
Jul-22	1	15.25	15.25	14.00	10.00	8.00	6.25	7.50
Aug-22	1	18.25	18.00	16.50	10.00	7.00	3.00	2.50
Sep-22	1	19.75	19.50	17.50	10.00	6.25	1.75	1.25
Oct-22	0	6.25	6.25	5.00	0.75	0.00	0.00	0.00
Nov-22	0	6.75	6.50	5.00	0.75	0.00	0.00	0.00
Dec-22	0	2.75	5.00	7.50	13.00	23.00	25.50	41.50
Jan-23	0	20.75	21.25	20.00	17.00	17.25	15.75	19.25
Feb-23	0	23.00	23.50	23.00	22.50	23.50	24.25	29.50
Mar-23	0	20.75	20.75	19.75	18.00	16.75	16.50	18.00
Apr-23	0	5.00	5.25	5.00	5.25	6.00	8.00	10.50

1) Rounded to nearest 0.25 cfs

Table A-2

Simulated Monthly Average Flows[1) in Santa Ynez River under Alternative 5C

Based on SYRHM , WY 1918-1993

MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
May-23	0	5.50	5.75	5.00	3.50	3.00	3.50	5.00
Jun-23	0	6.25	6.00	5.00	2.75	1.50	1.25	2.75
Jul-23	0	6.25	6.25	5.00	1.50	0.50	0.00	1.25
Aug-23	0	69.75	69.50	65.75	51.75	44.50	33.00	31.50
Sep-23	0	51.00	51.00	49.75	44.25	40.50	34.50	33.75
Oct-23	0	49.25	49.25	47.75	41.75	38.00	32.00	31.25
Nov-23	0	11.50	11.25	9.50	3.75	1.00	0.00	0.00
Dec-23	0	6.25	6.25	5.00	1.50	0.25	0.00	1.00
Jan-24	0	6.25	6.25	5.00	2.00	0.50	0.00	1.25
Feb-24	0	6.50	6.50	5.25	2.50	1.00	0.00	1.25
Mar-24	0	4.50	5.00	5.00	5.00	6.75	7.00	11.25
Apr-24	0	6.25	6.25	5.00	3.00	1.75	0.75	2.25
May-24	0	6.25	6.00	5.00	2.50	1.00	0.00	1.25
Jun-24	0	6.50	6.50	5.00	1.75	0.50	0.00	1.25
Jul-24	0	6.50	6.50	5.00	1.00	0.00	0.00	0.00
Aug-24	0	31.00	30.75	26.25	11.75	5.50	0.00	0.00
Sep-24	0	35.50	35.25	32.00	18.25	10.25	0.25	0.00
Oct-24	0	23.00	23.00	21.00	12.00	5.50	0.00	0.00
Nov-24	0	10.00	10.00	9.00	5.00	2.00	0.00	0.00
Dec-24	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-25	0	3.50	3.50	2.50	0.25	0.00	0.00	0.00
Feb-25	0	4.00	4.00	2.75	0.50	0.00	0.00	0.00
Mar-25	0	3.25	3.25	2.50	1.00	0.75	0.00	0.25
Apr-25	0	2.00	3.00	3.25	4.75	8.50	8.75	12.50
May-25	0	3.50	3.50	2.50	0.50	0.00	0.00	0.75
Jun-25	0	4.00	3.75	2.50	0.25	0.00	0.00	0.75
Jul-25	0	20.25	20.00	16.25	5.75	1.50	0.00	0.00
Aug-25	0	45.75	45.50	41.50	25.25	15.75	2.00	0.25
Sep-25	0	9.50	9.25	8.25	3.00	0.25	0.00	0.00
Oct-25	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Nov-25	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Dec-25	0	3.75	3.50	2.50	0.00	0.00	0.00	0.25
Jan-26	0	3.75	3.50	2.50	0.00	0.00	0.00	0.25
Feb-26	0	2.25	4.75	8.00	15.25	28.25	30.00	44.75
Mar-26	0	2.00	2.75	3.00	3.50	6.00	5.00	11.00
Apr-26	0	2.25	15.50	36.50	104.50	162.50	185.25	263.50
May-26	1	19.25	20.00	20.00	21.25	25.00	29.00	35.75
Jun-26	1	25.00	25.00	23.50	19.00	16.50	14.25	15.75
Jul-26	1	16.75	16.75	15.25	10.00	7.25	4.00	5.25
Aug-26	1	19.75	19.50	17.50	10.00	5.75	1.00	0.50
Sep-26	1	32.50	32.25	28.75	14.50	7.00	0.00	0.00
Oct-26	0	72.75	72.75	70.25	59.00	49.75	34.75	32.00
Nov-26	0	2.00	3.75	6.25	11.50	18.75	21.25	32.00
Dec-26	0	2.00	2.75	3.50	5.25	8.25	9.50	15.50
Jan-27	0	2.00	2.75	3.25	5.75	9.50	13.00	17.75
Feb-27	0	3.25	28.00	68.50	226.50	385.00	527.25	637.25
Mar-27	1	148.00	151.25	154.75	172.50	183.00	190.00	213.25
Apr-27	1	68.00	70.00	72.50	82.50	94.75	112.50	123.25
May-27	1	19.25	19.75	20.00	21.25	23.25	28.00	31.50
Jun-27	1	22.75	22.75	21.75	19.00	17.25	17.25	18.50
Jul-27	1	15.50	15.50	14.25	10.00	8.00	5.75	7.00
Aug-27	1	18.75	18.50	16.75	10.00	6.75	2.50	2.00
Sep-27	1	20.25	20.25	18.00	10.00	6.00	1.00	0.50
Oct-27	0	6.25	6.25	5.00	0.75	0.00	0.00	0.00
Nov-27	0	6.50	6.50	5.00	1.00	0.00	0.00	0.75
Dec-27	0	6.25	6.25	5.00	1.25	0.25	0.00	1.00
Jan-28	0	20.75	20.75	18.75	13.00	9.50	3.75	4.50
Feb-28	0	22.00	24.00	25.75	32.00	36.50	32.75	44.75
Mar-28	0	20.75	21.75	22.25	24.25	27.25	28.00	35.00
Apr-28	0	5.50	5.50	5.00	4.25	3.75	3.50	5.25
May-28	0	5.75	5.75	5.00	3.25	2.00	1.25	2.75
Jun-28	0	6.25	6.00	5.00	2.50	1.00	0.00	1.50
Jul-28	0	62.00	62.00	58.75	48.25	42.25	34.00	32.50
Aug-28	0	49.50	49.50	48.25	43.00	39.25	34.00	33.25
Sep-28	0	51.00	50.75	49.25	42.50	38.50	32.00	31.00
Oct-28	0	49.25	49.00	47.50	40.75	36.50	30.00	29.25
Nov-28	0	6.75	6.75	5.00	0.50	0.00	0.00	0.00

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1) in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Dec-28	0	6.50	6.50	5.00	1.00	0.00	0.00	1.00
Jan-29	0	6.25	6.25	5.00	1.50	0.25	0.00	1.25
Feb-29	0	5.75	6.25	5.50	3.75	4.50	3.25	4.75
Mar-29	0	4.50	5.00	5.00	5.00	7.25	8.00	11.00
Apr-29	0	5.00	5.50	5.00	4.50	5.75	6.25	9.50
May-29	0	6.00	6.00	5.00	2.50	1.50	0.75	2.25
Jun-29	0	59.75	59.50	56.25	47.25	41.75	34.75	33.75
Jul-29	0	45.75	45.50	44.50	40.00	36.75	32.50	32.00
Aug-29	0	24.50	24.25	20.75	8.75	3.00	0.00	0.00
Sep-29	0	40.75	40.50	37.00	22.25	12.75	1.00	0.00
Oct-29	0	26.50	26.25	24.25	14.75	7.25	0.00	0.00
Nov-29	0	8.50	8.50	7.50	4.00	1.00	0.00	0.00
Dec-29	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-30	0	3.50	3.50	2.50	0.25	0.00	0.00	0.00
Feb-30	0	4.00	4.00	2.75	0.50	0.00	0.00	0.25
Mar-30	0	2.00	3.50	5.25	11.25	20.50	25.25	31.25
Apr-30	0	3.50	3.50	2.50	1.25	0.75	0.00	1.25
May-30	0	3.50	3.50	2.50	0.50	0.00	0.00	1.00
Jun-30	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jul-30	0	22.00	21.75	17.75	6.75	2.00	0.00	0.00
Aug-30	0	30.50	30.25	26.75	13.25	5.75	0.00	0.00
Sep-30	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Oct-30	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Nov-30	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Dec-30	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jan-31	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Feb-31	0	4.00	4.00	2.75	0.00	0.00	0.00	1.00
Mar-31	0	3.75	3.75	2.50	0.00	0.00	0.00	0.25
Apr-31	0	4.00	3.75	2.50	0.00	0.00	0.00	0.50
May-31	0	25.00	24.75	21.00	9.00	3.25	0.00	0.00
Jun-31	0	4.50	4.50	3.50	0.25	0.00	0.00	0.00
Jul-31	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Aug-31	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Sep-31	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Oct-31	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Nov-31	0	4.50	4.50	2.50	0.00	0.00	0.00	0.00
Dec-31	0	2.00	7.00	13.75	25.75	50.75	61.25	87.75
Jan-32	0	2.00	4.00	6.25	9.50	19.50	18.50	25.50
Feb-32	0	2.25	16.50	38.50	122.50	175.25	181.00	289.00
Mar-32	1	41.00	44.25	48.00	62.75	86.25	110.75	126.75
Apr-32	1	31.75	32.75	33.00	35.00	38.25	42.00	49.00
May-32	1	21.50	21.75	21.25	20.00	19.75	21.00	24.25
Jun-32	1	24.50	24.50	23.25	19.00	15.75	13.00	14.25
Jul-32	1	17.25	17.00	15.50	10.00	6.75	3.25	3.50
Aug-32	1	19.50	19.50	17.50	10.00	5.75	1.00	0.50
Sep-32	1	32.50	32.25	28.75	14.75	7.00	0.00	0.00
Oct-32	0	11.25	11.00	9.75	4.50	1.25	0.00	0.00
Nov-32	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Dec-32	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Jan-33	0	2.00	4.75	8.25	17.75	33.50	42.25	53.00
Feb-33	0	4.00	5.00	5.50	7.00	11.00	12.25	19.00
Mar-33	0	5.75	5.75	5.00	3.50	3.25	3.00	4.50
Apr-33	0	3.25	3.25	2.50	1.50	1.25	1.25	2.75
May-33	0	3.50	3.50	2.50	0.75	0.00	0.00	1.25
Jun-33	0	59.75	59.50	56.00	46.75	41.25	34.50	33.50
Jul-33	0	48.75	48.75	47.50	42.75	39.75	35.50	35.00
Aug-33	0	48.75	48.75	47.00	40.75	36.75	30.50	29.75
Sep-33	0	34.75	34.50	30.00	13.50	5.50	0.00	0.00
Oct-33	0	3.50	3.25	2.50	0.00	0.00	0.00	0.00
Nov-33	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Dec-33	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Jan-34	0	2.00	4.75	8.25	16.75	31.75	38.00	50.25
Feb-34	0	2.25	3.50	4.50	7.50	11.75	12.00	19.75
Mar-34	0	2.25	2.75	2.50	2.25	3.75	4.00	7.00
Apr-34	0	3.75	3.75	2.50	0.50	0.00	0.00	1.50
May-34	0	3.75	3.75	2.50	0.25	0.00	0.00	0.50
Jun-34	0	64.50	64.25	60.50	49.50	43.00	34.75	33.50

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Jul-34	0	47.00	47.00	45.75	40.75	37.25	32.50	31.75
Aug-34	0	39.25	39.00	34.75	18.75	9.75	0.50	0.00
Sep-34	0	41.50	41.50	38.50	24.00	13.50	1.25	0.25
Oct-34	0	3.25	3.00	2.50	0.00	0.00	0.00	0.00
Nov-34	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Dec-34	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Jan-35	0	2.00	5.00	9.00	20.00	37.25	47.00	59.50
Feb-35	0	2.25	3.50	4.50	7.75	13.25	16.75	23.50
Mar-35	0	2.00	5.25	9.75	25.50	41.75	52.75	69.25
Apr-35	0	2.00	7.50	15.75	44.50	74.75	99.75	127.50
May-35	1	20.00	20.50	20.00	21.00	23.75	28.25	31.75
Jun-35	1	25.00	25.00	23.25	19.00	16.25	14.75	16.00
Jul-35	1	17.25	17.25	15.50	10.00	6.75	3.50	3.75
Aug-35	1	66.75	66.75	63.50	51.50	44.25	33.50	32.00
Sep-35	1	44.50	44.50	43.25	38.25	34.50	29.00	28.50
Oct-35	0	19.75	19.50	16.50	6.50	1.50	0.00	0.00
Nov-35	0	14.75	14.75	13.25	7.50	3.50	0.00	0.00
Dec-35	0	3.50	3.25	2.50	0.25	0.00	0.00	0.00
Jan-36	0	3.50	3.50	2.50	0.25	0.00	0.00	0.75
Feb-36	0	2.00	11.00	24.75	71.75	121.00	152.75	192.50
Mar-36	0	2.00	3.50	5.25	12.00	21.50	31.50	40.00
Apr-36	0	2.00	3.50	4.75	10.50	15.25	18.50	25.75
May-36	0	3.25	3.25	2.50	1.50	1.25	1.50	3.25
Jun-36	0	3.75	3.75	2.50	0.25	0.00	0.00	0.50
Jul-36	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Aug-36	0	40.75	40.25	35.00	17.25	9.00	0.25	0.00
Sep-36	0	6.75	6.75	5.50	0.75	0.00	0.00	0.00
Oct-36	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Nov-36	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Dec-36	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jan-37	0	2.00	3.25	4.50	6.25	12.00	11.50	16.00
Feb-37	0	2.50	22.00	52.75	160.75	304.75	441.25	534.75
Mar-37	1	82.50	97.25	120.00	205.50	303.00	396.75	471.50
Apr-37	1	280.75	284.50	289.00	307.25	331.00	362.25	384.00
May-37	1	18.25	19.00	20.00	23.50	28.00	36.00	39.50
Jun-37	1	20.50	20.75	20.25	19.00	19.00	21.25	22.75
Jul-37	1	15.00	15.00	14.00	10.00	8.25	6.50	7.75
Aug-37	1	18.50	18.25	16.75	10.00	6.75	2.75	2.25
Sep-37	1	20.00	19.75	17.75	10.00	6.25	1.50	1.00
Oct-37	0	7.50	7.50	6.00	1.50	0.00	0.00	0.00
Nov-37	0	14.75	14.75	12.75	6.25	3.00	0.00	0.00
Dec-37	0	6.00	6.00	5.00	2.00	0.75	0.00	1.00
Jan-38	0	20.75	20.75	19.00	14.00	11.00	6.00	6.50
Feb-38	0	553.50	570.50	595.25	691.25	823.50	959.25	1044.25
Mar-38	1	3013.50	3047.50	3106.25	3345.25	3501.00	3601.25	3827.25
Apr-38	1	263.75	267.50	273.50	295.75	323.50	358.75	380.50
May-38	1	36.50	36.50	36.25	35.50	34.50	36.00	37.75
Jun-38	1	18.75	19.00	19.00	19.50	21.75	26.50	28.00
Jul-38	1	12.75	13.00	12.25	10.00	10.25	10.75	12.25
Aug-38	1	17.50	17.50	16.00	10.00	7.50	4.00	5.00
Sep-38	1	18.75	18.50	16.75	10.00	7.00	2.75	3.75
Oct-38	0	7.00	6.75	5.50	1.50	0.00	0.00	0.00
Nov-38	0	7.25	7.25	5.75	1.50	0.00	0.00	0.00
Dec-38	0	5.50	5.75	5.00	2.75	2.50	0.75	3.25
Jan-39	0	20.75	21.25	20.50	19.00	21.00	20.25	24.00
Feb-39	0	23.00	24.00	24.25	26.00	31.00	34.75	41.75
Mar-39	0	20.75	22.50	24.00	30.75	41.00	52.25	61.75
Apr-39	0	4.00	4.50	5.00	7.00	10.00	14.00	19.00
May-39	0	5.50	5.50	5.00	3.75	3.25	3.50	5.25
Jun-39	0	6.25	6.25	5.00	2.50	1.25	0.25	1.75
Jul-39	0	58.00	58.00	54.75	45.00	39.75	33.00	32.00
Aug-39	0	49.50	49.50	48.00	43.00	39.75	34.75	34.00
Sep-39	0	51.00	51.00	49.25	42.75	39.00	32.75	31.75
Oct-39	0	6.75	6.50	5.00	0.25	0.00	0.00	0.00
Nov-39	0	7.00	6.75	5.00	0.25	0.00	0.00	0.00
Dec-39	0	6.75	6.50	5.00	0.75	0.00	0.00	0.00
Jan-40	0	5.50	5.75	5.00	2.75	3.00	1.25	3.50

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1) in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Feb-40	0	2.75	4.25	5.25	8.75	16.25	20.50	27.25
Mar-40	0	3.25	4.25	5.00	7.00	12.00	15.75	22.25
Apr-40	0	5.00	5.50	5.00	5.00	6.50	8.25	11.75
May-40	0	6.00	6.00	5.00	2.50	1.75	1.25	2.75
Jun-40	0	6.75	6.50	5.00	1.50	0.25	0.00	0.50
Jul-40	0	64.25	64.00	60.50	48.50	42.25	33.25	31.75
Aug-40	0	49.25	49.00	47.75	42.25	38.50	33.00	32.25
Sep-40	0	33.75	33.25	29.25	14.25	6.75	0.00	0.00
Oct-40	0	25.00	24.75	22.50	12.00	5.25	0.00	0.00
Nov-40	0	3.25	3.25	2.50	0.25	0.00	0.00	0.00
Dec-40	0	2.25	4.25	6.75	13.00	22.50	25.50	37.25
Jan-41	0	2.50	9.50	20.50	55.00	103.50	147.25	189.25
Feb-41	0	966.50	1013.25	1088.50	1335.75	1526.00	1593.75	1940.75
Mar-41	1	3096.75	3152.25	3248.25	3617.00	3936.00	4199.75	4506.75
Apr-41	1	1997.75	2025.25	2070.75	2249.25	2384.00	2476.00	2638.25
May-41	1	294.25	298.50	306.00	327.50	355.25	387.25	414.75
Jun-41	1	48.25	49.75	51.25	55.25	62.00	69.50	81.50
Jul-41	1	8.00	9.00	10.00	12.00	16.75	21.25	29.25
Aug-41	1	11.25	11.75	11.75	10.00	11.75	12.00	18.25
Sep-41	1	14.50	14.75	14.00	10.00	9.75	8.00	12.50
Oct-41	0	5.00	5.25	5.00	3.00	3.50	2.50	7.25
Nov-41	0	5.00	5.50	5.00	3.25	4.00	3.25	8.00
Dec-41	0	2.75	8.50	17.25	36.00	63.25	78.25	133.50
Jan-42	0	3.75	6.75	10.75	20.00	34.25	45.25	72.50
Feb-42	0	5.75	7.25	8.75	13.00	19.00	24.25	40.75
Mar-42	0	6.50	9.50	13.25	23.25	37.00	48.25	78.00
Apr-42	0	104.50	106.50	107.75	114.50	124.50	137.00	155.75
May-42	0	7.00	8.00	9.00	12.25	16.75	22.75	31.25
Jun-42	0	6.00	6.50	6.25	6.00	7.00	8.25	13.25
Jul-42	0	5.50	5.75	5.00	2.50	1.75	0.75	3.75
Aug-42	0	6.00	6.00	5.00	1.50	0.50	0.00	2.75
Sep-42	0	18.25	18.00	14.75	4.00	0.50	0.00	1.00
Oct-42	0	6.00	6.00	5.00	0.75	0.00	0.00	1.00
Nov-42	0	6.00	6.00	5.00	1.50	0.25	0.00	2.75
Dec-42	0	5.75	5.75	5.00	2.00	0.50	0.00	2.75
Jan-43	0	733.75	748.00	766.75	855.00	933.75	982.75	1029.75
Feb-43	1	514.25	521.00	532.75	572.00	617.50	671.50	706.75
Mar-43	1	1065.75	1081.50	1107.00	1211.75	1301.25	1383.00	1447.25
Apr-43	1	170.50	173.25	177.50	191.75	208.50	230.75	247.00
May-43	1	18.25	19.00	20.00	23.25	27.50	34.00	40.75
Jun-43	1	19.75	20.00	19.75	19.00	20.00	22.50	26.00
Jul-43	1	13.75	13.75	13.00	10.00	9.00	8.25	11.25
Aug-43	1	17.75	17.50	16.00	10.00	7.50	4.00	5.25
Sep-43	1	18.75	18.75	16.75	10.00	7.00	2.75	3.75
Oct-43	0	6.50	6.25	5.25	1.50	0.25	0.00	1.25
Nov-43	0	6.50	6.50	5.25	1.50	0.25	0.00	1.25
Dec-43	0	5.00	5.25	5.00	3.25	3.50	1.50	5.75
Jan-44	0	4.00	4.75	5.00	5.25	7.75	8.25	14.50
Feb-44	0	288.00	302.00	321.75	397.00	463.75	501.75	574.00
Mar-44	1	578.25	585.50	597.00	637.00	676.75	717.00	758.25
Apr-44	1	77.50	79.25	81.75	90.25	100.50	115.00	125.75
May-44	1	17.75	18.75	20.00	24.25	30.25	38.75	45.75
Jun-44	1	20.00	20.25	20.00	19.00	19.75	22.00	25.25
Jul-44	1	15.25	15.25	14.00	10.00	8.00	6.25	7.50
Aug-44	1	18.00	17.75	16.25	10.00	7.25	3.50	4.50
Sep-44	1	19.50	19.25	17.50	10.00	6.25	1.50	1.00
Oct-44	0	7.25	7.25	6.00	1.50	0.00	0.00	0.25
Nov-44	0	5.00	5.50	5.00	3.50	4.50	2.75	5.50
Dec-44	0	5.50	5.75	5.00	2.75	2.25	0.75	3.50
Jan-45	0	5.25	5.50	5.00	3.25	3.25	2.00	5.00
Feb-45	0	3.50	8.50	15.50	43.75	81.00	120.00	135.50
Mar-45	0	67.75	70.00	71.50	82.00	90.50	97.50	107.25
Apr-45	1	43.00	44.00	44.75	50.50	58.50	71.00	75.00
May-45	1	20.00	20.25	20.00	20.25	21.25	25.00	26.50
Jun-45	1	24.75	24.50	23.00	19.00	16.25	15.00	14.75
Jul-45	1	16.75	16.50	15.00	10.00	7.25	4.50	4.00
Aug-45	1	19.25	19.25	17.25	10.00	6.50	2.00	1.50

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Sep-45	1	20.75	20.50	18.50	10.00	5.75	0.75	0.25
Oct-45	0	21.25	21.00	18.00	7.50	2.50	0.00	0.00
Nov-45	0	12.25	12.00	10.75	5.75	2.50	0.00	0.00
Dec-45	0	2.75	4.00	5.00	8.50	15.50	18.75	20.25
Jan-46	0	5.50	5.75	5.00	3.50	3.25	2.00	3.25
Feb-46	0	5.50	6.00	5.50	5.25	6.50	7.50	9.00
Mar-46	0	3.25	4.50	5.50	10.00	11.00	8.25	21.00
Apr-46	0	5.50	7.00	8.00	14.50	24.50	36.50	41.75
May-46	1	23.50	23.75	22.25	20.00	19.50	20.50	21.75
Jun-46	1	25.50	25.50	23.75	19.00	16.00	13.50	15.00
Jul-46	1	56.50	56.25	53.75	45.00	39.75	33.25	32.50
Aug-46	1	49.50	49.50	48.25	43.25	40.00	35.25	34.75
Sep-46	1	51.00	51.00	49.50	43.00	39.25	33.25	32.25
Oct-46	0	49.50	49.25	47.75	41.25	37.25	31.25	30.25
Nov-46	0	5.25	5.75	5.00	3.00	4.00	3.00	5.50
Dec-46	0	5.00	5.50	5.00	3.25	4.25	3.75	6.75
Jan-47	0	6.00	6.00	5.00	2.25	1.50	0.50	2.00
Feb-47	0	6.00	6.25	5.50	3.50	3.75	3.25	6.50
Mar-47	0	5.75	5.75	5.00	3.25	2.75	2.75	4.50
Apr-47	0	6.25	6.25	5.00	2.75	1.75	1.25	2.75
May-47	0	56.00	55.75	53.00	46.00	41.25	37.25	36.75
Jun-47	0	51.00	51.00	50.00	46.25	43.75	41.50	41.00
Jul-47	0	49.25	49.25	47.75	42.75	40.00	36.25	35.50
Aug-47	0	49.25	49.00	47.25	40.75	37.00	31.50	30.50
Sep-47	0	50.75	50.75	48.75	41.00	36.75	30.00	28.75
Oct-47	0	47.50	47.25	45.25	38.00	33.75	27.00	26.00
Nov-47	0	24.50	24.00	19.75	7.00	1.75	0.00	0.00
Dec-47	0	3.50	3.25	2.50	0.00	0.00	0.00	0.00
Jan-48	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Feb-48	0	4.00	3.75	2.50	0.25	0.00	0.00	0.00
Mar-48	0	3.75	3.75	2.50	0.25	0.00	0.00	0.00
Apr-48	0	4.00	4.00	2.50	0.25	0.00	0.00	0.00
May-48	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jun-48	0	13.25	13.00	10.50	4.25	1.50	0.00	0.00
Jul-48	0	20.50	20.25	16.50	5.25	1.00	0.00	0.00
Aug-48	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Sep-48	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Oct-48	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Nov-48	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Dec-48	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Jan-49	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Feb-49	0	4.50	4.50	2.75	0.00	0.00	0.00	0.00
Mar-49	0	30.00	31.75	31.75	24.00	25.75	13.50	31.25
Apr-49	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
May-49	0	29.75	29.50	26.25	13.25	6.75	0.00	0.00
Jun-49	0	5.00	5.00	4.00	0.50	0.00	0.00	0.00
Jul-49	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Aug-49	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Sep-49	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Oct-49	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Nov-49	0	4.50	4.50	2.50	0.00	0.00	0.00	0.00
Dec-49	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Jan-50	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Feb-50	0	33.25	34.25	33.00	19.75	17.00	3.50	10.00
Mar-50	0	3.25	3.25	2.50	0.00	0.00	0.00	0.00
Apr-50	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
May-50	0	52.00	51.50	47.25	28.00	17.00	0.75	0.00
Jun-50	0	3.25	3.25	2.50	0.00	0.00	0.00	0.00
Jul-50	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Aug-50	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Sep-50	0	4.25	4.25	2.50	0.00	0.00	0.00	0.00
Oct-50	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Nov-50	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Dec-50	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Jan-51	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Feb-51	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Mar-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Apr-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
May-51	0	14.25	13.75	8.00	0.00	0.00	0.00	0.00
Jun-51	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Jul-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Aug-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Sep-51	0	3.75	3.50	0.50	0.00	0.00	0.00	0.00
Oct-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Nov-51	0	0.50	0.25	0.00	0.00	0.00	0.00	0.00
Dec-51	0	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Jan-52	0	2.00	25.50	58.00	181.75	307.50	429.25	535.50
Feb-52	1	35.75	37.25	33.75	25.50	31.75	17.50	22.00
Mar-52	1	3.00	25.25	60.25	155.00	307.00	443.25	584.75
Apr-52	1	111.50	114.25	115.75	117.25	137.00	149.25	154.00
May-52	1	18.00	19.00	20.00	21.50	27.25	32.00	32.75
Jun-52	1	23.50	23.75	23.00	19.00	16.50	12.50	12.25
Jul-52	1	15.25	15.25	14.50	10.00	8.25	5.00	5.00
Aug-52	1	17.25	17.50	16.00	10.00	7.75	3.75	4.00
Sep-52	1	28.00	28.00	25.00	11.75	5.25	0.00	0.00
Oct-52	0	15.25	15.25	14.25	8.50	5.25	0.50	1.00
Nov-52	0	5.00	5.25	5.00	2.75	1.75	0.00	3.50
Dec-52	0	2.75	5.75	10.25	17.50	29.00	29.75	60.00
Jan-53	0	30.75	33.25	35.50	42.50	54.75	62.75	80.00
Feb-53	0	4.25	5.00	5.50	7.25	10.25	13.75	17.25
Mar-53	0	4.75	5.25	5.00	5.25	6.00	7.75	9.50
Apr-53	0	5.25	5.50	5.00	4.75	4.00	3.50	6.00
May-53	0	6.00	6.00	5.00	2.75	1.00	0.25	0.75
Jun-53	0	6.50	6.25	5.00	2.00	0.50	0.00	0.50
Jul-53	0	63.50	63.25	60.00	49.00	42.75	34.50	33.00
Aug-53	0	49.50	49.50	48.25	43.00	39.00	33.50	32.50
Sep-53	0	40.50	40.25	38.75	32.50	28.50	22.00	21.00
Oct-53	0	35.50	35.25	31.00	15.50	6.75	0.00	0.00
Nov-53	0	6.00	6.00	5.00	1.50	0.00	0.00	0.00
Dec-53	0	6.00	6.00	5.00	1.50	0.00	0.00	0.00
Jan-54	0	10.25	11.00	11.00	12.00	13.00	9.50	10.50
Feb-54	0	23.00	23.75	23.50	22.50	23.25	20.25	24.75
Mar-54	0	2.75	5.50	9.50	19.50	33.25	41.50	64.00
Apr-54	0	3.75	4.50	5.00	8.00	12.75	17.75	21.00
May-54	0	6.00	6.00	5.00	2.50	0.75	0.00	0.00
Jun-54	0	6.25	6.25	5.00	2.25	1.00	0.00	1.25
Jul-54	0	67.50	67.25	63.75	51.75	44.50	34.25	32.50
Aug-54	0	45.25	45.25	44.00	38.50	34.50	28.50	27.75
Sep-54	0	51.00	50.75	46.25	27.75	16.25	2.75	1.50
Oct-54	0	30.75	30.75	28.50	18.25	9.25	0.25	0.00
Nov-54	0	13.50	13.50	12.50	8.00	3.75	0.00	0.00
Dec-54	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-55	0	2.00	2.50	2.75	2.75	1.75	0.00	4.50
Feb-55	0	3.00	3.25	2.75	1.75	1.25	0.00	2.75
Mar-55	0	3.25	3.25	2.50	1.25	0.75	0.00	1.00
Apr-55	0	3.50	3.50	2.50	1.00	0.25	0.00	1.50
May-55	0	3.00	3.25	2.50	1.50	1.75	1.00	2.00
Jun-55	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jul-55	0	34.25	34.00	29.25	15.50	8.00	0.00	0.00
Aug-55	0	50.75	50.50	47.00	31.00	19.75	3.75	1.50
Sep-55	0	8.75	8.75	7.75	3.00	0.00	0.00	0.00
Oct-55	0	3.50	3.25	2.50	0.00	0.00	0.00	0.00
Nov-55	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Dec-55	0	2.00	12.50	28.50	58.00	101.50	109.75	209.00
Jan-56	0	2.00	15.50	37.25	87.00	136.25	145.00	261.50
Feb-56	0	2.00	4.25	7.00	14.00	23.25	30.00	49.25
Mar-56	0	2.00	3.00	3.75	6.50	10.00	13.50	21.75
Apr-56	0	2.00	3.50	5.25	10.75	16.00	19.25	31.75
May-56	0	2.00	2.75	3.00	5.25	8.75	13.75	18.50
Jun-56	0	3.50	3.50	2.50	1.00	0.25	0.00	1.50
Jul-56	0	3.50	3.50	2.50	0.50	0.25	0.00	1.25
Aug-56	0	31.00	30.75	26.00	11.25	4.75	0.00	0.00
Sep-56	0	18.75	18.75	16.00	5.50	0.50	0.00	0.00
Oct-56	0	3.75	3.75	2.75	0.00	0.00	0.00	0.00

1) Rounded to nearest 0.25 cfs

Table A-2

Simulated Monthly Average Flows[1) in Santa Ynez River under Alternative 5C

Based on SYRHM , WY 1918-1993

MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Nov-56	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Dec-56	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Jan-57	0	3.25	3.25	2.50	0.25	0.00	0.00	0.75
Feb-57	0	2.25	3.00	3.00	2.50	3.25	0.25	6.25
Mar-57	0	2.00	2.50	2.50	2.25	3.50	1.75	4.25
Apr-57	0	3.00	3.25	2.50	1.50	1.50	0.25	1.50
May-57	0	3.25	3.25	2.50	1.00	0.75	0.00	1.25
Jun-57	0	70.75	70.50	66.50	54.50	47.00	35.25	33.25
Jul-57	0	12.75	12.75	11.25	5.75	2.50	0.00	0.00
Aug-57	0	48.25	47.75	44.00	27.25	16.75	2.75	1.50
Sep-57	0	13.50	13.50	12.25	6.25	1.75	0.00	0.00
Oct-57	0	4.25	4.25	3.25	0.00	0.00	0.00	0.00
Nov-57	0	5.25	5.00	3.75	0.25	0.00	0.00	0.00
Dec-57	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Jan-58	0	2.00	2.75	3.00	3.25	4.25	1.00	5.00
Feb-58	0	2.25	15.00	35.00	87.25	161.00	209.25	304.50
Mar-58	1	3.00	20.00	48.00	136.25	255.25	369.00	482.25
Apr-58	1	534.25	561.75	605.25	776.50	972.00	1171.75	1313.75
May-58	1	145.00	148.75	154.75	176.00	200.00	231.25	245.75
Jun-58	1	16.25	17.50	19.00	23.50	30.25	39.50	46.50
Jul-58	1	12.25	12.50	12.25	10.00	8.75	6.50	9.50
Aug-58	1	17.00	17.00	15.50	10.00	7.25	3.25	4.50
Sep-58	1	18.75	18.75	17.00	10.00	6.50	2.25	3.25
Oct-58	0	7.00	6.75	5.75	1.50	0.00	0.00	1.00
Nov-58	0	7.25	7.00	5.75	1.50	0.00	0.00	1.00
Dec-58	0	6.25	6.25	5.00	1.50	0.00	0.00	1.00
Jan-59	0	5.00	5.25	5.00	3.50	3.75	1.75	4.50
Feb-59	0	34.00	37.50	41.50	53.50	73.50	86.75	111.25
Mar-59	0	3.75	4.50	5.00	6.75	9.50	12.00	16.75
Apr-59	0	5.00	5.50	5.00	4.75	4.00	2.75	6.00
May-59	0	5.75	5.75	5.00	3.25	1.75	0.75	2.25
Jun-59	0	6.25	6.25	5.00	2.50	1.25	0.50	2.00
Jul-59	0	62.75	62.50	59.25	48.50	42.50	33.75	32.50
Aug-59	0	49.50	49.50	48.25	42.75	39.25	33.75	33.00
Sep-59	0	36.00	35.75	31.75	16.75	8.50	0.00	0.00
Oct-59	0	28.00	27.75	25.50	15.00	7.25	0.00	0.00
Nov-59	0	16.00	15.75	14.75	9.75	5.25	0.25	0.00
Dec-59	0	6.00	5.75	5.00	2.25	0.25	0.00	0.00
Jan-60	0	5.75	5.75	5.00	2.75	1.00	0.00	0.75
Feb-60	0	32.50	33.25	32.50	30.75	29.25	22.00	30.25
Mar-60	0	5.75	5.75	5.00	3.25	1.50	0.00	1.25
Apr-60	0	5.00	5.50	5.00	4.50	3.75	1.75	7.00
May-60	0	6.00	6.00	5.00	2.50	1.00	0.00	1.25
Jun-60	0	6.50	6.25	5.00	2.00	0.50	0.00	0.00
Jul-60	0	6.50	6.50	5.00	0.75	0.00	0.00	0.00
Aug-60	0	45.00	44.50	39.50	21.50	12.25	0.50	0.00
Sep-60	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Oct-60	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Nov-60	0	3.50	3.50	2.50	0.00	0.00	0.00	0.75
Dec-60	0	3.50	3.50	2.50	0.00	0.00	0.00	1.50
Jan-61	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Feb-61	0	4.25	4.00	2.75	0.00	0.00	0.00	0.00
Mar-61	0	3.75	3.75	2.50	0.00	0.00	0.00	0.25
Apr-61	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
May-61	0	28.75	28.50	24.50	11.75	4.50	0.00	0.00
Jun-61	0	5.50	5.25	4.25	0.50	0.00	0.00	0.00
Jul-61	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Aug-61	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Sep-61	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Oct-61	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Nov-61	0	5.25	5.00	3.25	0.00	0.00	0.00	0.00
Dec-61	0	2.25	2.75	2.50	0.25	0.00	0.00	2.00
Jan-62	0	2.00	2.75	2.75	0.75	0.00	0.00	7.25
Feb-62	0	2.50	50.00	127.50	348.50	618.25	842.50	1177.75
Mar-62	1	28.50	36.25	48.00	79.00	122.25	136.75	197.50
Apr-62	1	29.75	31.50	33.00	39.00	47.25	49.25	59.50
May-62	1	19.50	20.00	20.00	20.25	20.50	18.25	23.00

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Jun-62	1	24.25	24.25	23.00	19.00	15.50	10.50	12.00
Jul-62	1	16.50	16.50	15.00	10.00	7.00	2.75	4.00
Aug-62	1	19.25	19.00	17.25	10.00	5.75	0.75	0.25
Sep-62	1	29.00	28.75	25.50	12.50	5.25	0.00	0.00
Oct-62	0	6.00	6.00	5.00	1.00	0.00	0.00	0.00
Nov-62	0	6.50	6.25	5.00	1.00	0.00	0.00	0.00
Dec-62	0	6.25	6.00	5.00	1.25	0.00	0.00	0.50
Jan-63	0	5.75	6.00	5.00	2.00	0.25	0.00	1.00
Feb-63	0	2.75	5.75	9.50	15.00	23.00	16.50	48.00
Mar-63	0	2.75	5.00	7.75	12.50	19.25	16.25	42.50
Apr-63	0	2.75	4.00	5.00	6.75	9.50	7.50	22.25
May-63	0	5.00	5.25	5.00	4.00	4.00	2.25	8.25
Jun-63	0	6.00	6.25	5.00	2.50	1.50	0.00	3.00
Jul-63	0	6.50	6.50	5.00	1.00	0.00	0.00	1.25
Aug-63	0	38.75	38.50	33.75	17.50	8.75	0.00	0.00
Sep-63	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Oct-63	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Nov-63	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Dec-63	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Jan-64	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Feb-64	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Mar-64	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Apr-64	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
May-64	0	31.50	31.00	27.25	14.25	6.25	0.00	0.00
Jun-64	0	6.00	6.00	5.00	1.25	0.00	0.00	0.00
Jul-64	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Aug-64	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Sep-64	0	4.25	4.25	2.50	0.00	0.00	0.00	0.00
Oct-64	0	4.25	4.25	2.50	0.00	0.00	0.00	0.00
Nov-64	0	4.50	4.25	2.50	0.00	0.00	0.00	0.00
Dec-64	0	4.25	4.25	2.50	0.00	0.00	0.00	0.00
Jan-65	0	2.00	2.75	3.00	0.75	0.25	0.00	5.50
Feb-65	0	4.00	4.00	2.75	0.00	0.00	0.00	0.50
Mar-65	0	3.25	3.50	2.50	0.00	0.00	0.00	1.25
Apr-65	0	2.00	6.25	12.00	21.50	34.25	21.25	45.75
May-65	0	3.00	3.25	2.50	0.25	0.00	0.00	1.25
Jun-65	0	67.25	66.75	61.25	38.50	25.00	4.00	3.75
Jul-65	0	47.50	47.25	45.25	32.00	20.50	4.00	2.75
Aug-65	0	18.50	18.25	16.75	8.00	1.50	0.00	0.00
Sep-65	0	6.50	6.25	5.50	1.00	0.00	0.00	0.00
Oct-65	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Nov-65	0	2.00	6.25	12.25	18.50	27.75	15.25	59.50
Dec-65	0	2.00	6.00	11.75	20.75	34.00	31.50	70.25
Jan-66	1	2.25	7.00	14.00	31.50	56.00	71.00	108.75
Feb-66	1	21.50	24.00	26.50	32.00	40.75	44.75	69.50
Mar-66	1	47.00	48.00	48.00	49.25	51.75	54.50	63.00
Apr-66	1	36.00	36.25	35.00	33.00	29.25	26.50	29.25
May-66	1	22.50	22.75	22.00	20.00	18.00	17.00	20.00
Jun-66	1	24.00	24.00	22.75	19.00	16.00	14.00	15.25
Jul-66	1	16.75	16.75	15.25	10.00	6.75	3.25	3.50
Aug-66	1	67.75	67.50	64.75	52.50	44.75	33.75	32.00
Sep-66	1	50.50	50.25	49.25	44.00	40.00	34.00	33.25
Oct-66	0	48.75	48.75	47.25	41.50	37.25	31.00	30.25
Nov-66	0	50.50	50.25	48.75	43.00	38.75	32.50	31.75
Dec-66	0	2.25	5.00	8.50	21.25	40.25	58.00	65.50
Jan-67	1	2.50	12.25	27.00	71.75	135.50	195.25	259.00
Feb-67	1	17.75	21.50	26.50	50.75	74.00	98.50	106.75
Mar-67	1	270.00	272.00	272.75	285.25	292.50	303.25	310.00
Apr-67	1	893.00	896.00	899.50	918.25	925.00	935.75	951.00
May-67	1	326.75	330.75	336.75	363.75	385.00	409.50	417.00
Jun-67	1	18.25	18.75	19.00	20.00	20.25	20.75	24.00
Jul-67	1	15.25	15.00	14.00	10.00	7.50	5.25	4.75
Aug-67	1	59.50	59.25	56.75	47.25	43.50	37.25	36.00
Sep-67	1	45.25	45.00	44.00	39.50	37.00	33.00	32.25
Oct-67	0	7.00	7.00	5.75	1.50	0.00	0.00	0.00
Nov-67	0	7.50	7.25	5.75	1.50	0.00	0.00	0.25
Dec-67	0	6.00	6.00	5.00	2.00	1.00	0.00	1.25

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1) in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Jan-68	0	5.75	6.00	5.00	2.50	1.75	0.25	1.50
Feb-68	0	5.75	6.00	5.25	4.00	4.50	4.00	5.25
Mar-68	0	30.75	31.25	30.50	29.75	31.75	33.25	36.00
Apr-68	0	5.25	5.50	5.00	5.00	5.75	7.00	8.50
May-68	0	6.00	6.00	5.00	2.50	1.00	0.25	0.00
Jun-68	0	57.75	57.75	54.75	46.75	41.75	36.25	35.25
Jul-68	0	6.00	6.00	5.00	1.50	0.25	0.00	0.00
Aug-68	0	17.00	16.75	13.75	4.00	0.75	0.00	0.00
Sep-68	0	36.50	36.25	33.00	18.50	10.25	0.25	0.00
Oct-68	0	24.25	24.00	22.00	12.75	6.00	0.00	0.00
Nov-68	0	12.00	12.00	11.00	6.75	3.25	0.00	0.00
Dec-68	0	6.00	5.75	5.00	2.25	0.25	0.00	0.00
Jan-69	0	2045.75	2078.75	2128.25	2364.25	2649.00	2969.00	3101.25
Feb-69	1	3348.00	3392.25	3468.25	3818.50	4145.25	4492.50	4642.25
Mar-69	1	1257.00	1272.00	1296.50	1407.50	1543.75	1713.50	1758.75
Apr-69	1	296.00	301.25	309.75	338.50	359.75	375.00	406.00
May-69	1	89.25	91.50	94.50	106.50	119.50	135.25	145.50
Jun-69	1	16.50	17.75	19.00	23.50	29.50	36.25	43.00
Jul-69	1	13.00	13.25	12.50	10.00	8.50	6.75	9.25
Aug-69	1	16.50	16.50	15.00	10.00	7.75	4.50	5.75
Sep-69	1	18.25	18.00	16.50	10.00	7.50	3.50	4.50
Oct-69	0	6.50	6.50	5.25	1.50	0.25	0.00	1.25
Nov-69	0	6.00	6.00	5.00	2.00	1.75	0.25	1.50
Dec-69	0	5.50	5.75	5.00	2.50	1.75	0.25	3.00
Jan-70	0	4.50	5.00	5.00	5.00	7.25	8.50	11.25
Feb-70	0	4.75	5.25	5.50	6.75	10.50	14.50	17.75
Mar-70	0	32.50	35.50	39.00	55.00	73.50	91.00	103.25
Apr-70	0	5.50	5.75	5.25	4.75	4.00	3.75	5.25
May-70	0	6.00	6.00	5.00	3.00	1.50	0.75	0.75
Jun-70	0	6.50	6.25	5.00	2.25	0.75	0.00	0.00
Jul-70	0	58.50	58.25	55.00	44.75	39.50	33.00	31.50
Aug-70	0	49.50	49.50	48.00	43.00	39.75	35.00	34.25
Sep-70	0	18.50	18.25	15.00	4.50	0.75	0.00	0.00
Oct-70	0	25.00	24.75	22.00	11.00	4.75	0.00	0.00
Nov-70	0	14.50	14.50	13.50	9.75	7.00	2.00	1.00
Dec-70	0	2.75	4.00	5.50	10.75	14.50	12.00	16.75
Jan-71	0	4.50	5.00	5.00	5.25	7.00	7.25	10.00
Feb-71	0	5.50	6.00	5.50	4.50	4.50	3.75	7.25
Mar-71	0	5.50	5.50	5.00	4.00	3.25	2.25	3.75
Apr-71	0	6.00	6.00	5.00	3.50	2.25	1.25	2.75
May-71	0	6.25	6.00	5.00	2.50	1.00	0.00	0.00
Jun-71	0	57.75	57.50	54.50	46.25	41.00	35.75	34.50
Jul-71	0	49.50	49.50	48.25	43.75	41.00	37.50	37.00
Aug-71	0	49.50	49.50	47.75	41.75	38.25	32.75	32.00
Sep-71	0	32.75	32.25	28.00	12.75	5.75	0.00	0.00
Oct-71	0	24.75	24.50	22.00	11.50	5.00	0.00	0.00
Nov-71	0	13.75	13.75	12.50	7.50	3.75	0.00	0.00
Dec-71	0	2.50	4.00	5.75	11.50	19.25	22.75	24.75
Jan-72	0	5.25	5.50	5.00	4.00	4.00	3.50	4.25
Feb-72	0	5.75	6.00	5.25	4.00	3.50	3.00	4.25
Mar-72	0	6.00	6.00	5.00	2.75	1.25	0.25	0.00
Apr-72	0	6.25	6.25	5.00	2.75	1.25	0.50	0.25
May-72	0	55.75	55.50	52.75	46.50	42.00	37.75	36.50
Jun-72	0	50.75	50.75	49.75	46.50	44.25	42.00	41.50
Jul-72	0	6.25	6.25	5.00	1.25	0.00	0.00	0.00
Aug-72	0	22.25	22.00	18.75	7.00	2.00	0.00	0.00
Sep-72	0	39.75	39.50	36.00	21.00	12.00	0.75	0.00
Oct-72	0	26.00	26.00	23.75	14.25	7.00	0.00	0.00
Nov-72	0	2.50	2.75	2.50	1.50	0.75	0.00	1.75
Dec-72	0	3.25	3.25	2.50	0.50	0.00	0.00	0.00
Jan-73	0	2.00	10.75	24.75	60.50	99.25	111.25	177.75
Feb-73	0	2.50	24.00	59.00	180.25	334.75	485.00	607.00
Mar-73	1	240.00	246.25	254.50	283.50	310.50	330.50	375.50
Apr-73	1	126.00	128.50	132.00	144.50	159.50	180.00	194.25
May-73	1	18.00	19.00	20.00	24.00	26.50	30.00	35.00
Jun-73	1	20.75	21.00	20.50	19.00	17.50	16.50	19.50
Jul-73	1	15.75	15.75	14.50	10.00	7.50	5.00	6.00

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Aug-73	1	18.25	18.25	16.50	10.00	7.00	2.75	3.00
Sep-73	1	19.50	19.25	17.50	10.00	6.25	1.50	1.00
Oct-73	0	7.50	7.25	6.00	1.50	0.00	0.00	0.25
Nov-73	0	13.25	13.00	11.25	5.25	2.25	0.00	0.25
Dec-73	0	6.00	6.00	5.00	1.75	0.50	0.00	1.00
Jan-74	0	2.75	9.00	18.25	43.75	81.25	107.50	150.50
Feb-74	0	4.25	5.00	5.50	7.25	10.75	13.75	19.25
Mar-74	0	5.50	7.25	9.00	14.75	23.00	29.75	44.50
Apr-74	0	7.00	7.75	8.00	9.75	13.00	17.00	23.75
May-74	1	22.50	22.75	21.75	20.00	19.75	20.75	23.75
Jun-74	1	25.25	25.25	23.50	19.00	16.00	13.75	15.00
Jul-74	1	17.00	17.00	15.25	10.00	7.00	3.75	4.00
Aug-74	1	19.25	19.25	17.25	10.00	6.25	1.50	1.75
Sep-74	1	74.00	73.75	70.50	57.00	48.25	34.75	32.75
Oct-74	0	6.00	6.00	5.00	1.25	0.00	0.00	0.50
Nov-74	0	11.00	11.00	9.50	4.50	1.50	0.00	0.25
Dec-74	0	2.75	5.25	8.50	13.50	22.00	21.25	46.00
Jan-75	0	5.25	5.50	5.00	3.75	3.50	2.25	5.25
Feb-75	0	34.00	41.25	51.25	77.25	115.25	142.00	204.25
Mar-75	0	33.75	46.50	67.25	121.50	196.25	257.75	367.75
Apr-75	1	81.25	83.25	85.50	93.75	104.75	118.25	134.00
May-75	1	17.75	19.00	20.00	24.25	30.00	38.25	45.25
Jun-75	1	20.75	21.25	20.75	19.00	17.50	16.00	20.75
Jul-75	1	15.00	15.00	14.00	10.00	7.75	5.00	6.50
Aug-75	1	18.25	18.25	16.50	10.00	7.00	3.00	4.00
Sep-75	1	19.50	19.25	17.50	10.00	6.25	1.50	1.75
Oct-75	0	6.25	6.00	5.00	1.00	0.00	0.00	1.00
Nov-75	0	6.50	6.25	5.00	1.00	0.00	0.00	1.00
Dec-75	0	6.25	6.25	5.00	1.25	0.00	0.00	1.00
Jan-76	0	6.25	6.00	5.00	1.75	0.25	0.00	1.25
Feb-76	0	32.75	33.75	33.50	32.25	34.50	30.75	40.25
Mar-76	0	5.00	5.25	5.00	4.50	4.50	3.75	6.75
Apr-76	0	5.50	5.75	5.00	4.00	3.50	2.25	5.75
May-76	0	6.00	6.00	5.00	3.00	1.50	0.25	1.75
Jun-76	0	57.75	57.75	54.75	47.00	41.75	35.75	34.75
Jul-76	0	49.50	49.50	48.25	44.00	41.25	37.00	36.50
Aug-76	0	41.50	41.25	39.75	34.25	30.75	25.25	24.50
Sep-76	0	40.50	40.00	35.25	18.25	9.75	0.25	0.00
Oct-76	0	17.00	17.00	15.00	6.50	1.25	0.00	0.00
Nov-76	0	6.00	6.00	5.00	1.50	0.00	0.00	0.00
Dec-76	0	6.00	6.00	5.00	1.75	0.00	0.00	0.00
Jan-77	0	6.00	6.00	5.00	2.00	0.25	0.00	0.75
Feb-77	0	6.75	6.75	5.50	2.50	0.50	0.00	1.00
Mar-77	0	6.00	6.00	5.00	2.50	0.75	0.00	1.25
Apr-77	0	3.50	3.50	2.50	0.75	0.00	0.00	0.00
May-77	0	3.50	3.50	2.50	0.50	0.00	0.00	1.00
Jun-77	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Jul-77	0	44.75	44.50	39.25	23.50	15.00	1.25	0.00
Aug-77	0	3.50	3.25	2.50	0.00	0.00	0.00	0.00
Sep-77	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Oct-77	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Nov-77	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Dec-77	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Jan-78	0	2.00	11.25	24.75	52.00	86.25	85.50	155.25
Feb-78	0	149.00	187.50	249.25	435.75	693.50	923.50	1197.00
Mar-78	1	2331.75	2368.25	2428.25	2661.50	2950.75	3269.00	3464.50
Apr-78	1	581.50	592.75	612.00	675.00	753.25	842.75	910.75
May-78	1	118.25	120.75	124.50	138.00	155.50	178.50	194.00
Jun-78	1	16.25	17.50	19.00	24.25	30.00	36.50	43.25
Jul-78	1	9.50	10.00	10.25	10.00	11.50	12.50	17.00
Aug-78	1	15.00	15.25	14.25	10.00	9.25	7.25	10.00
Sep-78	1	18.00	18.00	16.50	10.00	7.25	2.75	4.00
Oct-78	0	5.75	5.75	5.00	1.75	0.50	0.00	2.50
Nov-78	0	6.00	6.00	5.00	1.75	0.50	0.00	2.75
Dec-78	0	5.50	5.75	5.00	2.50	2.00	0.25	3.00
Jan-79	0	2.75	5.00	8.25	16.00	29.00	37.00	54.50
Feb-79	0	5.25	10.50	18.00	39.50	70.75	97.25	135.75

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Mar-79	0	339.25	344.50	350.25	371.00	401.75	431.25	474.75
Apr-79	1	181.50	185.00	190.75	210.75	234.75	266.00	282.50
May-79	1	17.75	18.75	20.00	24.50	30.25	38.25	45.25
Jun-79	1	19.25	19.75	19.50	19.00	18.75	18.50	23.25
Jul-79	1	15.00	15.00	14.00	10.00	7.75	4.75	6.25
Aug-79	1	18.50	18.25	16.75	10.00	6.75	2.25	2.50
Sep-79	1	19.75	19.50	17.75	10.00	6.00	1.00	1.00
Oct-79	0	14.00	14.00	12.25	6.00	2.75	0.00	0.25
Nov-79	0	11.00	11.00	9.50	4.50	1.50	0.00	0.25
Dec-79	0	5.75	5.75	5.00	2.25	0.50	0.00	1.25
Jan-80	0	2.75	4.50	6.75	13.00	23.25	28.25	38.50
Feb-80	0	1150.00	1175.50	1213.00	1357.50	1548.75	1738.00	1888.75
Mar-80	1	652.75	664.50	684.75	753.00	837.00	933.75	1001.75
Apr-80	1	115.25	117.50	120.25	131.00	144.00	162.50	175.25
May-80	1	16.75	18.25	20.00	27.25	34.00	42.50	49.25
Jun-80	1	18.00	18.75	19.00	20.25	21.25	22.25	27.00
Jul-80	1	14.00	14.00	13.25	10.00	8.25	5.75	8.25
Aug-80	1	18.50	18.25	16.50	10.00	7.00	3.00	3.25
Sep-80	1	19.50	19.50	17.50	10.00	6.50	1.50	1.75
Oct-80	0	7.25	7.00	5.75	1.50	0.00	0.00	0.25
Nov-80	0	7.25	7.25	5.75	1.50	0.00	0.00	0.25
Dec-80	0	6.25	6.25	5.00	1.50	0.00	0.00	1.00
Jan-81	0	4.75	5.25	5.00	3.75	4.50	2.25	6.50
Feb-81	0	4.50	5.25	5.50	6.50	9.75	10.75	15.50
Mar-81	0	30.75	39.25	51.50	89.00	143.25	190.25	249.75
Apr-81	0	2.75	4.00	5.50	10.50	17.50	25.50	34.00
May-81	0	4.75	5.25	5.00	4.75	5.75	7.50	10.75
Jun-81	0	5.75	6.00	5.00	3.25	2.75	2.50	4.00
Jul-81	0	7.00	6.75	5.25	1.50	0.25	0.00	0.50
Aug-81	0	20.00	19.75	16.25	5.25	1.25	0.00	0.25
Sep-81	0	38.50	38.25	34.75	20.00	11.50	0.25	0.00
Oct-81	0	25.25	25.00	23.00	13.75	6.75	0.00	0.00
Nov-81	0	12.75	12.50	11.50	7.25	3.75	0.00	0.00
Dec-81	0	5.75	5.75	5.00	2.25	0.50	0.00	0.75
Jan-82	0	5.50	5.50	5.00	3.25	2.00	0.00	2.25
Feb-82	0	6.25	6.25	5.50	3.75	2.75	0.50	1.75
Mar-82	0	30.75	31.75	31.75	34.75	39.25	41.25	43.75
Apr-82	0	2.75	5.75	10.00	27.00	49.00	72.50	83.25
May-82	0	4.75	5.00	5.00	5.50	6.50	8.00	9.50
Jun-82	0	6.25	6.25	5.00	2.25	0.75	0.00	0.50
Jul-82	0	59.75	59.50	56.25	46.50	41.25	34.00	32.75
Aug-82	0	49.50	49.50	48.25	43.25	40.00	34.75	34.25
Sep-82	0	51.00	51.00	49.50	43.00	39.00	32.75	32.00
Oct-82	0	6.75	6.50	5.00	0.25	0.00	0.00	0.00
Nov-82	0	6.25	6.25	5.00	1.50	1.00	0.00	1.00
Dec-82	0	2.50	6.00	10.25	27.25	48.75	65.25	70.50
Jan-83	0	204.75	222.50	249.00	324.00	434.50	527.00	667.00
Feb-83	1	1008.50	1032.75	1072.75	1195.50	1354.75	1512.50	1686.00
Mar-83	1	3169.00	3194.00	3236.00	3430.50	3549.00	3638.50	3800.25
Apr-83	1	933.75	948.25	972.50	1060.50	1126.00	1169.50	1257.25
May-83	1	469.50	477.75	491.00	544.00	591.50	635.50	666.75
Jun-83	1	83.00	85.75	89.75	103.00	122.25	145.50	160.00
Jul-83	1	7.75	9.00	10.00	12.50	17.50	22.50	30.50
Aug-83	1	10.00	10.50	10.75	10.00	12.75	14.50	19.25
Sep-83	1	14.75	15.00	14.00	10.00	9.75	8.25	11.25
Oct-83	0	4.00	4.75	5.00	4.75	7.75	9.25	13.75
Nov-83	0	5.50	5.75	5.00	3.00	2.75	1.50	6.25
Dec-83	0	210.25	213.00	213.75	215.00	226.25	233.25	255.75
Jan-84	0	77.00	78.50	80.25	86.25	92.75	102.25	110.75
Feb-84	0	28.25	29.25	30.25	34.75	39.50	47.75	53.25
Mar-84	0	7.00	7.50	8.25	11.50	15.25	21.75	25.25
Apr-84	1	33.25	33.75	33.00	33.50	32.75	34.00	37.50
May-84	1	22.50	22.75	21.75	20.00	17.75	17.25	18.75
Jun-84	1	24.25	24.25	22.75	19.00	16.00	14.50	15.00
Jul-84	1	16.25	16.25	14.75	10.00	7.25	4.50	4.00
Aug-84	1	19.00	19.00	17.00	10.00	6.75	2.25	1.75
Sep-84	1	20.50	20.25	18.00	10.00	6.00	0.75	0.25

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1)] in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
MONTH	Indicator that 3A2 in effect (1=yes)	Cachuma Total Discharges Downstream cfs	Santa Ynez River Below Hilton Creek cfs	Santa Ynez River at 154 Bridge cfs	Santa Ynez River above Alisal Bridge cfs	Santa Ynez River near Buellton cfs	Santa Ynez River above Salsipuedes Creek Confluence cfs	Santa Ynez River at Lompoc Narrows cfs
Oct-84	0	17.25	17.00	14.25	5.00	1.00	0.00	0.00
Nov-84	0	11.50	11.25	10.00	5.00	2.00	0.00	0.25
Dec-84	0	4.50	5.00	5.00	3.75	4.00	1.25	6.25
Jan-85	0	5.75	5.75	5.00	2.75	1.75	0.25	1.50
Feb-85	0	5.75	6.00	5.50	4.25	4.25	2.75	6.00
Mar-85	0	5.25	5.50	5.00	4.00	3.75	3.00	6.00
Apr-85	0	6.00	6.00	5.00	3.25	2.50	1.75	3.00
May-85	0	6.25	6.25	5.00	2.50	1.00	0.00	0.00
Jun-85	0	57.75	57.50	54.25	46.00	41.00	35.25	34.00
Jul-85	0	49.25	49.25	48.00	43.50	41.00	37.00	36.50
Aug-85	0	11.25	11.25	9.25	3.25	0.75	0.00	0.00
Sep-85	0	38.00	37.75	33.25	16.75	9.00	0.00	0.00
Oct-85	0	18.25	18.25	16.00	7.25	2.25	0.00	0.00
Nov-85	0	6.00	6.00	5.00	1.75	0.00	0.00	0.00
Dec-85	0	3.25	3.25	2.50	0.50	0.00	0.00	0.50
Jan-86	0	2.50	2.75	2.50	1.50	1.50	0.00	1.75
Feb-86	0	2.50	13.75	31.50	78.50	143.25	185.75	271.50
Mar-86	1	23.50	33.00	48.00	84.50	135.75	172.25	262.25
Apr-86	1	31.75	32.75	33.00	36.00	40.00	46.00	53.00
May-86	1	19.50	20.00	20.00	20.75	20.75	20.50	25.25
Jun-86	1	23.25	23.25	22.25	19.00	17.25	17.00	18.50
Jul-86	1	16.50	16.50	15.00	10.00	7.25	4.25	4.00
Aug-86	1	19.25	19.00	17.00	10.00	6.50	2.00	1.50
Sep-86	1	20.50	20.50	18.25	10.00	5.75	0.75	0.25
Oct-86	0	18.00	18.00	15.00	5.50	1.25	0.00	0.00
Nov-86	0	6.25	6.00	5.00	1.50	0.00	0.00	0.25
Dec-86	0	6.00	6.00	5.00	1.75	0.25	0.00	1.00
Jan-87	0	5.75	5.75	5.00	2.75	1.25	0.00	2.50
Feb-87	0	6.75	6.75	5.50	2.50	0.75	0.00	1.25
Mar-87	0	30.75	31.75	31.50	30.75	31.25	26.25	38.00
Apr-87	0	6.00	6.00	5.00	3.25	1.75	0.50	1.75
May-87	0	6.00	6.00	5.00	2.75	1.00	0.00	0.50
Jun-87	0	6.25	6.25	5.00	2.00	0.50	0.00	0.00
Jul-87	0	6.50	6.50	5.00	1.00	0.00	0.00	0.00
Aug-87	0	33.00	32.75	28.25	13.75	7.00	0.00	0.00
Sep-87	0	30.75	30.50	27.50	15.00	7.50	0.00	0.00
Oct-87	0	6.00	5.75	5.00	1.25	0.00	0.00	0.00
Nov-87	0	6.25	6.25	5.00	1.00	0.00	0.00	0.00
Dec-87	0	6.25	6.00	5.00	1.50	0.00	0.00	0.25
Jan-88	0	5.25	5.50	5.00	3.00	2.25	0.00	1.75
Feb-88	0	6.25	6.25	5.25	2.75	1.25	0.00	1.00
Mar-88	0	30.50	31.25	31.00	32.75	38.25	38.75	38.50
Apr-88	0	5.00	5.25	5.00	5.00	5.75	5.25	7.00
May-88	0	5.75	5.75	5.00	3.00	1.75	0.00	1.50
Jun-88	0	58.50	58.25	55.50	47.50	42.25	34.50	33.25
Jul-88	0	3.50	3.25	2.50	0.00	0.00	0.00	0.00
Aug-88	0	32.50	32.25	28.25	14.00	7.00	0.00	0.00
Sep-88	0	39.50	39.25	36.00	22.00	12.75	0.75	0.00
Oct-88	0	5.00	5.00	4.25	1.00	0.00	0.00	0.00
Nov-88	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Dec-88	0	3.50	3.50	2.50	0.00	0.00	0.00	0.00
Jan-89	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Feb-89	0	3.75	3.75	2.75	0.75	0.25	0.00	0.00
Mar-89	0	3.50	3.50	2.50	0.25	0.00	0.00	0.00
Apr-89	0	3.75	3.75	2.50	0.25	0.00	0.00	0.00
May-89	0	3.75	3.75	2.50	0.25	0.00	0.00	0.00
Jun-89	0	15.00	14.75	12.25	6.25	3.00	0.00	0.00
Jul-89	0	36.50	36.00	31.75	17.75	10.25	0.50	0.00
Aug-89	0	11.50	11.25	9.75	4.00	0.75	0.00	0.00
Sep-89	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Oct-89	0	4.00	3.75	2.50	0.00	0.00	0.00	0.00
Nov-89	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Dec-89	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Jan-90	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Feb-90	0	4.50	4.50	2.75	0.00	0.00	0.00	0.00
Mar-90	0	4.00	4.00	2.50	0.00	0.00	0.00	0.00
Apr-90	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00

1) Rounded to nearest 0.25 cfs

Table A-2								
Simulated Monthly Average Flows[1] in Santa Ynez River under Alternative 5C								
Based on SYRHM , WY 1918-1993								
	Indicator	Cachuma	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River	Santa Ynez River
	that 3A2	Total Discharges	Below	at 154	above Alisal	near	above Salsipuedes	at Lompoc
MONTH	in effect	Downstream	Hilton Creek	Bridge	Bridge	Buellton	Creek Confluence	Narrows
	(1=yes)	cfs	cfs	cfs	cfs	cfs	cfs	cfs
May-90	0	22.50	22.25	18.00	5.00	0.50	0.00	0.00
Jun-90	0	3.75	3.50	2.50	0.00	0.00	0.00	0.00
Jul-90	0	8.00	7.75	6.00	0.25	0.00	0.00	0.00
Aug-90	0	5.25	5.00	3.50	0.00	0.00	0.00	0.00
Sep-90	0	5.25	5.00	3.25	0.00	0.00	0.00	0.00
Oct-90	0	7.25	7.00	5.00	0.00	0.00	0.00	0.00
Nov-90	0	5.50	5.25	3.50	0.00	0.00	0.00	0.00
Dec-90	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Jan-91	0	4.25	4.00	2.50	0.00	0.00	0.00	0.00
Feb-91	0	4.50	4.50	2.75	0.00	0.00	0.00	0.00
Mar-91	0	2.00	11.50	25.75	57.25	110.25	146.25	208.25
Apr-91	1	31.75	33.25	33.25	33.00	41.50	40.50	38.25
May-91	1	25.50	26.00	24.75	20.00	19.00	14.75	11.75
Jun-91	1	33.25	33.00	30.25	19.00	11.75	3.00	0.00
Jul-91	1	26.00	25.75	23.50	13.25	6.50	0.00	0.00
Aug-91	1	39.75	39.50	36.75	22.75	13.00	1.25	0.00
Sep-91	1	18.50	18.50	17.00	10.00	4.75	0.00	0.00
Oct-91	0	5.50	5.25	4.25	0.50	0.00	0.00	0.00
Nov-91	0	3.75	3.75	2.50	0.00	0.00	0.00	0.00
Dec-91	0	3.25	3.50	2.50	0.25	0.00	0.00	0.00
Jan-92	0	2.00	2.50	2.50	2.00	3.25	1.25	0.25
Feb-92	0	2.25	18.00	42.75	127.25	244.00	352.00	430.50
Mar-92	1	38.00	42.50	48.00	69.75	100.25	133.50	152.25
Apr-92	1	29.00	31.00	33.00	43.75	57.25	75.50	78.75
May-92	1	19.25	19.75	20.00	22.00	25.00	30.25	33.25
Jun-92	1	21.75	22.00	21.25	19.00	18.50	19.50	20.75
Jul-92	1	15.75	15.75	14.50	10.00	7.25	4.25	5.50
Aug-92	1	65.75	65.50	62.75	51.00	44.00	34.00	32.50
Sep-92	1	51.00	51.00	49.75	44.50	40.75	35.25	34.50
Oct-92	0	16.50	16.25	14.50	7.50	3.50	0.00	0.00
Nov-92	0	50.75	50.75	49.25	44.00	40.25	34.50	33.25
Dec-92	0	6.00	6.00	5.00	2.00	0.50	0.00	2.50
Jan-93	0	328.25	340.25	356.25	419.25	511.75	605.50	661.50
Feb-93	1	2026.25	2050.50	2091.75	2237.50	2418.25	2619.50	2755.50
Mar-93	1	1050.00	1063.50	1086.25	1178.75	1285.50	1412.50	1465.50
Apr-93	1	476.00	482.25	491.75	532.50	583.75	651.00	670.75
May-93	1	100.75	103.25	106.75	121.00	135.00	151.25	160.00
Jun-93	1	16.25	17.50	19.00	25.00	31.00	37.00	42.00
Jul-93	1	10.25	10.75	10.50	10.00	10.50	9.75	12.75
Aug-93	1	15.75	15.75	14.75	10.00	9.00	7.00	8.00
Sep-93	1	19.00	18.75	17.00	10.00	7.00	2.50	2.00

1) Rounded to nearest 0.25 cfs

Appendix B

Table B-1
Simulated End-of-Month Storage, Elevation, and Surcharge
in Cachuma Reservoir Under Alterantive 5B
Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-17	173,182	744.95	0.00		Oct-22	168,979	743.44	0.00
Nov-17	171,008	744.17	0.00		Nov-22	167,657	742.96	0.00
Dec-17	169,056	743.47	0.00		Dec-22	173,220	744.96	0.00
Jan-18	167,446	742.89	0.00		Jan-23	174,527	745.42	0.00
Feb-18	193,585	751.80	1.80		Feb-23	175,061	745.60	0.00
Mar-18	193,585	751.80	1.80		Mar-23	172,939	744.86	0.00
Apr-18	193,585	751.80	1.80		Apr-23	171,065	744.19	0.00
May-18	193,585	751.80	1.80		May-23	167,658	742.96	0.00
Jun-18	192,606	751.48	1.48		Jun-23	163,681	741.50	0.00
Jul-18	187,091	749.69	0.00		Jul-23	158,580	739.60	0.00
Aug-18	181,534	747.83	0.00		Aug-23	149,389	736.06	0.00
Sep-18	177,486	746.45	0.00		Sep-23	143,001	733.50	0.00
Oct-18	173,699	745.13	0.00		Oct-23	137,733	731.33	0.00
Nov-18	172,967	744.87	0.00		Nov-23	135,661	730.46	0.00
Dec-18	171,991	744.52	0.00		Dec-23	134,492	729.97	0.00
Jan-19	171,014	744.17	0.00		Jan-24	133,175	729.41	0.00
Feb-19	170,656	744.05	0.00		Feb-24	131,848	728.85	0.00
Mar-19	168,677	743.33	0.00		Mar-24	132,595	729.17	0.00
Apr-19	165,169	742.05	0.00		Apr-24	130,164	728.12	0.00
May-19	161,485	740.69	0.00		May-24	126,415	726.49	0.00
Jun-19	156,887	738.96	0.00		Jun-24	121,971	724.51	0.00
Jul-19	147,642	735.37	0.00		Jul-24	116,754	722.13	0.00
Aug-19	142,829	733.43	0.00		Aug-24	109,935	718.91	0.00
Sep-19	136,823	730.95	0.00		Sep-24	104,465	716.23	0.00
Oct-19	132,982	729.33	0.00		Oct-24	100,759	714.36	0.00
Nov-19	130,937	728.46	0.00		Nov-24	98,885	713.40	0.00
Dec-19	130,614	728.32	0.00		Dec-24	97,949	712.91	0.00
Jan-20	129,099	727.66	0.00		Jan-25	96,696	712.26	0.00
Feb-20	130,456	728.25	0.00		Feb-25	95,570	711.67	0.00
Mar-20	139,478	732.05	0.00		Mar-25	95,015	711.37	0.00
Apr-20	141,408	732.85	0.00		Apr-25	95,107	711.42	0.00
May-20	138,600	731.69	0.00		May-25	92,392	709.97	0.00
Jun-20	134,606	730.02	0.00		Jun-25	88,677	707.94	0.00
Jul-20	125,570	726.12	0.00		Jul-25	82,694	704.55	0.00
Aug-20	121,058	724.10	0.00		Aug-25	75,751	700.45	0.00
Sep-20	114,637	721.14	0.00		Sep-25	72,193	698.24	0.00
Oct-20	110,625	719.24	0.00		Oct-25	70,094	696.90	0.00
Nov-20	108,351	718.14	0.00		Nov-25	68,588	695.93	0.00
Dec-20	107,160	717.56	0.00		Dec-25	67,395	695.15	0.00
Jan-21	107,999	717.97	0.00		Jan-26	66,432	694.52	0.00
Feb-21	108,587	718.26	0.00		Feb-26	69,159	696.30	0.00
Mar-21	110,545	719.20	0.00		Mar-26	69,786	696.70	0.00
Apr-21	108,647	718.29	0.00		Apr-26	130,882	728.43	0.00
May-21	106,090	717.04	0.00		May-26	131,842	728.84	0.00
Jun-21	102,733	715.36	0.00		Jun-26	127,518	726.98	0.00
Jul-21	97,989	712.94	0.00		Jul-26	121,406	724.25	0.00
Aug-21	88,683	707.94	0.00		Aug-26	115,192	721.40	0.00
Sep-21	83,439	704.98	0.00		Sep-26	109,371	718.64	0.00
Oct-21	78,700	702.22	0.00		Oct-26	102,503	715.25	0.00
Nov-21	76,459	700.88	0.00		Nov-26	104,742	716.37	0.00
Dec-21	96,400	712.10	0.00		Dec-26	105,378	716.68	0.00
Jan-22	112,914	720.33	0.00		Jan-27	106,940	717.45	0.00
Feb-22	171,814	744.46	0.00		Feb-27	188,056	750.01	0.01
Mar-22	193,585	751.80	1.80		Mar-27	193,585	751.80	1.80
Apr-22	193,585	751.80	1.80		Apr-27	193,585	751.80	1.80
May-22	193,585	751.80	1.80		May-27	191,010	750.97	0.97
Jun-22	189,334	750.42	0.42		Jun-27	186,296	749.43	0.00
Jul-22	183,123	748.37	0.00		Jul-27	180,022	747.32	0.00
Aug-22	177,454	746.44	0.00		Aug-27	174,321	745.35	0.00
Sep-22	172,686	744.77	0.00		Sep-27	169,529	743.64	0.00

Table B-1
Simulated End-of-Month Storage, Elevation, and Surcharge
in Cachuma Reservoir Under Alterantive 5B
Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-27	166,554	742.56	0.00		Oct-32	113,705	720.70	0.00
Nov-27	164,806	741.92	0.00		Nov-32	112,061	719.93	0.00
Dec-27	164,067	741.65	0.00		Dec-32	110,520	719.19	0.00
Jan-28	162,603	741.11	0.00		Jan-33	118,619	722.99	0.00
Feb-28	169,335	743.57	0.00		Feb-33	120,616	723.90	0.00
Mar-28	170,775	744.09	0.00		Mar-33	119,578	723.42	0.00
Apr-28	167,555	742.93	0.00		Apr-33	117,274	722.37	0.00
May-28	163,851	741.57	0.00		May-33	113,582	720.65	0.00
Jun-28	159,735	740.04	0.00		Jun-33	105,922	716.95	0.00
Jul-28	150,706	736.58	0.00		Jul-33	98,099	712.99	0.00
Aug-28	142,957	733.48	0.00		Aug-33	90,989	709.21	0.00
Sep-28	136,417	730.78	0.00		Sep-33	85,546	706.18	0.00
Oct-28	131,036	728.50	0.00		Oct-33	83,188	704.84	0.00
Nov-28	129,928	728.02	0.00		Nov-33	81,397	703.80	0.00
Dec-28	129,298	727.75	0.00		Dec-33	80,853	703.49	0.00
Jan-29	128,274	727.30	0.00		Jan-34	93,084	710.34	0.00
Feb-29	128,567	727.43	0.00		Feb-34	97,139	712.49	0.00
Mar-29	128,767	727.52	0.00		Mar-34	96,810	712.32	0.00
Apr-29	127,602	727.01	0.00		Apr-34	94,096	710.88	0.00
May-29	124,240	725.53	0.00		May-34	90,478	708.93	0.00
Jun-29	116,279	721.91	0.00		Jun-34	82,757	704.59	0.00
Jul-29	108,621	718.27	0.00		Jul-34	75,986	700.59	0.00
Aug-29	102,626	715.31	0.00		Aug-34	69,287	696.38	0.00
Sep-29	96,853	712.34	0.00		Sep-34	63,667	692.67	0.00
Oct-29	92,834	710.21	0.00		Oct-34	61,725	691.34	0.00
Nov-29	90,761	709.08	0.00		Nov-34	60,340	690.37	0.00
Dec-29	89,365	708.32	0.00		Dec-34	59,341	689.67	0.00
Jan-30	88,739	707.97	0.00		Jan-35	71,800	697.99	0.00
Feb-30	87,307	707.17	0.00		Feb-35	74,070	699.41	0.00
Mar-30	90,922	709.17	0.00		Mar-35	82,401	704.38	0.00
Apr-30	88,793	708.00	0.00		Apr-35	97,601	712.73	0.00
May-30	85,729	706.29	0.00		May-35	96,907	712.37	0.00
Jun-30	81,940	704.12	0.00		Jun-35	92,696	710.13	0.00
Jul-30	76,096	700.66	0.00		Jul-35	86,857	706.92	0.00
Aug-30	70,248	697.00	0.00		Aug-35	77,456	701.48	0.00
Sep-30	67,279	695.08	0.00		Sep-35	71,740	697.95	0.00
Oct-30	64,918	693.51	0.00		Oct-35	68,299	695.74	0.00
Nov-30	63,515	692.57	0.00		Nov-35	66,023	694.25	0.00
Dec-30	62,307	691.74	0.00		Dec-35	64,916	693.51	0.00
Jan-31	61,696	691.32	0.00		Jan-36	63,499	692.56	0.00
Feb-31	60,872	690.75	0.00		Feb-36	86,832	706.91	0.00
Mar-31	59,147	689.53	0.00		Mar-36	90,607	709.00	0.00
Apr-31	57,118	688.07	0.00		Apr-36	92,394	709.97	0.00
May-31	53,461	685.35	0.00		May-36	89,439	708.36	0.00
Jun-31	50,456	683.05	0.00		Jun-36	85,626	706.23	0.00
Jul-31	47,230	680.47	0.00		Jul-36	80,963	703.55	0.00
Aug-31	44,028	677.82	0.00		Aug-36	74,098	699.43	0.00
Sep-31	41,523	675.66	0.00		Sep-36	70,610	697.23	0.00
Oct-31	39,648	674.00	0.00		Oct-36	68,522	695.89	0.00
Nov-31	38,782	673.21	0.00		Nov-36	66,999	694.89	0.00
Dec-31	46,267	679.69	0.00		Dec-36	70,175	696.95	0.00
Jan-32	52,027	684.26	0.00		Jan-37	75,864	700.51	0.00
Feb-32	139,788	732.18	0.00		Feb-37	143,641	733.76	0.00
Mar-32	148,479	735.70	0.00		Mar-37	193,585	751.80	1.80
Apr-32	145,587	734.55	0.00		Apr-37	193,585	751.80	1.80
May-32	140,802	732.60	0.00		May-37	193,585	751.80	1.80
Jun-32	135,760	730.50	0.00		Jun-37	190,129	750.68	0.68
Jul-32	129,418	727.80	0.00		Jul-37	184,024	748.67	0.00
Aug-32	122,959	724.96	0.00		Aug-37	178,289	746.72	0.00
Sep-32	116,898	722.19	0.00		Sep-37	173,448	745.04	0.00

Table B-1 Simulated End-of-Month Storage, Elevation, and Surcharge in Cachuma Reservoir Under Alterantive 5B Based on SYRHM, WY 1918-1993								
Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-37	169,647	743.68	0.00		Oct-42	170,911	744.14	0.00
Nov-37	166,766	742.64	0.00		Nov-42	168,932	743.42	0.00
Dec-37	166,526	742.55	0.00		Dec-42	167,433	742.88	0.00
Jan-38	165,391	742.13	0.00		Jan-43	193,585	751.80	1.80
Feb-38	193,585	751.80	1.80		Feb-43	193,585	751.80	1.80
Mar-38	193,585	751.80	1.80		Mar-43	193,585	751.80	1.80
Apr-38	193,585	751.80	1.80		Apr-43	193,585	751.80	1.80
May-38	193,585	751.80	1.80		May-43	193,293	751.71	1.71
Jun-38	191,181	751.03	1.03		Jun-43	189,250	750.40	0.40
Jul-38	185,932	749.31	0.00		Jul-43	183,357	748.45	0.00
Aug-38	180,345	747.43	0.00		Aug-43	177,857	746.58	0.00
Sep-38	175,790	745.86	0.00		Sep-43	173,296	744.99	0.00
Oct-38	172,089	744.56	0.00		Oct-43	169,810	743.74	0.00
Nov-38	170,156	743.87	0.00		Nov-43	167,923	743.06	0.00
Dec-38	170,311	743.92	0.00		Dec-43	167,752	743.00	0.00
Jan-39	172,931	744.86	0.00		Jan-44	167,675	742.97	0.00
Feb-39	175,206	745.66	0.00		Feb-44	193,585	751.80	1.80
Mar-39	182,335	748.10	0.00		Mar-44	193,585	751.80	1.80
Apr-39	180,360	747.43	0.00		Apr-44	193,585	751.80	1.80
May-39	176,929	746.26	0.00		May-44	192,542	751.46	1.46
Jun-39	172,457	744.69	0.00		Jun-44	188,492	750.15	0.15
Jul-39	163,411	741.40	0.00		Jul-44	182,435	748.14	0.00
Aug-39	155,566	738.46	0.00		Aug-44	176,797	746.21	0.00
Sep-39	149,072	735.94	0.00		Sep-44	172,080	744.55	0.00
Oct-39	146,486	734.91	0.00		Oct-44	168,336	743.21	0.00
Nov-39	144,452	734.09	0.00		Nov-44	168,358	743.22	0.00
Dec-39	143,021	733.51	0.00		Dec-44	167,392	742.87	0.00
Jan-40	143,705	733.79	0.00		Jan-45	166,432	742.51	0.00
Feb-40	148,912	735.87	0.00		Feb-45	187,247	749.74	0.00
Mar-40	151,229	736.78	0.00		Mar-45	193,585	751.80	1.80
Apr-40	150,491	736.49	0.00		Apr-45	193,585	751.80	1.80
May-40	146,937	735.09	0.00		May-45	190,688	750.86	0.86
Jun-40	142,979	733.49	0.00		Jun-45	185,589	749.19	0.00
Jul-40	133,838	729.69	0.00		Jul-45	179,075	747.00	0.00
Aug-40	126,311	726.44	0.00		Aug-45	173,135	744.93	0.00
Sep-40	120,844	724.00	0.00		Sep-45	167,326	742.84	0.00
Oct-40	117,003	722.24	0.00		Oct-45	163,653	741.49	0.00
Nov-40	115,477	721.53	0.00		Nov-45	161,364	740.64	0.00
Dec-40	119,845	723.55	0.00		Dec-45	169,184	743.52	0.00
Jan-41	147,446	735.29	0.00		Jan-46	168,926	743.42	0.00
Feb-41	193,585	751.80	1.80		Feb-46	169,980	743.80	0.00
Mar-41	193,585	751.80	1.80		Mar-46	186,714	749.56	0.00
Apr-41	193,585	751.80	1.80		Apr-46	193,520	751.78	1.78
May-41	193,585	751.80	1.80		May-46	190,291	750.74	0.74
Jun-41	193,585	751.80	1.80		Jun-46	184,618	748.87	0.00
Jul-41	191,089	751.00	1.00		Jul-46	174,606	745.44	0.00
Aug-41	187,026	749.67	0.00		Aug-46	166,667	742.60	0.00
Sep-41	183,472	748.49	0.00		Sep-46	159,997	740.13	0.00
Oct-41	180,787	747.58	0.00		Oct-46	154,497	738.05	0.00
Nov-41	179,626	747.18	0.00		Nov-46	156,051	738.64	0.00
Dec-41	185,562	749.18	0.00		Dec-46	161,273	740.61	0.00
Jan-42	189,931	750.62	0.62		Jan-47	162,370	741.02	0.00
Feb-42	191,420	751.10	1.10		Feb-47	161,991	740.88	0.00
Mar-42	193,585	751.80	1.80		Mar-47	161,383	740.65	0.00
Apr-42	193,585	751.80	1.80		Apr-47	158,548	739.59	0.00
May-42	192,343	751.40	1.40		May-47	151,189	736.77	0.00
Jun-42	188,737	750.23	0.23		Jun-47	144,451	734.09	0.00
Jul-42	183,424	748.47	0.00		Jul-47	136,398	730.77	0.00
Aug-42	178,407	746.77	0.00		Aug-47	128,681	727.48	0.00
Sep-42	173,377	745.01	0.00		Sep-47	122,174	724.60	0.00

Table B-1 Simulated End-of-Month Storage, Elevation, and Surcharge in Cachuma Reservoir Under Alterantive 5B Based on SYRHM, WY 1918-1993								
Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-47	116,893	722.19	0.00		Oct-52	170,247	743.90	0.00
Nov-47	113,830	720.76	0.00		Nov-52	169,773	743.73	0.00
Dec-47	112,830	720.29	0.00		Dec-52	172,000	744.52	0.00
Jan-48	111,621	719.72	0.00		Jan-53	177,527	746.46	0.00
Feb-48	110,768	719.31	0.00		Feb-53	176,429	746.08	0.00
Mar-48	109,657	718.77	0.00		Mar-53	175,267	745.68	0.00
Apr-48	107,540	717.75	0.00		Apr-53	172,954	744.86	0.00
May-48	104,199	716.10	0.00		May-53	169,203	743.52	0.00
Jun-48	99,227	713.57	0.00		Jun-53	164,890	741.95	0.00
Jul-48	93,266	710.44	0.00		Jul-53	155,691	738.51	0.00
Aug-48	88,858	708.04	0.00		Aug-53	147,917	735.48	0.00
Sep-48	85,324	706.06	0.00		Sep-53	141,974	733.08	0.00
Oct-48	82,723	704.57	0.00		Oct-53	137,229	731.12	0.00
Nov-48	80,909	703.52	0.00		Nov-53	136,112	730.65	0.00
Dec-48	80,141	703.07	0.00		Dec-53	134,520	729.98	0.00
Jan-49	79,141	702.48	0.00		Jan-54	136,792	730.94	0.00
Feb-49	78,033	701.82	0.00		Feb-54	139,032	731.87	0.00
Mar-49	76,892	701.14	0.00		Mar-54	144,181	733.98	0.00
Apr-49	72,997	698.74	0.00		Apr-54	145,846	734.65	0.00
May-49	68,613	695.94	0.00		May-54	142,590	733.33	0.00
Jun-49	65,141	693.66	0.00		Jun-54	138,260	731.55	0.00
Jul-49	61,392	691.11	0.00		Jul-54	128,899	727.58	0.00
Aug-49	57,656	688.46	0.00		Aug-54	121,437	724.27	0.00
Sep-49	54,778	686.34	0.00		Sep-54	114,949	721.29	0.00
Oct-49	52,628	684.72	0.00		Oct-54	110,495	719.18	0.00
Nov-49	51,324	683.72	0.00		Nov-54	108,412	718.17	0.00
Dec-49	50,356	682.97	0.00		Dec-54	107,645	717.80	0.00
Jan-50	49,487	682.28	0.00		Jan-55	107,556	717.75	0.00
Feb-50	50,470	683.06	0.00		Feb-55	107,111	717.54	0.00
Mar-50	47,423	680.63	0.00		Mar-55	105,737	716.86	0.00
Apr-50	45,923	679.40	0.00		Apr-55	103,731	715.86	0.00
May-50	40,591	674.84	0.00		May-55	101,707	714.84	0.00
Jun-50	38,013	672.49	0.00		Jun-55	98,253	713.07	0.00
Jul-50	35,213	669.81	0.00		Jul-55	91,321	709.39	0.00
Aug-50	32,380	666.95	0.00		Aug-55	83,924	705.26	0.00
Sep-50	30,202	664.63	0.00		Sep-55	80,241	703.13	0.00
Oct-50	28,625	662.90	0.00		Oct-55	77,662	701.60	0.00
Nov-50	27,811	661.98	0.00		Nov-55	76,328	700.80	0.00
Dec-50	27,138	661.20	0.00		Dec-55	80,502	703.28	0.00
Jan-51	26,590	660.56	0.00		Jan-56	90,586	708.99	0.00
Feb-51	25,975	659.84	0.00		Feb-56	92,738	710.15	0.00
Mar-51	24,991	658.66	0.00		Mar-56	92,049	709.78	0.00
Apr-51	23,647	657.03	0.00		Apr-56	93,027	710.31	0.00
May-51	21,347	654.14	0.00		May-56	92,512	710.03	0.00
Jun-51	19,552	651.80	0.00		Jun-56	89,817	708.56	0.00
Jul-51	17,442	648.93	0.00		Jul-56	85,622	706.23	0.00
Aug-51	15,479	646.06	0.00		Aug-56	79,408	702.64	0.00
Sep-51	13,816	643.41	0.00		Sep-56	75,370	700.21	0.00
Oct-51	12,841	641.76	0.00		Oct-56	73,160	698.85	0.00
Nov-51	12,275	640.75	0.00		Nov-56	71,765	697.97	0.00
Dec-51	12,030	640.30	0.00		Dec-56	70,309	697.04	0.00
Jan-52	112,132	719.96	0.00		Jan-57	70,144	696.93	0.00
Feb-52	119,701	723.48	0.00		Feb-57	70,128	696.92	0.00
Mar-52	190,701	750.87	0.87		Mar-57	69,917	696.79	0.00
Apr-52	193,585	751.80	1.80		Apr-57	68,682	695.99	0.00
May-52	193,585	751.80	1.80		May-57	66,880	694.81	0.00
Jun-52	190,357	750.76	0.76		Jun-57	60,039	690.16	0.00
Jul-52	184,942	748.98	0.00		Jul-57	55,842	687.13	0.00
Aug-52	179,108	747.01	0.00		Aug-57	49,749	682.49	0.00
Sep-52	173,537	745.07	0.00		Sep-57	46,654	680.01	0.00

Table B-1 Simulated End-of-Month Storage, Elevation, and Surcharge in Cachuma Reservoir Under Alterantive 5B Based on SYRHM, WY 1918-1993								
Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-57	45,027	678.66	0.00		Oct-62	146,837	735.05	0.00
Nov-57	43,684	677.53	0.00		Nov-62	144,661	734.17	0.00
Dec-57	44,401	678.13	0.00		Dec-62	143,336	733.64	0.00
Jan-58	44,627	678.32	0.00		Jan-63	142,199	733.17	0.00
Feb-58	76,911	701.15	0.00		Feb-63	142,300	733.21	0.00
Mar-58	122,188	724.61	0.00		Mar-63	141,481	732.88	0.00
Apr-58	193,585	751.80	1.80		Apr-63	139,726	732.16	0.00
May-58	193,585	751.80	1.80		May-63	136,904	730.99	0.00
Jun-58	191,747	751.21	1.21		Jun-63	132,883	729.29	0.00
Jul-58	186,688	749.56	0.00		Jul-63	127,606	727.01	0.00
Aug-58	181,332	747.76	0.00		Aug-63	120,317	723.76	0.00
Sep-58	176,714	746.18	0.00		Sep-63	117,130	722.30	0.00
Oct-58	172,807	744.81	0.00		Oct-63	114,690	721.17	0.00
Nov-58	170,536	744.00	0.00		Nov-63	113,437	720.58	0.00
Dec-58	168,409	743.23	0.00		Dec-63	112,060	719.93	0.00
Jan-59	168,663	743.33	0.00		Jan-64	111,246	719.54	0.00
Feb-59	180,846	747.60	0.00		Feb-64	109,780	718.83	0.00
Mar-59	179,309	747.08	0.00		Mar-64	108,081	718.01	0.00
Apr-59	177,188	746.34	0.00		Apr-64	105,877	716.93	0.00
May-59	173,318	744.99	0.00		May-64	100,592	714.28	0.00
Jun-59	169,224	743.53	0.00		Jun-64	96,294	712.05	0.00
Jul-59	159,836	740.07	0.00		Jul-64	91,541	709.51	0.00
Aug-59	152,057	737.11	0.00		Aug-64	86,894	706.94	0.00
Sep-59	146,370	734.86	0.00		Sep-64	83,335	704.92	0.00
Oct-59	141,884	733.04	0.00		Oct-64	80,840	703.48	0.00
Nov-59	139,044	731.88	0.00		Nov-64	79,445	702.66	0.00
Dec-59	138,132	731.50	0.00		Dec-64	78,462	702.08	0.00
Jan-60	137,756	731.34	0.00		Jan-65	77,692	701.62	0.00
Feb-60	136,925	730.99	0.00		Feb-65	76,642	700.99	0.00
Mar-60	133,421	729.52	0.00		Mar-65	75,206	700.11	0.00
Apr-60	130,979	728.47	0.00		Apr-65	84,381	705.52	0.00
May-60	127,277	726.87	0.00		May-65	82,248	704.30	0.00
Jun-60	122,898	724.93	0.00		Jun-65	75,617	700.36	0.00
Jul-60	117,569	722.50	0.00		Jul-65	69,038	696.22	0.00
Aug-60	110,032	718.96	0.00		Aug-65	64,345	693.13	0.00
Sep-60	106,536	717.25	0.00		Sep-65	61,143	690.94	0.00
Oct-60	103,858	715.93	0.00		Oct-65	59,165	689.54	0.00
Nov-60	102,994	715.49	0.00		Nov-65	80,635	703.36	0.00
Dec-60	101,838	714.91	0.00		Dec-65	109,940	718.91	0.00
Jan-61	101,059	714.51	0.00		Jan-66	127,341	726.90	0.00
Feb-61	99,726	713.83	0.00		Feb-66	134,517	729.98	0.00
Mar-61	97,823	712.85	0.00		Mar-66	135,289	730.31	0.00
Apr-61	95,146	711.44	0.00		Apr-66	131,008	728.49	0.00
May-61	90,025	708.68	0.00		May-66	125,691	726.17	0.00
Jun-61	85,817	706.34	0.00		Jun-66	121,021	724.08	0.00
Jul-61	81,230	703.71	0.00		Jul-66	115,099	721.36	0.00
Aug-61	76,789	701.08	0.00		Aug-66	105,452	716.72	0.00
Sep-61	73,331	698.95	0.00		Sep-66	99,253	713.59	0.00
Oct-61	70,915	697.42	0.00		Oct-66	93,800	710.72	0.00
Nov-61	69,404	696.46	0.00		Nov-66	89,873	708.59	0.00
Dec-61	68,492	695.87	0.00		Dec-66	137,164	731.09	0.00
Jan-62	67,390	695.15	0.00		Jan-67	168,455	743.25	0.00
Feb-62	162,147	740.94	0.00		Feb-67	182,772	748.25	0.00
Mar-62	176,603	746.14	0.00		Mar-67	193,585	751.80	1.80
Apr-62	176,732	746.19	0.00		Apr-67	193,585	751.80	1.80
May-62	172,795	744.81	0.00		May-67	193,585	751.80	1.80
Jun-62	168,092	743.12	0.00		Jun-67	193,585	751.80	1.80
Jul-62	161,645	740.75	0.00		Jul-67	189,831	750.59	0.59
Aug-62	154,863	738.19	0.00		Aug-67	181,562	747.84	0.00
Sep-62	149,433	736.08	0.00		Sep-67	175,477	745.75	0.00

Table B-1
Simulated End-of-Month Storage, Elevation, and Surcharge
in Cachuma Reservoir Under Alterantive 5B
Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-67	172,738	744.79	0.00		Oct-72	103,031	715.51	0.00
Nov-67	171,770	744.44	0.00		Nov-72	102,724	715.36	0.00
Dec-67	170,618	744.03	0.00		Dec-72	101,617	714.80	0.00
Jan-68	169,649	743.68	0.00		Jan-73	114,342	721.00	0.00
Feb-68	169,661	743.69	0.00		Feb-73	182,566	748.18	0.00
Mar-68	171,531	744.36	0.00		Mar-73	193,585	751.80	1.80
Apr-68	168,359	743.22	0.00		Apr-73	193,585	751.80	1.80
May-68	164,887	741.95	0.00		May-73	192,769	751.54	1.54
Jun-68	157,151	739.06	0.00		Jun-73	188,462	750.14	0.14
Jul-68	152,500	737.28	0.00		Jul-73	182,247	748.07	0.00
Aug-68	146,641	734.97	0.00		Aug-73	176,464	746.09	0.00
Sep-68	140,878	732.63	0.00		Sep-73	171,724	744.43	0.00
Oct-68	137,150	731.09	0.00		Oct-73	167,970	743.08	0.00
Nov-68	134,854	730.12	0.00		Nov-73	165,510	742.18	0.00
Dec-68	133,622	729.60	0.00		Dec-73	164,810	741.92	0.00
Jan-69	193,585	751.80	1.80		Jan-74	184,788	748.93	0.00
Feb-69	193,585	751.80	1.80		Feb-74	186,257	749.41	0.00
Mar-69	193,585	751.80	1.80		Mar-74	192,887	751.58	1.58
Apr-69	193,585	751.80	1.80		Apr-74	192,369	751.41	1.41
May-69	193,585	751.80	1.80		May-74	189,196	750.38	0.38
Jun-69	193,069	751.63	1.63		Jun-74	184,073	748.69	0.00
Jul-69	188,947	750.30	0.30		Jul-74	177,350	746.40	0.00
Aug-69	184,040	748.68	0.00		Aug-74	171,520	744.35	0.00
Sep-69	179,620	747.18	0.00		Sep-74	165,506	742.18	0.00
Oct-69	175,823	745.87	0.00		Oct-74	161,666	740.76	0.00
Nov-69	174,537	745.42	0.00		Nov-74	159,957	740.12	0.00
Dec-69	173,105	744.92	0.00		Dec-74	161,574	740.72	0.00
Jan-70	173,838	745.18	0.00		Jan-75	160,649	740.38	0.00
Feb-70	176,676	746.17	0.00		Feb-75	168,157	743.14	0.00
Mar-70	191,322	751.07	1.07		Mar-75	193,585	751.80	1.80
Apr-70	187,634	749.87	0.00		Apr-75	193,585	751.80	1.80
May-70	184,026	748.67	0.00		May-75	192,405	751.42	1.42
Jun-70	180,152	747.36	0.00		Jun-75	188,063	750.01	0.01
Jul-70	171,085	744.20	0.00		Jul-75	181,814	747.93	0.00
Aug-70	163,180	741.32	0.00		Aug-75	176,167	745.99	0.00
Sep-70	158,278	739.49	0.00		Sep-75	171,448	744.33	0.00
Oct-70	154,150	737.92	0.00		Oct-75	167,844	743.03	0.00
Nov-70	155,427	738.40	0.00		Nov-75	165,853	742.30	0.00
Dec-70	166,666	742.60	0.00		Dec-75	164,043	741.64	0.00
Jan-71	172,975	744.87	0.00		Jan-76	162,100	740.92	0.00
Feb-71	174,273	745.33	0.00		Feb-76	164,677	741.87	0.00
Mar-71	174,174	745.29	0.00		Mar-76	162,305	741.00	0.00
Apr-71	171,661	744.40	0.00		Apr-76	160,200	740.21	0.00
May-71	168,879	743.40	0.00		May-76	156,622	738.86	0.00
Jun-71	161,680	740.76	0.00		Jun-76	148,875	735.86	0.00
Jul-71	153,750	737.76	0.00		Jul-76	140,874	732.63	0.00
Aug-71	145,823	734.64	0.00		Aug-76	133,225	729.43	0.00
Sep-71	140,258	732.38	0.00		Sep-76	128,148	727.25	0.00
Oct-71	136,367	730.76	0.00		Oct-76	124,657	725.71	0.00
Nov-71	134,025	729.77	0.00		Nov-76	123,051	725.00	0.00
Dec-71	142,334	733.23	0.00		Dec-76	121,761	724.42	0.00
Jan-72	143,140	733.56	0.00		Jan-77	121,467	724.28	0.00
Feb-72	142,494	733.29	0.00		Feb-77	120,054	723.64	0.00
Mar-72	140,310	732.40	0.00		Mar-77	118,424	722.90	0.00
Apr-72	137,405	731.19	0.00		Apr-77	115,751	721.66	0.00
May-72	130,198	728.14	0.00		May-77	113,006	720.37	0.00
Jun-72	123,633	725.26	0.00		Jun-77	109,067	718.49	0.00
Jul-72	118,903	723.12	0.00		Jul-77	101,193	714.58	0.00
Aug-72	112,564	720.16	0.00		Aug-77	96,482	712.15	0.00
Sep-72	106,862	717.41	0.00		Sep-77	93,023	710.31	0.00

Table B-1								
Simulated End-of-Month Storage, Elevation, and Surcharge								
in Cachuma Reservoir Under Alterantive 5B								
Based on SYRHM, WY 1918-1993								
Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-77	90,338	708.85	0.00		Oct-82	137,965	731.43	0.00
Nov-77	88,405	707.78	0.00		Nov-82	137,783	731.35	0.00
Dec-77	87,804	707.45	0.00		Dec-82	152,166	737.15	0.00
Jan-78	106,400	717.19	0.00		Jan-83	193,585	751.80	1.80
Feb-78	193,585	751.80	1.80		Feb-83	193,585	751.80	1.80
Mar-78	193,585	751.80	1.80		Mar-83	193,585	751.80	1.80
Apr-78	193,585	751.80	1.80		Apr-83	193,585	751.80	1.80
May-78	193,585	751.80	1.80		May-83	193,585	751.80	1.80
Jun-78	192,431	751.43	1.43		Jun-83	193,585	751.80	1.80
Jul-78	187,704	749.89	0.00		Jul-83	192,061	751.31	1.31
Aug-78	182,958	748.31	0.00		Aug-83	189,084	750.34	0.34
Sep-78	179,090	747.00	0.00		Sep-83	185,795	749.26	0.00
Oct-78	175,286	745.68	0.00		Oct-83	186,375	749.45	0.00
Nov-78	173,811	745.17	0.00		Nov-83	189,595	750.51	0.51
Dec-78	172,650	744.76	0.00		Dec-83	193,585	751.80	1.80
Jan-79	179,235	747.05	0.00		Jan-84	193,585	751.80	1.80
Feb-79	193,585	751.80	1.80		Feb-84	193,585	751.80	1.80
Mar-79	193,585	751.80	1.80		Mar-84	192,719	751.52	1.52
Apr-79	193,585	751.80	1.80		Apr-84	190,191	750.70	0.70
May-79	192,931	751.59	1.59		May-84	184,871	748.95	0.00
Jun-79	188,592	750.18	0.18		Jun-84	179,634	747.19	0.00
Jul-79	182,634	748.20	0.00		Jul-84	173,091	744.91	0.00
Aug-79	176,857	746.23	0.00		Aug-84	167,429	742.88	0.00
Sep-79	171,866	744.48	0.00		Sep-84	161,825	740.82	0.00
Oct-79	167,469	742.89	0.00		Oct-84	157,813	739.31	0.00
Nov-79	165,325	742.11	0.00		Nov-84	156,106	738.66	0.00
Dec-79	164,279	741.72	0.00		Dec-84	156,460	738.80	0.00
Jan-80	166,737	742.63	0.00		Jan-85	155,815	738.55	0.00
Feb-80	193,585	751.80	1.80		Feb-85	155,528	738.44	0.00
Mar-80	193,585	751.80	1.80		Mar-85	154,362	738.00	0.00
Apr-80	193,585	751.80	1.80		Apr-85	151,793	737.01	0.00
May-80	193,585	751.80	1.80		May-85	147,878	735.46	0.00
Jun-80	190,491	750.80	0.80		Jun-85	140,061	732.29	0.00
Jul-80	185,328	749.11	0.00		Jul-85	132,162	728.98	0.00
Aug-80	179,650	747.19	0.00		Aug-85	126,747	726.64	0.00
Sep-80	174,855	745.53	0.00		Sep-85	121,070	724.10	0.00
Oct-80	170,879	744.13	0.00		Oct-85	117,668	722.55	0.00
Nov-80	168,626	743.31	0.00		Nov-85	117,050	722.26	0.00
Dec-80	166,916	742.69	0.00		Dec-85	115,796	721.68	0.00
Jan-81	166,971	742.71	0.00		Jan-86	115,388	721.49	0.00
Feb-81	167,468	742.89	0.00		Feb-86	158,936	739.74	0.00
Mar-81	185,396	749.13	0.00		Mar-86	192,313	751.39	1.39
Apr-81	184,628	748.87	0.00		Apr-86	193,585	751.80	1.80
May-81	181,476	747.81	0.00		May-86	190,701	750.87	0.87
Jun-81	177,003	746.28	0.00		Jun-86	186,020	749.33	0.00
Jul-81	171,555	744.37	0.00		Jul-86	179,511	747.14	0.00
Aug-81	165,139	742.04	0.00		Aug-86	173,503	745.06	0.00
Sep-81	159,237	739.85	0.00		Sep-86	168,113	743.13	0.00
Oct-81	155,254	738.34	0.00		Oct-86	164,145	741.67	0.00
Nov-81	153,162	737.53	0.00		Nov-86	162,411	741.03	0.00
Dec-81	151,833	737.02	0.00		Dec-86	160,758	740.42	0.00
Jan-82	151,138	736.75	0.00		Jan-87	159,365	739.90	0.00
Feb-82	150,021	736.31	0.00		Feb-87	158,146	739.44	0.00
Mar-82	152,206	737.16	0.00		Mar-87	157,402	739.16	0.00
Apr-82	167,900	743.05	0.00		Apr-87	153,130	737.52	0.00
May-82	166,287	742.46	0.00		May-87	149,120	735.96	0.00
Jun-82	163,042	741.27	0.00		Jun-87	144,524	734.12	0.00
Jul-82	154,305	737.98	0.00		Jul-87	139,232	731.95	0.00
Aug-82	146,588	734.95	0.00		Aug-87	132,092	728.95	0.00
Sep-82	140,237	732.37	0.00		Sep-87	127,452	726.95	0.00

Table B-1
Simulated End-of-Month Storage, Elevation, and Surcharge
in Cachuma Reservoir Under Alterantive 5B
Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-87	125,379	726.03	0.00		Oct-92	140,311	732.40	0.00
Nov-87	123,734	725.30	0.00		Nov-92	137,785	731.35	0.00
Dec-87	122,873	724.92	0.00		Dec-92	137,377	731.18	0.00
Jan-88	122,508	724.75	0.00		Jan-93	193,585	751.80	1.80
Feb-88	121,925	724.49	0.00		Feb-93	193,585	751.80	1.80
Mar-88	124,564	725.67	0.00		Mar-93	193,585	751.80	1.80
Apr-88	122,128	724.58	0.00		Apr-93	193,585	751.80	1.80
May-88	118,763	723.05	0.00		May-93	193,585	751.80	1.80
Jun-88	111,288	719.56	0.00		Jun-93	192,891	751.58	1.58
Jul-88	104,220	716.11	0.00		Jul-93	188,635	750.20	0.20
Aug-88	98,408	713.15	0.00		Aug-93	183,774	748.59	0.00
Sep-88	93,157	710.38	0.00		Sep-93	179,262	747.06	0.00
Oct-88	90,841	709.13	0.00					
Nov-88	89,250	708.25	0.00					
Dec-88	88,422	707.79	0.00					
Jan-89	87,301	707.17	0.00					
Feb-89	87,281	707.16	0.00					
Mar-89	85,821	706.34	0.00					
Apr-89	83,290	704.90	0.00					
May-89	80,278	703.15	0.00					
Jun-89	75,665	700.39	0.00					
Jul-89	69,612	696.59	0.00					
Aug-89	65,409	693.84	0.00					
Sep-89	62,572	691.93	0.00					
Oct-89	60,589	690.55	0.00					
Nov-89	59,024	689.44	0.00					
Dec-89	57,681	688.48	0.00					
Jan-90	56,885	687.90	0.00					
Feb-90	56,065	687.30	0.00					
Mar-90	54,493	686.13	0.00					
Apr-90	52,302	684.47	0.00					
May-90	48,565	681.55	0.00					
Jun-90	46,294	679.71	0.00					
Jul-90	42,814	676.78	0.00					
Aug-90	39,921	674.24	0.00					
Sep-90	37,943	672.43	0.00					
Oct-90	36,279	670.85	0.00					
Nov-90	35,182	669.78	0.00					
Dec-90	34,553	669.16	0.00					
Jan-91	33,881	668.49	0.00					
Feb-91	33,398	668.00	0.00					
Mar-91	67,616	695.30	0.00					
Apr-91	76,258	700.75	0.00					
May-91	73,454	699.03	0.00					
Jun-91	68,700	696.00	0.00					
Jul-91	63,175	692.34	0.00					
Aug-91	57,616	688.43	0.00					
Sep-91	54,961	686.48	0.00					
Oct-91	52,210	684.40	0.00					
Nov-91	50,914	683.40	0.00					
Dec-91	50,771	683.29	0.00					
Jan-92	51,436	683.81	0.00					
Feb-92	137,141	731.08	0.00					
Mar-92	164,131	741.67	0.00					
Apr-92	171,637	744.40	0.00					
May-92	169,943	743.79	0.00					
Jun-92	165,907	742.32	0.00					
Jul-92	159,909	740.10	0.00					
Aug-92	150,196	736.38	0.00					
Sep-92	143,694	733.78	0.00					

Table B-2
Simulated End-of-Month Storage, Elevation, and Surcharge
in Cachuma Reservoir Under Alterantive 5C
Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-17	173,182	744.95	0.00		Oct-22	172,588	744.73	0.00
Nov-17	171,008	744.17	0.00		Nov-22	171,265	744.26	0.00
Dec-17	169,056	743.47	0.00		Dec-22	176,857	746.23	0.00
Jan-18	167,446	742.89	0.00		Jan-23	178,169	746.68	0.00
Feb-18	197,343	753.00	3.00		Feb-23	178,700	746.87	0.00
Mar-18	197,343	753.00	3.00		Mar-23	176,562	746.13	0.00
Apr-18	197,343	753.00	3.00		Apr-23	174,679	745.47	0.00
May-18	197,343	753.00	3.00		May-23	171,247	744.26	0.00
Jun-18	196,339	752.68	2.68		Jun-23	167,246	742.81	0.00
Jul-18	190,796	750.90	0.90		Jul-23	162,120	740.93	0.00
Aug-18	185,209	749.07	0.00		Aug-23	152,903	737.43	0.00
Sep-18	181,147	747.70	0.00		Sep-23	146,496	734.91	0.00
Oct-18	177,340	746.40	0.00		Oct-23	141,134	732.74	0.00
Nov-18	176,616	746.15	0.00		Nov-23	139,066	731.88	0.00
Dec-18	175,637	745.81	0.00		Dec-23	137,893	731.40	0.00
Jan-19	174,659	745.46	0.00		Jan-24	136,574	730.85	0.00
Feb-19	174,302	745.34	0.00		Feb-24	135,240	730.29	0.00
Mar-19	172,311	744.63	0.00		Mar-24	135,996	730.60	0.00
Apr-19	168,785	743.37	0.00		Apr-24	133,553	729.57	0.00
May-19	165,085	742.02	0.00		May-24	129,784	727.96	0.00
Jun-19	160,464	740.31	0.00		Jun-24	125,316	726.01	0.00
Jul-19	151,190	736.77	0.00		Jul-24	120,069	723.65	0.00
Aug-19	146,350	734.85	0.00		Aug-24	113,230	720.48	0.00
Sep-19	140,328	732.40	0.00		Sep-24	107,732	717.84	0.00
Oct-19	136,475	730.81	0.00		Oct-24	104,014	716.01	0.00
Nov-19	134,421	729.94	0.00		Nov-24	101,975	714.98	0.00
Dec-19	134,106	729.81	0.00		Dec-24	101,039	714.50	0.00
Jan-20	132,586	729.16	0.00		Jan-25	99,783	713.86	0.00
Feb-20	133,957	729.74	0.00		Feb-25	98,655	713.28	0.00
Mar-20	142,985	733.49	0.00		Mar-25	98,108	713.00	0.00
Apr-20	144,903	734.27	0.00		Apr-25	98,194	713.04	0.00
May-20	142,067	733.12	0.00		May-25	95,405	711.58	0.00
Jun-20	138,052	731.46	0.00		Jun-25	91,601	709.54	0.00
Jul-20	128,999	727.62	0.00		Jul-25	85,602	706.22	0.00
Aug-20	124,463	725.63	0.00		Aug-25	78,553	702.13	0.00
Sep-20	118,023	722.71	0.00		Sep-25	74,831	699.88	0.00
Oct-20	114,000	720.84	0.00		Oct-25	72,678	698.54	0.00
Nov-20	111,722	719.76	0.00		Nov-25	71,139	697.57	0.00
Dec-20	110,529	719.19	0.00		Dec-25	69,917	696.79	0.00
Jan-21	111,388	719.60	0.00		Jan-26	68,930	696.15	0.00
Feb-21	111,976	719.89	0.00		Feb-26	71,638	697.89	0.00
Mar-21	113,930	720.81	0.00		Mar-26	72,220	698.25	0.00
Apr-21	112,017	719.91	0.00		Apr-26	133,282	729.46	0.00
May-21	109,448	718.67	0.00		May-26	134,229	729.86	0.00
Jun-21	106,066	717.02	0.00		Jun-26	129,889	728.01	0.00
Jul-21	101,295	714.63	0.00		Jul-26	123,760	725.31	0.00
Aug-21	91,965	709.74	0.00		Aug-26	117,544	722.49	0.00
Sep-21	86,713	706.84	0.00		Sep-26	111,709	719.76	0.00
Oct-21	81,960	704.13	0.00		Oct-26	104,831	716.41	0.00
Nov-21	79,709	702.82	0.00		Nov-26	107,079	717.52	0.00
Dec-21	99,695	713.82	0.00		Dec-26	107,713	717.83	0.00
Jan-22	116,225	721.88	0.00		Jan-27	109,275	718.59	0.00
Feb-22	175,141	745.63	0.00		Feb-27	190,438	750.78	0.78
Mar-22	197,343	753.00	3.00		Mar-27	197,343	753.00	3.00
Apr-22	197,343	753.00	3.00		Apr-27	197,343	753.00	3.00
May-22	197,343	753.00	3.00		May-27	194,748	752.17	2.17
Jun-22	193,048	751.63	1.63		Jun-27	190,008	750.64	0.64
Jul-22	186,805	749.59	0.00		Jul-27	183,701	748.56	0.00
Aug-22	181,103	747.69	0.00		Aug-27	177,968	746.61	0.00
Sep-22	176,311	746.04	0.00		Sep-27	173,151	744.93	0.00

Table B-2								
Simulated End-of-Month Storage, Elevation, and Surcharge								
in Cachuma Reservoir Under Alterantive 5C								
Based on SYRHM, WY 1918-1993								
Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-27	170,173	743.87	0.00		Oct-32	115,255	721.43	0.00
Nov-27	168,419	743.24	0.00		Nov-32	113,607	720.66	0.00
Dec-27	167,686	742.97	0.00		Dec-32	112,064	719.93	0.00
Jan-28	166,218	742.44	0.00		Jan-33	120,178	723.70	0.00
Feb-28	172,960	744.87	0.00		Feb-33	122,172	724.60	0.00
Mar-28	174,400	745.37	0.00		Mar-33	121,129	724.13	0.00
Apr-28	171,161	744.23	0.00		Apr-33	118,658	723.00	0.00
May-28	167,437	742.88	0.00		May-33	114,954	721.29	0.00
Jun-28	163,300	741.36	0.00		Jun-33	107,309	717.63	0.00
Jul-28	154,244	737.95	0.00		Jul-33	99,473	713.70	0.00
Aug-28	146,469	734.90	0.00		Aug-33	91,962	709.73	0.00
Sep-28	139,912	732.23	0.00		Sep-33	86,526	706.74	0.00
Oct-28	134,518	729.98	0.00		Oct-33	84,164	705.40	0.00
Nov-28	133,411	729.51	0.00		Nov-33	82,370	704.37	0.00
Dec-28	132,794	729.25	0.00		Dec-33	81,832	704.06	0.00
Jan-29	131,770	728.81	0.00		Jan-34	94,065	710.87	0.00
Feb-29	132,062	728.94	0.00		Feb-34	98,121	713.00	0.00
Mar-29	132,258	729.02	0.00		Mar-34	97,788	712.83	0.00
Apr-29	131,083	728.52	0.00		Apr-34	95,069	711.40	0.00
May-29	127,700	727.05	0.00		May-34	91,419	709.44	0.00
Jun-29	119,715	723.49	0.00		Jun-34	83,672	705.12	0.00
Jul-29	112,082	719.94	0.00		Jul-34	76,246	700.75	0.00
Aug-29	106,055	717.02	0.00		Aug-34	69,611	696.59	0.00
Sep-29	100,262	714.11	0.00		Sep-34	63,988	692.89	0.00
Oct-29	96,228	712.01	0.00		Oct-34	62,027	691.55	0.00
Nov-29	94,145	710.91	0.00		Nov-34	60,629	690.58	0.00
Dec-29	92,743	710.16	0.00		Dec-34	59,618	689.87	0.00
Jan-30	92,132	709.83	0.00		Jan-35	72,067	698.16	0.00
Feb-30	90,694	709.05	0.00		Feb-35	74,325	699.57	0.00
Mar-30	94,321	711.00	0.00		Mar-35	82,641	704.52	0.00
Apr-30	92,177	709.85	0.00		Apr-35	97,822	712.85	0.00
May-30	89,021	708.13	0.00		May-35	97,119	712.48	0.00
Jun-30	85,125	705.95	0.00		Jun-35	92,898	710.24	0.00
Jul-30	79,152	702.49	0.00		Jul-35	87,047	707.03	0.00
Aug-30	73,181	698.86	0.00		Aug-35	77,636	701.58	0.00
Sep-30	70,120	696.92	0.00		Sep-35	71,827	698.01	0.00
Oct-30	67,694	695.35	0.00		Oct-35	68,393	695.80	0.00
Nov-30	66,251	694.40	0.00		Nov-35	66,103	694.30	0.00
Dec-30	64,999	693.57	0.00		Dec-35	64,993	693.56	0.00
Jan-31	64,363	693.14	0.00		Jan-36	63,572	692.61	0.00
Feb-31	63,509	692.56	0.00		Feb-36	86,903	706.95	0.00
Mar-31	61,725	691.34	0.00		Mar-36	90,673	709.03	0.00
Apr-31	59,628	689.87	0.00		Apr-36	92,454	710.00	0.00
May-31	55,857	687.14	0.00		May-36	89,488	708.38	0.00
Jun-31	52,718	684.79	0.00		Jun-36	85,662	706.25	0.00
Jul-31	49,331	682.16	0.00		Jul-36	80,983	703.56	0.00
Aug-31	45,979	679.45	0.00		Aug-36	74,106	699.43	0.00
Sep-31	43,359	677.25	0.00		Sep-36	70,606	697.23	0.00
Oct-31	41,400	675.55	0.00		Oct-36	68,510	695.88	0.00
Nov-31	40,487	674.75	0.00		Nov-36	66,981	694.88	0.00
Dec-31	47,940	681.05	0.00		Dec-36	70,152	696.94	0.00
Jan-32	53,659	685.50	0.00		Jan-37	75,835	700.50	0.00
Feb-32	141,394	732.84	0.00		Feb-37	143,608	733.75	0.00
Mar-32	150,088	736.34	0.00		Mar-37	197,343	753.00	3.00
Apr-32	147,178	735.18	0.00		Apr-37	197,343	753.00	3.00
May-32	142,383	733.25	0.00		May-37	197,343	753.00	3.00
Jun-32	137,331	731.16	0.00		Jun-37	193,842	751.88	1.88
Jul-32	130,976	728.47	0.00		Jul-37	187,706	749.89	0.00
Aug-32	124,509	725.65	0.00		Aug-37	181,938	747.97	0.00
Sep-32	118,446	722.91	0.00		Sep-37	177,072	746.30	0.00

Table B-2
Simulated End-of-Month Storage, Elevation, and Surcharge in Cachuma Reservoir Under Alterantive 5C Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-37	173,253	744.97	0.00		Oct-42	174,523	745.42	0.00
Nov-37	170,345	743.93	0.00		Nov-42	172,535	744.71	0.00
Dec-37	170,114	743.85	0.00		Dec-42	171,034	744.18	0.00
Jan-38	168,980	743.44	0.00		Jan-43	197,343	753.00	3.00
Feb-38	197,343	753.00	3.00		Feb-43	197,343	753.00	3.00
Mar-38	197,343	753.00	3.00		Mar-43	197,343	753.00	3.00
Apr-38	197,343	753.00	3.00		Apr-43	197,343	753.00	3.00
May-38	197,343	753.00	3.00		May-43	197,031	752.90	2.90
Jun-38	194,915	752.23	2.23		Jun-43	192,964	751.60	1.60
Jul-38	189,636	750.52	0.52		Jul-43	187,042	749.67	0.00
Aug-38	184,018	748.67	0.00		Aug-43	181,510	747.82	0.00
Sep-38	179,440	747.12	0.00		Sep-43	176,926	746.25	0.00
Oct-38	175,721	745.84	0.00		Oct-43	173,425	745.03	0.00
Nov-38	173,777	745.15	0.00		Nov-43	171,527	744.36	0.00
Dec-38	173,950	745.21	0.00		Dec-43	171,371	744.30	0.00
Jan-39	176,580	746.13	0.00		Jan-44	171,296	744.27	0.00
Feb-39	178,851	746.92	0.00		Feb-44	197,343	753.00	3.00
Mar-39	185,986	749.32	0.00		Mar-44	197,343	753.00	3.00
Apr-39	183,991	748.66	0.00		Apr-44	197,343	753.00	3.00
May-39	180,535	747.49	0.00		May-44	196,280	752.66	2.66
Jun-39	176,031	745.94	0.00		Jun-44	192,204	751.36	1.36
Jul-39	166,956	742.71	0.00		Jul-44	186,116	749.37	0.00
Aug-39	159,087	739.79	0.00		Aug-44	180,447	747.46	0.00
Sep-39	152,574	737.31	0.00		Sep-44	175,706	745.83	0.00
Oct-39	149,972	736.29	0.00		Oct-44	171,944	744.50	0.00
Nov-39	147,929	735.48	0.00		Nov-44	171,973	744.51	0.00
Dec-39	146,499	734.91	0.00		Dec-44	171,005	744.17	0.00
Jan-40	147,197	735.19	0.00		Jan-45	170,040	743.82	0.00
Feb-40	152,413	737.24	0.00		Feb-45	190,872	750.92	0.92
Mar-40	154,722	738.14	0.00		Mar-45	197,343	753.00	3.00
Apr-40	153,971	737.85	0.00		Apr-45	197,343	753.00	3.00
May-40	150,392	736.46	0.00		May-45	194,424	752.07	2.07
Jun-40	146,408	734.88	0.00		Jun-45	189,299	750.41	0.41
Jul-40	137,244	731.13	0.00		Jul-45	182,750	748.24	0.00
Aug-40	129,692	727.92	0.00		Aug-45	176,777	746.20	0.00
Sep-40	124,207	725.51	0.00		Sep-45	170,943	744.15	0.00
Oct-40	120,355	723.78	0.00		Oct-45	167,260	742.82	0.00
Nov-40	118,815	723.08	0.00		Nov-45	164,965	741.98	0.00
Dec-40	123,204	725.07	0.00		Dec-45	172,809	744.81	0.00
Jan-41	150,825	736.63	0.00		Jan-46	172,545	744.72	0.00
Feb-41	197,343	753.00	3.00		Feb-46	173,599	745.09	0.00
Mar-41	197,343	753.00	3.00		Mar-46	190,353	750.76	0.76
Apr-41	197,343	753.00	3.00		Apr-46	197,141	752.94	2.94
May-41	197,343	753.00	3.00		May-46	193,892	751.90	1.90
Jun-41	197,343	753.00	3.00		Jun-46	188,192	750.05	0.05
Jul-41	194,822	752.20	2.20		Jul-46	178,146	746.68	0.00
Aug-41	190,733	750.88	0.88		Aug-46	170,178	743.87	0.00
Sep-41	187,158	749.71	0.00		Sep-46	163,490	741.43	0.00
Oct-41	184,458	748.82	0.00		Oct-46	157,978	739.37	0.00
Nov-41	183,289	748.42	0.00		Nov-46	159,544	739.96	0.00
Dec-41	189,248	750.40	0.40		Dec-46	164,771	741.91	0.00
Jan-42	193,615	751.81	1.81		Jan-47	165,864	742.31	0.00
Feb-42	195,099	752.28	2.28		Feb-47	165,480	742.17	0.00
Mar-42	197,336	753.00	3.00		Mar-47	164,870	741.94	0.00
Apr-42	197,343	753.00	3.00		Apr-47	162,022	740.89	0.00
May-42	196,081	752.60	2.60		May-47	154,641	738.10	0.00
Jun-42	192,451	751.43	1.43		Jun-47	147,876	735.46	0.00
Jul-42	187,108	749.69	0.00		Jul-47	139,798	732.19	0.00
Aug-42	182,060	748.01	0.00		Aug-47	132,058	728.94	0.00
Sep-42	177,005	746.28	0.00		Sep-47	125,528	726.10	0.00

Table B-2
Simulated End-of-Month Storage, Elevation, and Surcharge
in Cachuma Reservoir Under Alterantive 5C
Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-47	120,126	723.67	0.00		Oct-52	173,561	745.08	0.00
Nov-47	117,067	722.27	0.00		Nov-52	173,093	744.91	0.00
Dec-47	116,063	721.81	0.00		Dec-52	175,342	745.70	0.00
Jan-48	114,849	721.24	0.00		Jan-53	180,865	747.61	0.00
Feb-48	113,995	720.84	0.00		Feb-53	179,757	747.23	0.00
Mar-48	112,889	720.32	0.00		Mar-53	178,582	746.83	0.00
Apr-48	110,765	719.31	0.00		Apr-53	176,253	746.02	0.00
May-48	107,405	717.68	0.00		May-53	172,475	744.69	0.00
Jun-48	102,415	715.20	0.00		Jun-53	168,136	743.14	0.00
Jul-48	96,422	712.12	0.00		Jul-53	158,913	739.73	0.00
Aug-48	91,989	709.75	0.00		Aug-53	151,112	736.74	0.00
Sep-48	88,438	707.80	0.00		Sep-53	145,218	734.40	0.00
Oct-48	85,823	706.34	0.00		Oct-53	140,460	732.46	0.00
Nov-48	84,002	705.31	0.00		Nov-53	139,342	732.00	0.00
Dec-48	83,240	704.87	0.00		Dec-53	137,745	731.34	0.00
Jan-49	82,241	704.29	0.00		Jan-54	140,028	732.28	0.00
Feb-49	81,129	703.65	0.00		Feb-54	142,272	733.20	0.00
Mar-49	79,991	702.98	0.00		Mar-54	147,429	735.28	0.00
Apr-49	76,077	700.64	0.00		Apr-54	149,077	735.94	0.00
May-49	71,585	697.85	0.00		May-54	145,800	734.63	0.00
Jun-49	67,991	695.54	0.00		Jun-54	141,449	732.87	0.00
Jul-49	64,092	692.96	0.00		Jul-54	132,061	728.94	0.00
Aug-49	60,213	690.29	0.00		Aug-54	124,587	725.68	0.00
Sep-49	57,228	688.15	0.00		Sep-54	118,078	722.74	0.00
Oct-49	55,002	686.51	0.00		Oct-54	113,609	720.66	0.00
Nov-49	53,651	685.50	0.00		Nov-54	111,522	719.67	0.00
Dec-49	52,645	684.73	0.00		Dec-54	110,759	719.30	0.00
Jan-50	51,739	684.04	0.00		Jan-55	110,681	719.27	0.00
Feb-50	52,683	684.76	0.00		Feb-55	110,235	719.05	0.00
Mar-50	49,574	682.35	0.00		Mar-55	108,850	718.38	0.00
Apr-50	47,994	681.09	0.00		Apr-55	106,839	717.40	0.00
May-50	42,537	676.54	0.00		May-55	104,800	716.40	0.00
Jun-50	39,816	674.15	0.00		Jun-55	101,321	714.65	0.00
Jul-50	36,846	671.39	0.00		Jul-55	94,363	711.03	0.00
Aug-50	33,853	668.46	0.00		Aug-55	86,942	706.97	0.00
Sep-50	31,555	666.08	0.00		Sep-55	83,243	704.87	0.00
Oct-50	29,895	664.30	0.00		Oct-55	80,650	703.37	0.00
Nov-50	29,025	663.34	0.00		Nov-55	79,314	702.58	0.00
Dec-50	28,296	662.53	0.00		Dec-55	83,518	705.03	0.00
Jan-51	27,699	661.85	0.00		Jan-56	93,609	710.62	0.00
Feb-51	27,035	661.09	0.00		Feb-56	95,756	711.76	0.00
Mar-51	25,981	659.85	0.00		Mar-56	95,056	711.39	0.00
Apr-51	24,549	658.13	0.00		Apr-56	96,031	711.91	0.00
May-51	22,126	655.13	0.00		May-56	95,440	711.60	0.00
Jun-51	20,194	652.64	0.00		Jun-56	92,653	710.11	0.00
Jul-51	17,919	649.59	0.00		Jul-56	88,351	707.75	0.00
Aug-51	15,797	646.54	0.00		Aug-56	82,035	704.17	0.00
Sep-51	14,015	643.74	0.00		Sep-56	77,917	701.75	0.00
Oct-51	12,955	641.96	0.00		Oct-56	75,652	700.39	0.00
Nov-51	12,331	640.85	0.00		Nov-56	74,212	699.50	0.00
Dec-51	12,030	640.30	0.00		Dec-56	72,721	698.57	0.00
Jan-52	112,079	719.93	0.00		Jan-57	72,537	698.45	0.00
Feb-52	119,648	723.46	0.00		Feb-57	72,498	698.43	0.00
Mar-52	190,708	750.87	0.87		Mar-57	72,244	698.27	0.00
Apr-52	197,343	753.00	3.00		Apr-57	70,954	697.45	0.00
May-52	197,343	753.00	3.00		May-57	69,063	696.24	0.00
Jun-52	194,051	751.95	1.95		Jun-57	62,111	691.61	0.00
Jul-52	188,561	750.17	0.17		Jul-57	57,779	688.55	0.00
Aug-52	182,502	748.16	0.00		Aug-57	51,563	683.91	0.00
Sep-52	176,927	746.25	0.00		Sep-57	48,373	681.40	0.00

Table B-2
Simulated End-of-Month Storage, Elevation, and Surcharge
in Cachuma Reservoir Under Alterantive 5C
Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-57	46,681	680.03	0.00		Oct-62	149,223	736.00	0.00
Nov-57	45,293	678.88	0.00		Nov-62	147,039	735.13	0.00
Dec-57	45,980	679.45	0.00		Dec-62	145,712	734.60	0.00
Jan-58	46,169	679.61	0.00		Jan-63	144,572	734.14	0.00
Feb-58	78,433	702.06	0.00		Feb-63	144,681	734.18	0.00
Mar-58	123,667	725.27	0.00		Mar-63	143,865	733.85	0.00
Apr-58	197,343	753.00	3.00		Apr-63	142,106	733.13	0.00
May-58	197,343	753.00	3.00		May-63	139,275	731.97	0.00
Jun-58	195,479	752.41	2.41		Jun-63	135,242	730.29	0.00
Jul-58	190,391	750.77	0.77		Jul-63	129,949	728.03	0.00
Aug-58	185,004	749.00	0.00		Aug-63	122,646	724.81	0.00
Sep-58	180,361	747.43	0.00		Sep-63	119,452	723.37	0.00
Oct-58	176,434	746.08	0.00		Oct-63	117,006	722.24	0.00
Nov-58	174,149	745.28	0.00		Nov-63	115,755	721.66	0.00
Dec-58	172,011	744.53	0.00		Dec-63	114,373	721.02	0.00
Jan-59	172,277	744.62	0.00		Jan-64	113,562	720.64	0.00
Feb-59	184,488	748.83	0.00		Feb-64	112,088	719.94	0.00
Mar-59	182,931	748.30	0.00		Mar-64	110,384	719.13	0.00
Apr-59	180,793	747.58	0.00		Apr-64	108,174	718.06	0.00
May-59	176,894	746.24	0.00		May-64	102,876	715.43	0.00
Jun-59	172,767	744.80	0.00		Jun-64	98,562	713.23	0.00
Jul-59	163,347	741.38	0.00		Jul-64	93,789	710.72	0.00
Aug-59	155,544	738.45	0.00		Aug-64	89,125	708.18	0.00
Sep-59	149,836	736.24	0.00		Sep-64	85,555	706.19	0.00
Oct-59	145,333	734.44	0.00		Oct-64	83,053	704.76	0.00
Nov-59	142,483	733.29	0.00		Nov-64	81,660	703.96	0.00
Dec-59	141,568	732.91	0.00		Dec-64	80,680	703.38	0.00
Jan-60	141,202	732.76	0.00		Jan-65	79,909	702.93	0.00
Feb-60	140,372	732.42	0.00		Feb-65	78,854	702.31	0.00
Mar-60	136,860	730.97	0.00		Mar-65	77,413	701.45	0.00
Apr-60	134,409	729.94	0.00		Apr-65	86,593	706.77	0.00
May-60	130,685	728.35	0.00		May-65	84,387	705.52	0.00
Jun-60	126,281	726.43	0.00		Jun-65	77,674	701.61	0.00
Jul-60	120,926	724.04	0.00		Jul-65	71,000	697.48	0.00
Aug-60	113,196	720.46	0.00		Aug-65	66,213	694.37	0.00
Sep-60	109,680	718.79	0.00		Sep-65	62,940	692.18	0.00
Oct-60	106,989	717.48	0.00		Oct-65	60,905	690.77	0.00
Nov-60	106,138	717.06	0.00		Nov-65	82,361	704.36	0.00
Dec-60	104,980	716.49	0.00		Dec-65	111,644	719.73	0.00
Jan-61	104,206	716.10	0.00		Jan-66	129,048	727.64	0.00
Feb-61	102,865	715.43	0.00		Feb-66	136,221	730.70	0.00
Mar-61	100,953	714.46	0.00		Mar-66	136,988	731.02	0.00
Apr-61	98,257	713.07	0.00		Apr-66	132,700	729.21	0.00
May-61	93,054	710.32	0.00		May-66	127,373	726.91	0.00
Jun-61	88,754	707.98	0.00		Jun-66	122,691	724.83	0.00
Jul-61	84,059	705.34	0.00		Jul-66	116,756	722.13	0.00
Aug-61	79,516	702.70	0.00		Aug-66	107,097	717.53	0.00
Sep-61	75,977	700.58	0.00		Sep-66	100,890	714.43	0.00
Oct-61	73,501	699.06	0.00		Oct-66	95,429	711.59	0.00
Nov-61	71,963	698.09	0.00		Nov-66	91,504	709.49	0.00
Dec-61	71,026	697.50	0.00		Dec-66	138,799	731.77	0.00
Jan-62	69,896	696.77	0.00		Jan-67	170,096	743.84	0.00
Feb-62	164,659	741.86	0.00		Feb-67	184,409	748.80	0.00
Mar-62	179,112	747.01	0.00		Mar-67	197,343	753.00	3.00
Apr-62	179,227	747.05	0.00		Apr-67	197,343	753.00	3.00
May-62	175,271	745.68	0.00		May-67	197,343	753.00	3.00
Jun-62	170,549	744.01	0.00		Jun-67	197,343	753.00	3.00
Jul-62	164,086	741.65	0.00		Jul-67	193,541	751.79	1.79
Aug-62	157,309	739.12	0.00		Aug-67	185,239	749.08	0.00
Sep-62	151,830	737.02	0.00		Sep-67	179,121	747.01	0.00

Table B-2								
Simulated End-of-Month Storage, Elevation, and Surcharge								
in Cachuma Reservoir Under Alterantive 5C								
Based on SYRHM, WY 1918-1993								
Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-67	176,360	746.06	0.00		Oct-72	106,215	717.10	0.00
Nov-67	175,396	745.72	0.00		Nov-72	105,918	716.95	0.00
Dec-67	174,243	745.32	0.00		Dec-72	104,810	716.40	0.00
Jan-68	173,271	744.98	0.00		Jan-73	117,552	722.49	0.00
Feb-68	173,279	744.98	0.00		Feb-73	185,809	749.26	0.00
Mar-68	175,142	745.63	0.00		Mar-73	197,343	753.00	3.00
Apr-68	171,951	744.51	0.00		Apr-73	197,343	753.00	3.00
May-68	168,453	743.25	0.00		May-73	196,507	752.73	2.73
Jun-68	160,691	740.39	0.00		Jun-73	192,173	751.34	1.34
Jul-68	156,012	738.63	0.00		Jul-73	185,928	749.30	0.00
Aug-68	150,122	736.35	0.00		Aug-73	180,115	747.35	0.00
Sep-68	144,338	734.04	0.00		Sep-73	175,352	745.71	0.00
Oct-68	140,602	732.52	0.00		Oct-73	171,581	744.38	0.00
Nov-68	138,300	731.57	0.00		Nov-73	169,119	743.49	0.00
Dec-68	137,068	731.05	0.00		Dec-73	168,422	743.24	0.00
Jan-69	197,343	753.00	3.00		Jan-74	188,425	750.13	0.13
Feb-69	197,343	753.00	3.00		Feb-74	189,885	750.60	0.60
Mar-69	197,343	753.00	3.00		Mar-74	196,517	752.74	2.74
Apr-69	197,343	753.00	3.00		Apr-74	195,985	752.57	2.57
May-69	197,343	753.00	3.00		May-74	192,794	751.54	1.54
Jun-69	196,809	752.83	2.83		Jun-74	187,643	749.87	0.00
Jul-69	192,662	751.50	1.50		Jul-74	180,887	747.61	0.00
Aug-69	187,725	749.90	0.00		Aug-74	175,029	745.59	0.00
Sep-69	183,284	748.42	0.00		Sep-74	165,845	742.30	0.00
Oct-69	179,467	747.13	0.00		Oct-74	163,531	741.45	0.00
Nov-69	178,173	746.68	0.00		Nov-74	160,876	740.46	0.00
Dec-69	176,737	746.19	0.00		Dec-74	162,813	741.18	0.00
Jan-70	177,474	746.44	0.00		Jan-75	161,886	740.84	0.00
Feb-70	180,311	747.42	0.00		Feb-75	169,390	743.59	0.00
Mar-70	194,962	752.24	2.24		Mar-75	197,343	753.00	3.00
Apr-70	191,257	751.05	1.05		Apr-75	197,343	753.00	3.00
May-70	187,622	749.86	0.00		May-75	196,143	752.62	2.62
Jun-70	183,720	748.57	0.00		Jun-75	191,775	751.22	1.22
Jul-70	174,619	745.45	0.00		Jul-75	185,492	749.16	0.00
Aug-70	166,688	742.61	0.00		Aug-75	179,812	747.25	0.00
Sep-70	161,767	740.79	0.00		Sep-75	175,069	745.61	0.00
Oct-70	157,626	739.24	0.00		Oct-75	171,449	744.33	0.00
Nov-70	158,912	739.73	0.00		Nov-75	169,449	743.61	0.00
Dec-70	170,166	743.87	0.00		Dec-75	167,634	742.95	0.00
Jan-71	176,472	746.10	0.00		Jan-76	165,683	742.24	0.00
Feb-71	177,762	746.54	0.00		Feb-76	168,279	743.19	0.00
Mar-71	177,649	746.50	0.00		Mar-76	165,900	742.32	0.00
Apr-71	175,119	745.62	0.00		Apr-76	163,789	741.54	0.00
May-71	172,319	744.64	0.00		May-76	160,191	740.21	0.00
Jun-71	165,096	742.03	0.00		Jun-76	152,414	737.25	0.00
Jul-71	157,143	739.06	0.00		Jul-76	144,386	734.06	0.00
Aug-71	149,188	735.98	0.00		Aug-76	137,204	731.11	0.00
Sep-71	143,604	733.74	0.00		Sep-76	132,042	728.93	0.00
Oct-71	139,703	732.15	0.00		Oct-76	128,852	727.56	0.00
Nov-71	137,356	731.17	0.00		Nov-76	127,237	726.85	0.00
Dec-71	145,687	734.59	0.00		Dec-76	125,933	726.28	0.00
Jan-72	146,488	734.91	0.00		Jan-77	125,648	726.15	0.00
Feb-72	145,835	734.65	0.00		Feb-77	124,227	725.52	0.00
Mar-72	143,637	733.76	0.00		Mar-77	122,596	724.79	0.00
Apr-72	140,716	732.56	0.00		Apr-77	119,730	723.49	0.00
May-72	133,489	729.55	0.00		May-77	116,978	722.23	0.00
Jun-72	126,902	726.70	0.00		Jun-77	113,021	720.38	0.00
Jul-72	122,147	724.59	0.00		Jul-77	105,049	716.52	0.00
Aug-72	115,785	721.68	0.00		Aug-77	100,525	714.24	0.00
Sep-72	110,057	718.97	0.00		Sep-77	96,832	712.33	0.00

Table B-2
Simulated End-of-Month Storage, Elevation, and Surcharge
in Cachuma Reservoir Under Alterantive 5C
Based on SYRHM, WY 1918-1993

Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-77	94,131	710.90	0.00		Oct-82	141,308	732.81	0.00
Nov-77	91,989	709.75	0.00		Nov-82	141,134	732.74	0.00
Dec-77	91,596	709.54	0.00		Dec-82	155,522	738.44	0.00
Jan-78	110,214	719.04	0.00		Jan-83	197,343	753.00	3.00
Feb-78	197,343	753.00	3.00		Feb-83	197,343	753.00	3.00
Mar-78	197,343	753.00	3.00		Mar-83	197,343	753.00	3.00
Apr-78	197,343	753.00	3.00		Apr-83	197,343	753.00	3.00
May-78	197,343	753.00	3.00		May-83	197,343	753.00	3.00
Jun-78	196,164	752.62	2.62		Jun-83	197,343	753.00	3.00
Jul-78	191,410	751.10	1.10		Jul-83	195,792	752.51	2.51
Aug-78	186,633	749.54	0.00		Aug-83	192,794	751.55	1.55
Sep-78	182,747	748.24	0.00		Sep-83	189,485	750.47	0.47
Oct-78	178,924	746.94	0.00		Oct-83	190,062	750.66	0.66
Nov-78	177,449	746.43	0.00		Nov-83	193,292	751.71	1.71
Dec-78	176,286	746.03	0.00		Dec-83	197,343	753.00	3.00
Jan-79	182,900	748.29	0.00		Jan-84	197,343	753.00	3.00
Feb-79	197,343	753.00	3.00		Feb-84	197,343	753.00	3.00
Mar-79	197,343	753.00	3.00		Mar-84	196,463	752.72	2.72
Apr-79	197,343	753.00	3.00		Apr-84	193,915	751.91	1.91
May-79	196,666	752.78	2.78		May-84	188,563	750.17	0.17
Jun-79	192,300	751.39	1.39		Jun-84	183,291	748.42	0.00
Jul-79	186,310	749.43	0.00		Jul-84	176,710	746.18	0.00
Aug-79	180,500	747.48	0.00		Aug-84	171,016	744.17	0.00
Sep-79	175,481	745.75	0.00		Sep-84	165,390	742.13	0.00
Oct-79	171,071	744.19	0.00		Oct-84	161,366	740.64	0.00
Nov-79	168,920	743.42	0.00		Nov-84	159,660	740.01	0.00
Dec-79	167,876	743.04	0.00		Dec-84	160,026	740.14	0.00
Jan-80	170,346	743.93	0.00		Jan-85	159,380	739.90	0.00
Feb-80	197,343	753.00	3.00		Feb-85	159,089	739.79	0.00
Mar-80	197,343	753.00	3.00		Mar-85	157,917	739.35	0.00
Apr-80	197,343	753.00	3.00		Apr-85	155,329	738.37	0.00
May-80	197,343	753.00	3.00		May-85	151,388	736.85	0.00
Jun-80	194,206	752.00	2.00		Jun-85	143,542	733.72	0.00
Jul-80	189,014	750.32	0.32		Jul-85	135,617	730.44	0.00
Aug-80	183,304	748.43	0.00		Aug-85	130,175	728.13	0.00
Sep-80	178,486	746.79	0.00		Sep-85	124,481	725.63	0.00
Oct-80	174,488	745.40	0.00		Oct-85	121,056	724.10	0.00
Nov-80	172,221	744.60	0.00		Nov-85	120,448	723.82	0.00
Dec-80	170,507	743.99	0.00		Dec-85	119,022	723.17	0.00
Jan-81	170,574	744.02	0.00		Jan-86	118,620	722.99	0.00
Feb-81	171,073	744.19	0.00		Feb-86	162,196	740.95	0.00
Mar-81	189,024	750.32	0.32		Mar-86	195,615	752.45	2.45
Apr-81	188,243	750.07	0.07		Apr-86	197,343	753.00	3.00
May-81	185,064	749.02	0.00		May-86	193,967	751.92	1.92
Jun-81	180,552	747.50	0.00		Jun-86	189,261	750.40	0.40
Jul-81	175,068	745.61	0.00		Jul-86	182,736	748.24	0.00
Aug-81	168,622	743.31	0.00		Aug-86	176,659	746.16	0.00
Sep-81	162,703	741.14	0.00		Sep-86	171,271	744.26	0.00
Oct-81	158,709	739.65	0.00		Oct-86	167,288	742.83	0.00
Nov-81	156,614	738.86	0.00		Nov-86	165,547	742.19	0.00
Dec-81	155,281	738.35	0.00		Dec-86	163,892	741.58	0.00
Jan-82	154,596	738.09	0.00		Jan-87	162,497	741.07	0.00
Feb-82	153,472	737.65	0.00		Feb-87	161,276	740.61	0.00
Mar-82	155,667	738.50	0.00		Mar-87	160,533	740.33	0.00
Apr-82	171,360	744.30	0.00		Apr-87	156,243	738.72	0.00
May-82	169,727	743.71	0.00		May-87	152,209	737.17	0.00
Jun-82	166,462	742.53	0.00		Jun-87	147,588	735.35	0.00
Jul-82	157,700	739.27	0.00		Jul-87	142,274	733.20	0.00
Aug-82	149,955	736.28	0.00		Aug-87	135,113	730.23	0.00
Sep-82	143,590	733.74	0.00		Sep-87	129,721	727.93	0.00

Table B-2								
Simulated End-of-Month Storage, Elevation, and Surcharge in Cachuma Reservoir Under Alterantive 5C Based on SYRHM, WY 1918-1993								
Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)		Month	Storage (acre-feet)	Elevation (feet)	Surcharge (feet)
Oct-87	127,644	727.03	0.00		Oct-92	141,168	732.75	0.00
Nov-87	126,006	726.31	0.00		Nov-92	136,406	730.78	0.00
Dec-87	125,165	725.94	0.00		Dec-92	135,994	730.60	0.00
Jan-88	124,807	725.78	0.00		Jan-93	197,343	753.00	3.00
Feb-88	124,226	725.52	0.00		Feb-93	197,343	753.00	3.00
Mar-88	126,860	726.69	0.00		Mar-93	197,343	753.00	3.00
Apr-88	124,423	725.61	0.00		Apr-93	197,343	753.00	3.00
May-88	121,042	724.09	0.00		May-93	197,343	753.00	3.00
Jun-88	113,518	720.61	0.00		Jun-93	196,624	752.77	2.77
Jul-88	108,664	718.29	0.00		Jul-93	192,343	751.40	1.40
Aug-88	102,285	715.14	0.00		Aug-93	187,453	749.81	0.00
Sep-88	96,727	712.28	0.00		Sep-93	182,918	748.30	0.00
Oct-88	94,082	710.88	0.00					
Nov-88	92,684	710.12	0.00					
Dec-88	91,869	709.68	0.00					
Jan-89	90,747	709.07	0.00					
Feb-89	90,731	709.07	0.00					
Mar-89	89,261	708.26	0.00					
Apr-89	86,710	706.84	0.00					
May-89	83,595	705.07	0.00					
Jun-89	79,125	702.47	0.00					
Jul-89	72,912	698.69	0.00					
Aug-89	68,476	695.86	0.00					
Sep-89	65,540	693.93	0.00					
Oct-89	63,481	692.54	0.00					
Nov-89	61,862	691.44	0.00					
Dec-89	60,471	690.47	0.00					
Jan-90	59,641	689.88	0.00					
Feb-90	58,783	689.27	0.00					
Mar-90	57,151	688.09	0.00					
Apr-90	54,882	686.42	0.00					
May-90	51,019	683.48	0.00					
Jun-90	48,602	681.58	0.00					
Jul-90	44,949	678.59	0.00					
Aug-90	41,892	675.98	0.00					
Sep-90	39,789	674.12	0.00					
Oct-90	38,033	672.51	0.00					
Nov-90	36,874	671.42	0.00					
Dec-90	36,189	670.76	0.00					
Jan-91	35,466	670.06	0.00					
Feb-91	34,938	669.54	0.00					
Mar-91	69,111	696.27	0.00					
Apr-91	77,662	701.60	0.00					
May-91	74,784	699.85	0.00					
Jun-91	69,981	696.83	0.00					
Jul-91	64,365	693.14	0.00					
Aug-91	58,710	689.22	0.00					
Sep-91	55,990	687.24	0.00					
Oct-91	53,192	685.15	0.00					
Nov-91	51,863	684.14	0.00					
Dec-91	51,696	684.01	0.00					
Jan-92	52,335	684.50	0.00					
Feb-92	138,025	731.45	0.00					
Mar-92	165,017	742.00	0.00					
Apr-92	172,518	744.71	0.00					
May-92	170,818	744.10	0.00					
Jun-92	166,776	742.64	0.00					
Jul-92	160,772	740.42	0.00					
Aug-92	151,052	736.71	0.00					
Sep-92	144,545	734.13	0.00					

Draft Technical Memorandum No. 7
Hydrologic Impacts of Alternatives 5B and 5C on Salinity

C

D R A F T
TECHNICAL MEMORANDUM No. 7

2171 E. Francisco Blvd., Suite K • San Rafael, California • 94901
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TO:	David Fee, URS	**DATE:**	June 16, 2006 rev. August 22, 2006
FROM:	Curtis Lawler	**JOB NO:**	1893
RE:	Hydrologic Impacts of Alternatives 5B and 5C on Salinity		

1. INTRODUCTION

This technical memorandum was prepared to determine the hydrologic impacts of Alternatives 5B and 5C on surface water salinity and ground water salinity in the Lompoc Plain. The two additional alternatives (Alternatives 5B and 5C) were identified for the revised Draft Environmental Impact Report on Consideration of Modifications to the U.S. Bureau of Reclamation's Water Right Permits 11308 and 11310 (Applications 11331 and 11332) to Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir) dated August 2003. Draft Technical Memorandum No. 5 (Re: Hydrologic Impact Analysis of Possible Cachuma Operations Alternatives) provides a detailed discussion on how these alternatives (Alternatives 5B and 5C) were analyzed using the Santa Ynez River Hydrology Model (SYRHM). Draft Technical Memorandum No. 5 includes the results on: (1) Cachuma Reservoir operations; (2) Santa Ynez River flows; (3) above Narrows groundwater storage; (4) water rights releases; (5) Cachuma Project water supply; (6) State Water Project (SWP) deliveries; and (7) sensitivity analysis.

Presented in this memorandum are the results of hydrologic impact analyses of Alternatives 5B and 5C for:

- Effects on salinity in Cachuma Reservoir;
- Effects on salinity of surface flows at Lompoc Narrows; and
- Effects on salinity of ground water in Lompoc Plain.

The focus of this salinity analysis is on concentrations of total dissolved solids (TDS) in the Santa Ynez River (surface flow) at the Lompoc Narrows. The Santa Ynez River passes through the Lompoc Narrows, then flows across the Lompoc Plain, where the Lompoc Plain ground water basin is located. The TDS concentrations of the groundwater in the central and western Lompoc plains have increased from less than 1,000 milligrams per liter (mg/L) in the 1940s to greater than 2,000 mg/L in the 1960s (USGS, 1997). The surface water flow of Santa Ynez River reaching the Lompoc Narrows is a significant source of recharge for the Lompoc Plain aquifer. This study has been undertaken, primarily, for the purpose of determining the impacts, if any, of the Cachuma Project operations (including SWP water deliveries) on the TDS concentrations of surface flows at the Lompoc Narrows.

Hydrologic impact analyses were performed using three different models. The SYRHM was used to determine impacts to the surface water at the Lompoc Narrows. The Lompoc groundwater models by the U.S. Geological Survey (USGS) and Hydrologic Consultants, Inc (HCI) were used to determine impacts on salinity in the Lompoc Plain main aquifer.

2. SURFACE WATER SALINITY ANALYSIS OF ALTERNATIVES 5B AND 5C

This section covers the methodology utilized for modeling the salinity in the Santa Ynez River and the impact analysis for Alternatives 5B and 5C.

2A. METHODOLOGY FOR MODELING SALINITY IN SANTA YNEZ RIVER FROM CACHUMA RESERVOIR TO LOMPOC NARROWS

The SYRHM was utilized for the surface water salinity analysis of the EIR alternatives. Technical Memorandum No. 1 provides an overview of the SYRHM and modeling results prepared for the SWRCB Draft EIR (August 2003) which included hydrologic analyses for seven alternatives (Alternatives 1, 2, 3A, 3B, 3C, 4A and 4B). Technical Memorandum No. 3 explains the methodology of modeling surface water salinity in the SYRHM, including model calibration. An overview of the main sources of salts in the surface water as modeled in the SYRHM is summarized below.

- Salinity varies in the local runoff within the Santa Ynez River watershed according to the magnitude of surface flows, where high flows have low salinity and low flows have high salinity. Five different flow-salinity relationships were used in the SYRHM based on five geographic regions with measured salinity data.

- Imports of SWP water with lower salinity affects the TDS concentrations when blended with Santa Ynez River water. In the SYRHM, the SWP imports are either mixed directly in Cachuma Reservoir or released as commingled water into the Santa Ynez River through the Cachuma outlet works.

C

- Another source of salt loading incorporated in the SYRHM is channel loading where the salinity of the Santa Ynez River increases from Solvang to the Lompoc Narrows due to salt contributions from the river channel and associated subflow in the alluvial deposits.

Alternatives 5B and 5C are very similar to Alternatives 3B and 3C in terms of how the surface water salinity is modeled in the SYRHM. Table 1 shows the SWP deliveries under various alternatives including Alternative 5B and 5C. Alternatives 5B and 5C would involve slightly different operations of the SWP imports as discussed below.

TABLE 1
SWP WATER DELIVERIES USED IN SYRHM

	Average for Period 1942-1993 , afa				
	Exchange with ID#1	**BNA Exchange for Alt 4B only**	**SWP Delivered to Cachuma Lake**	**SWP Released in the Outlet Works**	**Total SWP Imports**
Alternative	**(a)**	**(b)**	**(c)**	**(d)**	**(a)+(b)+(c)+(d)**
1	0	0	0	0	0
2	2,497	0	5,489	1,789	10,135
3A	2,472	0	5,878	1,802	10,152
3B	2,482	0	5,844	1,841	10,167
3C	2,497	0	5,836	1,866	10,199
4B	2,501	1,770	4,853	1,245	10,369
5B	2,470	0	5,251	2,317	10,038
5C	2,484	0	5,246	2,337	10,068

The total amount of SWP water delivery to the South Coast would be reduced slightly (<1%) under Alternatives 5B and 5C in comparison to the baseline condition (Alternative 2). However, more SWP is released directly into the river in Alternatives 5B and 5C. This is due to the increased use of the outlet works for making additional releases for fish under Alternatives 5B and 5C. The higher target flows under Alternatives 5B and 5C would require at times releases greater than 10 cfs (Hilton Creek watering system capacity) and releases for fish might contain up to 50% SWP water and have a lower salinity. However, during the months of December through June, no SWP water could be delivered if releases are being made for fish through the outlet works.

Tables 2 and 3 show the annual SWP imports under Alternatives 5B and 5C. Please note that tables in Appendix D of Draft Technical Memorandum No. 5 of August 11, 2005 were revised

Table 2
SUMMARY OF STATE WATER PROJECT DELIVERIES
FOR ALTERNATIVE 5B
(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
WATER YEAR	TOTAL SWP Demand [1)]	ID No. 1 Exchange	M&I Projected Delivery as Percentage of Full Entitlement [2)]	ID No. 1 Exchange Shortage [3)]	Reduced Delivery due to Spill [4)]	ID No. 1 Exchange	SWP in Cachuma [5)]	SWP in Outlet Works [6)]	Total Imports under South Coast Contracts
1942	13,750	2,571	100%	100%	1,868	2,571	8,392	521	11,483
1943	13,750	2,571	89%	100%	3,173	2,571	2,831	1,421	6,822
1944	13,750	2,571	92%	100%	2,467	2,571	5,367	1,500	9,438
1945	13,750	2,571	90%	100%	1,645	2,571	6,589	1,659	10,819
1946	13,750	2,571	88%	100%	0	2,571	6,589	4,988	14,148
1947	13,750	2,571	75%	100%	0	2,571	3,203	4,888	10,662
1948	13,750	2,571	67%	100%	0	2,571	4,007	2,588	9,166
1949	13,750	2,571	65%	88%	0	2,272	5,649	1,055	8,976
1950	13,750	2,571	67%	69%	0	1,768	6,162	1,236	9,167
1951	13,750	2,571	88%	51%	0	1,321	10,196	515	12,031
1952	13,750	2,571	96%	88%	1,820	2,258	5,022	1,647	8,927
1953	13,750	2,571	90%	100%	0	2,571	9,207	3,065	14,843
1954	13,750	2,571	83%	100%	0	2,571	5,892	2,995	11,458
1955	13,750	2,571	69%	100%	0	2,571	4,123	2,855	9,549
1956	13,750	2,571	90%	97%	0	2,493	8,174	1,494	12,161
1957	13,750	2,571	88%	84%	0	2,171	5,863	3,101	11,135
1958	13,750	2,571	90%	93%	1,677	2,379	7,350	1,171	10,900
1959	13,750	2,571	88%	100%	0	2,571	7,283	3,162	13,016
1960	13,750	2,571	63%	100%	0	2,571	3,749	2,274	8,594
1961	13,750	2,571	61%	98%	0	2,515	4,848	1,040	8,403
1962	13,750	2,571	78%	99%	0	2,546	3,216	2,047	7,810
1963	13,750	2,571	94%	100%	0	2,571	12,415	885	15,871
1964	13,750	2,571	88%	100%	0	2,571	9,285	175	12,031
1965	13,750	2,571	82%	93%	0	2,398	5,642	3,227	11,267
1966	13,750	2,571	96%	98%	0	2,520	3,591	3,177	9,288
1967	13,750	2,571	96%	100%	3,545	2,571	2,705	5,665	10,942
1968	13,750	2,571	89%	100%	0	2,571	7,153	2,684	12,409
1969	13,750	2,571	93%	100%	4,230	2,571	2,705	2,044	7,321
1970	13,750	2,571	89%	100%	0	2,571	8,760	2,168	13,499
1971	13,750	2,571	94%	100%	0	2,571	5,157	5,523	13,251
1972	13,750	2,571	88%	100%	0	2,571	4,945	3,857	11,373
1973	13,750	2,571	82%	100%	1,453	2,571	3,453	2,333	8,356
1974	13,750	2,571	94%	100%	0	2,571	7,793	2,171	12,535
1975	13,750	2,571	96%	100%	1,773	2,571	4,015	2,142	8,728
1976	13,750	2,571	88%	100%	0	2,571	7,732	5,506	15,809
1977	13,750	2,571	33%	100%	0	2,571	888	1,364	4,823
1978	13,750	2,571	68%	100%	2,231	2,571	3,421	922	6,914
1979	13,750	2,571	85%	100%	2,214	2,571	3,271	1,515	7,357
1980	13,750	2,571	82%	100%	2,875	2,571	2,705	2,179	7,455
1981	13,750	2,571	83%	100%	0	2,571	9,572	1,485	13,628
1982	13,750	2,571	94%	100%	0	2,571	6,004	4,412	12,986
1983	13,750	2,571	100%	100%	5,544	2,571	4,716	384	7,671
1984	13,750	2,571	100%	100%	2,779	2,571	3,345	1,632	7,548
1985	13,750	2,571	96%	100%	0	2,571	6,292	5,291	14,154
1986	13,750	2,571	81%	100%	699	2,571	4,958	2,178	9,706
1987	13,750	2,571	69%	100%	0	2,571	7,928	1,666	12,166
1988	13,750	2,571	43%	100%	0	2,571	1,433	1,958	5,962
1989	13,750	2,571	58%	93%	0	2,385	3,749	1,887	8,021
1990	13,750	2,571	46%	75%	0	1,916	3,189	1,197	6,302
1991	13,750	2,571	29%	75%	0	1,927	0	2,084	4,011
1992	13,750	2,571	31%	95%	0	2,445	44	1,713	4,202
1993	13,750	2,571	76%	100%	3,282	2,571	2,460	1,835	6,866
AVG	13,750	2,571	80%	96%	832	2,470	5,251	2,317	10,038

NOTES

1) Based on total South Coast contractual agreements with CCWA not including drought buffers and additional water (4,500 afy) contracted by Goleta.

2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology
with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan)
and no new storage facilities. The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water
because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases)
are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

Table 3

SUMMARY OF STATE WATER PROJECT DELIVERIES

FOR ALTERNATIVE 5C

(ACRE-FEET/YEAR)

	DEMAND		SUPPLY			DELIVERY			
			M&I Projected	ID No. 1	Reduced				Total Imports
WATER	TOTAL	ID No. 1	Delivery as Percentage	Exchange	Delivery due	ID No. 1	SWP in	SWP in	under South
YEAR	SWP Demand 1)	Exchange	of Full Entitlement 2)	Shortage 3)	to Spill 4)	Exchange	Cachuma 5)	Outlet Works 6)	Coast Contracts
1942	13,750	2,571	100%	100%	919	2,571	9,341	522	12,434
1943	13,750	2,571	89%	100%	3,173	2,571	2,830	1,421	6,821
1944	13,750	2,571	92%	100%	2,467	2,571	5,367	1,500	9,438
1945	13,750	2,571	90%	100%	1,645	2,571	6,589	1,660	10,820
1946	13,750	2,571	88%	100%	0	2,571	6,589	4,989	14,149
1947	13,750	2,571	75%	100%	0	2,571	3,203	4,887	10,661
1948	13,750	2,571	67%	100%	0	2,571	4,004	2,591	9,166
1949	13,750	2,571	65%	90%	0	2,324	5,595	1,057	8,976
1950	13,750	2,571	67%	73%	0	1,866	6,080	1,220	9,166
1951	13,750	2,571	88%	56%	0	1,431	10,086	515	12,031
1952	13,750	2,571	96%	89%	1,816	2,283	5,014	1,735	9,032
1953	13,750	2,571	90%	100%	0	2,571	9,207	2,965	14,743
1954	13,750	2,571	83%	100%	0	2,571	5,892	2,995	11,458
1955	13,750	2,571	69%	100%	0	2,571	4,124	2,854	9,549
1956	13,750	2,571	90%	98%	0	2,529	8,144	1,491	12,165
1957	13,750	2,571	88%	87%	0	2,243	5,819	3,094	11,156
1958	13,750	2,571	90%	94%	1,673	2,405	7,317	1,167	10,889
1959	13,750	2,571	88%	100%	0	2,571	7,274	3,162	13,007
1960	13,750	2,571	63%	100%	0	2,571	3,749	2,274	8,594
1961	13,750	2,571	61%	99%	0	2,551	4,817	1,035	8,403
1962	13,750	2,571	78%	100%	0	2,562	3,209	2,055	7,827
1963	13,750	2,571	94%	100%	0	2,571	12,398	885	15,854
1964	13,750	2,571	88%	100%	0	2,571	9,285	175	12,031
1965	13,750	2,571	82%	95%	0	2,433	5,612	3,223	11,268
1966	13,750	2,571	96%	98%	0	2,530	3,588	3,177	9,295
1967	13,750	2,571	96%	100%	3,545	2,571	2,705	5,666	10,942
1968	13,750	2,571	89%	100%	0	2,571	7,153	2,685	12,409
1969	13,750	2,571	93%	100%	4,230	2,571	2,705	2,044	7,321
1970	13,750	2,571	89%	100%	0	2,571	8,760	2,168	13,498
1971	13,750	2,571	94%	100%	0	2,571	5,157	5,523	13,251
1972	13,750	2,571	88%	100%	0	2,571	4,945	3,778	11,295
1973	13,750	2,571	82%	100%	1,453	2,571	3,531	2,333	8,435
1974	13,750	2,571	94%	100%	0	2,571	7,793	2,754	13,118
1975	13,750	2,571	96%	100%	1,773	2,571	4,058	1,816	8,445
1976	13,750	2,571	88%	100%	0	2,571	7,732	5,449	15,752
1977	13,750	2,571	33%	100%	0	2,571	1,251	1,357	5,178
1978	13,750	2,571	68%	100%	2,231	2,571	3,324	1,019	6,914
1979	13,750	2,571	85%	100%	2,214	2,571	3,271	1,515	7,357
1980	13,750	2,571	82%	100%	2,875	2,571	2,705	2,179	7,455
1981	13,750	2,571	83%	100%	0	2,571	9,571	1,485	13,628
1982	13,750	2,571	94%	100%	0	2,571	6,004	4,412	12,986
1983	13,750	2,571	100%	100%	5,544	2,571	4,716	384	7,671
1984	13,750	2,571	100%	100%	2,779	2,571	3,345	1,632	7,548
1985	13,750	2,571	96%	100%	0	2,571	6,292	5,291	14,154
1986	13,750	2,571	81%	100%	699	2,571	4,953	2,202	9,725
1987	13,750	2,571	69%	100%	0	2,571	7,917	1,701	12,189
1988	13,750	2,571	43%	100%	0	2,571	1,391	1,958	5,920
1989	13,750	2,571	58%	95%	0	2,433	3,653	1,935	8,021
1990	13,750	2,571	46%	78%	0	2,011	3,096	1,195	6,302
1991	13,750	2,571	29%	78%	0	2,004	296	1,711	4,010
1992	13,750	2,571	31%	96%	0	2,460	0	1,741	4,201
1993	13,750	2,571	76%	100%	3,282	2,571	1,337	2,958	6,866
AVG	13,750	2,571	80%	97%	814	2,484	5,246	2,337	10,068

NOTES

1) Based on total South Coast contractual agreements with CCWA not including drought buffers and additional water (4,500 afy) contracted by Goleta.

2) Based on DWR's SWP model DWRSIM v. 9.06T
Uses results from DWR's No Action scenario 786 which uses Delta historic hydrology with regulations (including 1995 WQCP Bay-Delta Accord, 1997 AFRP CVPIA(b) and the New Melones Interim Operation plan) and no new storage facilities. The percentages in this table do not include the option of purchasing the 10% drought buffer.

3) Based on shortages in Cachuma Project estimated by the SYRHM 0498

4) Assumes no CCWA deliveries when Cachuma is spilling and also that South Coast would not want to make-up that delivery water because of the wetness of the basin and already assuming full deliveries of 13750 pending spills

5) SWP reductions in delivery (due to restrictions of 50% SWP during water right releases and 0% SWP during passage releases) are redistributed to the following months up to one year.

6) Limited to being 50% of outlet releases

to reflect rescheduling of the SWP imports when water rights releases are made. This is consistent with the modeling of other EIR alternatives, except Alternative 1 which does not have SWP imports. This rescheduling of SWP imports is done in accordance with the Settlement Agreement of 2002 which states that the parties will "make best efforts to maximize the delivery by the Central Coast Water Authority ('CCWA') of State Water Project (SWP) water with lower concentrations of total dissolved solids ('TDS') into the outlet works at Bradbury Dam during WR 89-18 water rights releases consistent with the NMFS BO."

In performing the surface water salinity modeling for Alternatives 5B and 5C, a computer programming "bug" was found in the SYRHM model code for surface water salinity modeling originally performed in 2001. The bug relates to Cachuma Reservoir salinity. Releases for fish are made from Cachuma Reservoir on an iterative basis in the SYRHM model code for each month until downstream flow targets are met. Due to these iterations within the model's monthly timestep, the salts from the incremental releases for fish were not properly taken out of Cachuma Reservoir. The results of this model programming bug is that the salinity in Cachuma Reservoir was about 8 mg/L higher than it should have been for Alternative 2 and about 18 mg/L higher than it should have been for Alternatives 3A, 3B, and 3C. Because Alternative 1 did not have releases for fish, the Cachuma Reservoir salinity in Alternative 1 is unchanged. Likewise, the model calibration of the SYRHM for surface water salinity modeling did not change because the model calibration did not have releases for fish. Table 4 summarizes the median Cachuma Reservoir salinity for the period 1942-1993 for the previous and revised surface water salinity model runs performed in 2001 and 2006, respectively. This programming bug created errors in Cachuma Reservoir salinity of about 1.5 to 3 percent based on the median salinity.

Table 4
Corrections in Simulated Cachuma Reservoir Salinity (1942-1993)

	Median Salinity (mg/L)			
Alternative	**Technical Memorandum 2001**	**Technical Memorandum 2006**	**Difference**	**Percentage**
1	605	605	0	0
2	575	566	-8	-1.5%
3A	585	567	-18	-3.1%
3B	585	567	-18	-3.2%
3C	585	567	-18	-3.2%
4B	591	572	-19	-3.3%
5B	NA	569	0	0
5C	NA	570	0	0

C

The error from the programming bug was even smaller in the salinity of surface flows at the Lompoc Narrows due to attenuation from the above Narrows riparian reach. The results of this model programming bug is that the surface water salinity at the Lompoc Narrows was about 2 mg/L higher than it should have been for Alternative 2 and about 5 mg/L higher than it should have been for Alternatives 3A, 3B, and 3C. Table 5 summarizes the surface water salinity for the flows for the Lompoc Narrows for the previous and revised surface water salinity model runs performed in 2001 and 2006, respectively. This programming bug created errors in the Santa Ynez River salinity at the Lompoc Narrows of less than one percent based on the average salinity.

Table 5
Corrections in Simulated Salinity of Santa Ynez River at Lompoc Narrows (1942-1993)

Alternative	Average Annual Flow Weighed TDS (mg/L)			
	Technical Memorandum 2001	Technical Memorandum 2006	Difference	Percentage
1	766	766	0	0
2	743	741	-2	-0.3%
3A	752	747	-5	-0.7%
3B	758	753	-5	-0.7%
3C	751	746	-5	-0.7%
4B	562	560	-2	-0.4%
5B	NA	747	0	0
5C	NA	747	0	0

The quantity of surface water flows for any of the alternatives is not affected by the above corrections. Since the revised surface water salinity changes are small, none of the conclusions from the previous Stetson technical memoranda have changed. However, all surface water salinity figures have been updated here. Aside from the above changes, all other modeling assumptions and limitations in the SYRHM are the same for all of the alternatives, including Alternatives 5B and 5C.

2B. RESULTS OF SURFACE WATER ANALYSIS – ALTERNATIVES 5B AND 5C

Overall, the SYRHM results indicate that the surface water salinity under Alternatives 5B and 5C is very similar to Alternatives 3B and 3C due to similar operations for WR 89-18 and releases for fish and similar import quantities of SWP water.

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Figure 1 shows the TDS concentrations in Cachuma Reservoir for each alternative. Alternative 1 has the highest TDS due to no imports of SWP. All of the TDS concentrations are very similar, except during droughts when the amount of storage in Cachuma Reservoir decreases so that SWP imports become a larger percentage of the storage.

Figure 2 shows the frequency of TDS concentrations in water rights releases directly below the dam. SWP mixing in the outlet works is limited to 50% of the WR 89-18 releases, and SWP imports are typically about 300 mg/L lower in TDS concentration than the TDS in Cachuma Reservoir. For these reasons, the TDS of WR 89-18 releases under Alternative 2, 3A, 3B, 3C, 4B, 5B, and 5C are typically about 150 mg/L lower than Alternative 1 as shown in Figure 2.

The simulated flow and TDS of the Santa Ynez River at the Lompoc Narrows from the SYRHM are the inputs to the Lompoc Plain groundwater models. The differences in flow and TDS concentrations of the surface water at the Lompoc Narrows are discussed briefly here in order to facilitate the understanding of the simulated response in TDS concentrations of the Lompoc Plain ground water for the EIR alternatives.

The primary difference between the EIR alternatives regarding the salinity at the Narrows is related to the importation of SWP water. In Alternative 1, there are no SWP imports. In Alternative 4B, SWP imports are recharged directly into Lompoc Plain aquifer in exchange for the Below Narrows Account (WR 89-18) water. All of the other alternatives (including Alternatives 5B and 5C) are very similar in terms of SWP imports. Figure 3 shows the frequency of TDS concentrations of water rights releases (WR 89-18) at the Narrows. The frequency analysis does not include months of no flows or flows less than 0.5 cfs at the Narrows. Figure 3 indicates that imports of SWP water improve the salinity at the Narrows during WR 89-18 releases. The median difference in TDS concentrations between Alternative 1 and other alternatives (including Alternatives 5B and 5C) is about 130 mg/L.

The total surface flow at the Lompoc Narrows is very similar for the EIR alternatives because of the tributary contributions in the reach between Bradbury Dam and the Lompoc Narrows and the similarity in total amount of water discharged from Cachuma Reservoir as either spills, water rights releases, or releases for fish (Stetson, 2001, 2005). Figure 4 shows the annual average flows of the Santa Ynez River at the Lompoc Narrows. The monthly average simulated flows based on the SYRHM for the period 1942-1988 are shown in Figure 5. The differences between the alternatives are most apparent during summer months. The greatest differences exist between Alternatives 2, 3, and 5, which are very similar, and Alternative 4. In Alternative 4B,

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SWP water is recharged directly at or below the Narrows and increases the flow significantly in dry months. However, directly upstream of the recharge point near the Lompoc Narrows, surface flows are actually smaller than the rest of the alternatives due to the proposed Below Narrows Exchange as shown in Figure 5.

The average annual flow weighted TDS of the Santa Ynez River (simulated by SYRHM) at the Narrows for the EIR alternatives is shown in Figure 6. The monthly average TDS of flows simulated at the Narrows for each EIR alternative is shown in Figure 7. These graphs clearly show the inverse relationship between flow and TDS. The wintertime TDS is 300 to 600 mg/L lower than summertime TDS because of the higher flows. The TDS concentrations for Alternatives 2, 3B, 3C, 5B, and 5C are very similar. There is less similarity in the TDS for Alternative 4. Alternative 4B stands out because, at low flows, the effects of discharging State Project water below the Narrows for recharge significantly reduce the average TDS, even though the amount of water discharged is relatively small. However, the TDS at the Narrows, except during the winter months, would be higher under Alternative 4B immediately upstream of the recharge area than it is under the baseline operation (Alternative 2) because Below Narrows Account releases would no longer be made from Cachuma Reservoir.

3. GROUND WATER SALINITY ANALYSIS OF ALTERNATIVES 5B AND 5C

This section covers the methodology utilized for modeling salinity in the Lompoc ground water basin and the results of analysis using the USGS and HCI models.

3A. METHODOLOGY FOR MODELING SALINITY IN LOMPOC PLAIN GROUND WATER BASIN

Two sets of Lompoc Plain groundwater models were utilized for the ground water salinity analysis of the alternatives. These models are generally referred to as the USGS and HCI flow and solute transport models. Technical Memorandum No. 4 explains the methodology of modeling groundwater salinity in the Lompoc Plain. The reader is also referred to the USGS (1997) and HCI (1997, 1999) reports that provide a detailed description of the models.

The objective of this analysis is to simulate the relative change in the quality of ground-water in the Main Zone aquifer of the Lompoc Plain that will result from various Cachuma Reservoir operational alternatives to be considered in the EIR. The USGS and HCI flow and transport model simulations for the Cachuma EIR alternatives both use the same Santa Ynez River flow and TDS input data at the Lompoc Narrows produced as outputs by the SYRHM.

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The common time period for all models is controlled by the USGS model period which was January 1941 to December 1988. Although the models were run for their respective calibration periods, the hydrologic period selected for evaluation of the EIR alternatives using the ground water models is 1952 to 1988. This period was selected for averaging the effects of model results for each alternative because it was a more balanced hydrologic period that overlaps the calibration periods of both sets of models, and because it limits the effect of using different initial conditions. In other words, the same initial conditions were used for all of the EIR alternatives in each model.

The most significant modifications made to the ground-water flow and transport models from the calibrated versions that were provided by the USGS and HCI was to utilize the 1988 ground-water pumping data as a constant throughout the simulations. The purpose in using constant pumping is to better represent current conditions, and allow for a suitable comparison between the EIR alternatives. Also, initial water levels and TDS were reset to those simulated at the end of 1988 for the original calibration of each model.

From the limited evaluation of the models that could be conducted within the scope of this study, it is believed that the TDS results of models are only accurate for future predictions to within a range of roughly 100 to 300 mg/L, depending upon location, magnitude of changes in input data, hydrologic conditions, length of simulation period and other factors. For use in comparative analysis, such as between EIR alternatives where changes in input are limited, the differences in TDS between simulations in a single model of less than 100 mg/L may be useful in cases where clear trends are exhibited.

The differences between EIR alternatives are best viewed within one model rather than between models since the differences in model construction and approach to calibration and the complexity of the system and limitation of data make it difficult to compare the models directly. The predictive capability of these models to simulate ground water quality conditions in the future is limited by: (1) the conversion of monthly SYRHM output into the biannual and annual stress periods in the USGS and HCI transport models, respectively; (2) the use of constant 1988 pumping, as originally developed for the model calibration, which may not represent present or future pumping amounts or pumping distribution by aquifer and subregion.

3B. Ground Water Model Results for Cachuma EIR Alternatives

For this study two well locations were selected from each of the primary subareas, Eastern, Central and Western Plain in order to evaluate the effects of each alternative in the regions of the majority of ground water pumping (Figure 8). The wells were selected on the basis of location, availability of measured water quality data at that location, and the fact that they were used as calibration wells by the USGS (Bright, and others, 1997). The following is a summary of the simulated water levels and TDS for selected sites within the Main Zone of the Lompoc Plain for the Cachuma EIR alternatives. The results are presented for each Alternative as tables representing the average TDS at each location over the period 1952 through 1982, and time series graphs of TDS and water levels representing the results for the entire simulated period used in the USGS and HCI models.

1. Average Simulated TDS for the 1952 – 1982 Base Period

The average TDS for the Main Zone aquifer in the Lompoc Plain for each subarea at selected locations and the flow-weighted average for the City of Lompoc active wells (five wells) are shown in Table 6. The average difference in TDS between Alternative 2 and other alternatives are shown in Table 7 as both a difference in TDS in mg/L and as a percentage. Alternative 2 was selected as the baseline, by which other alternatives can be compared for the purpose of the Cachuma EIR. The results shown in Table 6 illustrate the magnitude of the average simulated TDS in each subarea and within a given subarea. The values in Table 6 can provide an indication of the relative precision of the model results that, although presented to the nearest 1 mg/L, may be best evaluated by rounding to the nearest 100 mg/L. However, for comparisons between alternatives, differences of less than 100 mg/L may be useful where clear trends are observed.

Table 6 shows that, within the HCI model, the overall magnitude of the average TDS ranges from about 2000 to 2300 mg/L in the Western Plain, a relatively uniform 1800 mg/L in the Central Plain, over 800 to 1700 mg/L in the Eastern Plain, and about 900 to 1000 mg/L for the City of Lompoc wells. The range of TDS in the HCI model is approximately 1500 mg/L basin wide. The differences in results within each subarea range from about 900 mg/L in the Eastern Plain, 300 mg/L in the Western Plain, and no significant difference within the Central Plain. The new EIR alternatives (Alternatives 5B and 5C) also fall within these ranges of TDS in the HCI model.

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Table 6
Lompoc Plain Groundwater Quality
Simulated Average TDS for Selected Locations
Main Zone Aquifer (1952-1982)
[mg/L]

HCI Model

	Alt 1	Alt 2	Alt 3B	Alt 3C	Alt 4B	Alt5B	Alt 5C
Western Plain							
Well 26F1,3,4,5	2331	2330	2329	2330	2332	2333	2333
Well 25D1,3	2020	2018	2016	2016	2018	2017	2017
Central Plain							
Well 31A3	1786	1784	1784	1782	1803	1798	1798
Well 29N6	1785	1784	1784	1786	1794	1800	1799
Eastern Plain							
Well 28M2	1733	1728	1726	1723	1731	1715	1712
Well 34B1	1019	1009	1006	1002	842	986	987
City Wells - Avg	1022	1012	1011	1008	854	989	991

USGS Model

	Alt 1	Alt 2	Alt 3B	Alt 3C	Alt 4B	Alt 5B	Alt 5C
Western Plain							
Well 26F1,3,4,5	2901	2885	2844	2850	2906	2831	2830
Well 25D1,3	2291	2273	2231	2235	2284	2210	2209
Central Plain							
Well 31A3	2180	2180	2176	2176	2176	2172	2171
Well 29N6	1933	1937	1935	1935	1928	1934	1934
Eastern Plain							
Well 28M2	1769	1770	1758	1758	1752	1753	1754
Well 34B1	984	973	975	974	931	971	970
City Wells - Avg	1115	1108	1109	1107	1085	1105	1104

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Within the USGS model, Table 6 shows that the overall magnitude of the average TDS ranges from about 2200 to 2900 mg/L in the Western Plain, 1900 to 2200 mg/L in the Central Plain, about 900 to 1800 mg/L in the Eastern Plain, and about 1100 mg/L for the City of Lompoc wells. The range of TDS in the USGS model is approximately 2000 mg/L basin wide. The differences in results within each sub-area range from about 700 mg/L in the Western Plain, about 300 mg/L within the Central Plain, and 800 mg/L in the Eastern Plain. Alternatives 5B and 5C also fall within these ranges of TDS in the USGS model.

Table 7 was created to show the extremely small simulated TDS differences between the EIR alternatives. Results shown in Table 7 have been normalized relative to Alternative 2. The difference in TDS between alternatives at a given location may be considered below the absolute accuracy of either model. However, it is hoped that they may exhibit trends that would allow evaluation of the alternatives.

The results shown in Table 7 are primarily for comparisons between the EIR alternatives as simulated by a single model. These indicate only minor differences in the water quality in the Main Zone aquifer of the Lompoc Plain that result from the changes in Cachuma operations for the EIR alternatives. Cachuma operations that result in higher dry season flows due to increased releases for fish (Alternatives 3 and 5) provide benefits to the Eastern Plain (HCI and USGS) and possibly to the Western Plain (USGS). Alternatives that involve changes in operations directly within the Lompoc Plain basin such as Alternative 4B, which includes direct recharge of high quality SWP water in the basin, result in the most significant changes throughout the Main Zone in the Lompoc Plain. In general, the HCI model appears to be more sensitive to Cachuma operations in the Eastern Plain, and the USGS model appears to be more sensitive in the Western Plain.

None of the Alternatives considered for future operations exhibit conspicuous basin wide trends that would suggest it was superior to the others. Alternative 1 is more representative of past operations, but does exhibit a clear trend of inferior water quality basin wide, although the magnitude is relatively minor or even insignificant. Locally, the greatest improvement in ground water quality occurs near the Lompoc Narrows under Alternative 4B where recharging of low TDS SWP water results in a significant improvement near the City wells, including Well 34B1, possibly due to high vertical permeability which allows localized deep percolation of high quality SWP discharge. Slight improvements in TDS are shown in the HCI model results for Alternatives 3B and 3C. Alternatives 5B and 5C show slight improvements compared to

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Table 7
Lompoc Plain Groundwater Quality
Simulated Average TDS for Selected Locations
Main Zone Aquifer (1952-1982)
[Alternatives - Alternative 2]

	HCI Model											
	Alt 1		Alt 3B		Alt 3C		Alt 4B		Alt 5B		Alt 5C	
	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%
Western Plain												
Well 26F1,3,4,5	1.4	0.1%	-0.4	0.0%	0.0	0.0%	2.0	0.1%	3.4	0.1%	3.4	0.1%
Well 25D1,3	2.6	0.1%	-1.9	-0.1%	-2.0	-0.1%	-0.1	0.0%	-0.7	0.0%	-0.7	0.0%
Central Plain												
Well 31A3	2.3	0.1%	-0.1	0.0%	-1.5	-0.1%	19.6	1.1%	14.2	0.8%	14.2	0.8%
Well 29N6	1.0	0.1%	-0.3	0.0%	1.2	0.1%	9.9	0.6%	15.6	0.9%	14.6	0.8%
Eastern Plain												
Well 28M2	5.0	0.3%	-1.6	-0.1%	-4.8	-0.3%	3.1	0.2%	-13.1	-0.8%	-16.1	-0.9%
Well 34B1	9.3	0.9%	-3.2	-0.3%	-6.8	-0.7%	-167.1	-16.6%	-23.2	-2.3%	-22.2	-2.2%
City Wells - Avg	10.3	1.0%	-1.4	-0.1%	-4.5	-0.4%	-158.2	-15.6%	-23.0	-2.3%	-21.0	-2.1%

	USGS Model											
	Alt 1		Alt 3B		Alt 3C		Alt 4B		Alt 5B		Alt 5C	
	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%
Western Plain												
Well 26F1,3,4,5	15.5	0.5%	-41.0	-1.4%	-35.0	-1.2%	21.1	0.7%	-54.2	-1.9%	-55.2	-1.9%
Well 25D1,3	17.3	0.8%	-42.6	-1.9%	-38.3	-1.7%	10.4	0.5%	-63.5	-2.8%	-64.5	-2.8%
Central Plain												
Well 31A3	-0.1	0.0%	-4.0	-0.2%	-4.0	-0.2%	-4.5	-0.2%	-8.1	-0.4%	-9.1	-0.4%
Well 29N6	-3.6	-0.2%	-1.1	-0.1%	-1.2	-0.1%	-8.4	-0.4%	-2.6	-0.1%	-2.6	-0.1%
Eastern Plain												
Well 28M2	-0.7	0.0%	-11.9	-0.7%	-11.9	-0.7%	-17.5	-1.0%	-16.9	-1.0%	-15.9	-0.9%
Well 34B1	10.8	1.1%	1.7	0.2%	1.6	0.2%	-42.0	-4.3%	-1.8	-0.2%	-2.8	-0.3%
City Wells - Avg	7.0	0.6%	1.0	0.1%	-1.1	-0.1%	-23.5	-2.1%	-3.4	-0.3%	-4.4	-0.4%

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Alternatives 2, 3B and 3C due to both increased low flows at the Narrows resulting from more releases for fish from Cachuma Reservoir and more releases of SWP water directly into the river during the releases for fish through the outlet works during wet and above-normal years.

In general, the results for both models are generally consistent, although some differences in magnitude occur that may be explained by differences in boundary conditions, calibration approach and conceptual models. The ground water model results tend to favor Alternative 4B in the Eastern Plain. However, Alternative 4B would increase the TDS in the alluvial groundwater basin immediately upstream of the Lompoc Narrows, which is the Santa Rita sub-unit, due to the Below Narrows Exchange.

2. Time Series Graphs of USGS Model Results

Time series graph of water levels and TDS are presented as Figures 9 to 32 and are discussed briefly below for each of the six locations (Figure 8) selected for comparisons between the EIR alternatives. In general, the graphs show a degree of similarity between the alternatives which make it difficult to identify clear difference between them. In comparison, the changes in TDS shown in Stetson Technical Memorandum No. 4 showed large historical increases in TDS compared to the relatively minor differences simulated for most of the EIR alternatives. The times series graphs are shown for the entire calibration period of each model, unlike the TDS Tables 6 and 7 which are based on averages from the period 1952-82.

<u>Eastern Lompoc Plain</u>

The Eastern Plain is greatly influenced by flows and TDS of surface water at the Narrows. The simulated TDS in the Main Zone in the eastern Lompoc Plain using the USGS model are shown for two selected well locations in Figures 9 and 10. Figure 9 shows the simulated TDS at Eastern Plain well 34B1. Alternative 4B clearly results in a lower TDS than the others at this location. At increasing distances from the Narrows, a greater influence on ground water quality in the Main Zone appears to be the TDS of water in overlying or underlying aquifers or along margins as shown in Figures 10 which shows the simulated TDS in the Main Zone for Well 28M2 on the western side of the eastern Lompoc Plain. There is little difference between the results for each alternative at this location, which begins to show a more subdued response more characteristic of wells in the Central Plain.

Figure 11 shows the water level response in the Main Zone near the Lompoc Narrows. Figure 12 shows a similar but more subdued water level response. The simulated water level

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response in the Eastern Plain to all alternatives is very similar and none stands out as having a clear advantage over the others with respect to ground water levels in the Main Zone in this area.

Central Lompoc Plain

The simulated TDS response in the Central Plain shows the dampened response to flow and TDS changes at the Narrows with increasing distance (Figures 13 and 14). The lower permeability of overlying sediments and distance from the Narrows has the effect of allowing the simulated TDS for all alternatives to become very similar. The simulated water levels for these same locations in the Lompoc Plain are shown in Figures 15 and 16. Both locations show a similar response to each Alternative such that none is clearly superior over the others. Alternatives 5B and 5C are slightly higher than Alternatives 2, 3B, and 3C due to the increased releases for fish from Cachuma Reservoir.

Western Lompoc Plain

The simulated TDS graphs for each alternative in the Western Plain are shown in Figures 17 and 18. The differences between alternatives are small relative to the magnitude of the TDS in the Main Zone in the Western Plain sub-area but shows more variation than TDS in the Central Plain (Figures 13 and 14) caused by greater inflow of poor quality water from adjacent boundaries of underlying formations. Figures 19 and 20 show the water level response in the Main Zone beneath the Western Lompoc Plain. The water levels in this region show similar responses as those in the Eastern and Central Plain. There appears to be little difference between the alternatives.

3. Time Series Graphs of HCI Model Results

The graphs of results for the HCI model contrast with those of the USGS model. The HCI model results appear smoother due to the annual stress periods.

Eastern Lompoc Plain

The simulated TDS in the Main Zone in the eastern Lompoc Plain using the HCI model are shown in Figures 21 and 22. Figure 21 shows the simulated TDS at Eastern Plain Well 34B1. The simulated TDS in the Main Zone is similar for all the EIR alternatives, except Alternative 4B. In Alternative 4B, the direct recharge of much lower TDS water (approximately 300 mg/L) in the Santa Ynez River bed near this well location, lowers the simulated TDS in the aquifer in that area by about 150 mg/L relative to the other alternatives. The minor differences in

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simulated TDS at this location between the other alternatives are a result of the similarity in the simulated flow and TDS at the Narrows for those alternatives.

Figure 22 shows the simulated TDS in the Main Zone for Well 28M2 on the western side of the Eastern Plain. There is little significant difference between the results for each alternative at this location. The effects of direct recharge of high quality water in Alternative 4B appear to provide little benefit at this distance from the recharge area. The long-term trend is relatively flat, showing little response to hydrology.

Figures 23 and 24 show the water level response in the Main Zone near the Lompoc Narrows. The simulated water level response in the Eastern Plain to all alternatives is very similar and none stands out as showing clear advantages over another in the Main Zone. Water levels under Alternatives 5B and 5C are slightly higher than Alternatives 2, 3B, and 3C due to the increased releases for fish from Cachuma Reservoir. Figure 24 shows a similar water level response to that shown in Figure 23, but is more subdued due to distance from the area of highest recharge and highest degree of hydraulic communication with surface water near the Narrows.

Central Lompoc Plain

The simulated TDS response in the Central Plain is more subdued than near the Narrows due to the lower permeability of overlying sediments and increased distance from the primary area of stream recharge (below Lompoc Narrows) (Figures 25 and 26). There is no significant difference between the alternatives in this area. However, the TDS for Alternatives 5C and 4B is slightly higher compared to other alternatives although they would be expected to be slightly lower. There is no explanation for these apparently anomalous results.

The simulated water levels for these Central Lompoc Plain locations are shown in Figures 27 and 28. Both locations show a similar response to each alternative. Alternatives 5B and 5C are slightly higher than Alternatives 2, 3B, and 3C possibly due to the increased releases for fish from Cachuma Reservoir.

Western Lompoc Plain

The simulated TDS for each alternative in the Western Plain is shown in Figures 29 and 30. The results for each of the alternatives are very similar and show little variation over time, due to hydrology. Figures 31 and 32 show the water level response in the Main Zone beneath the Western Lompoc Plain. There is little difference in water levels between the alternatives and

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they show only a minor response to hydrologic trends particularly in the model study period from 1952 through 1982.

4. REFERENCES

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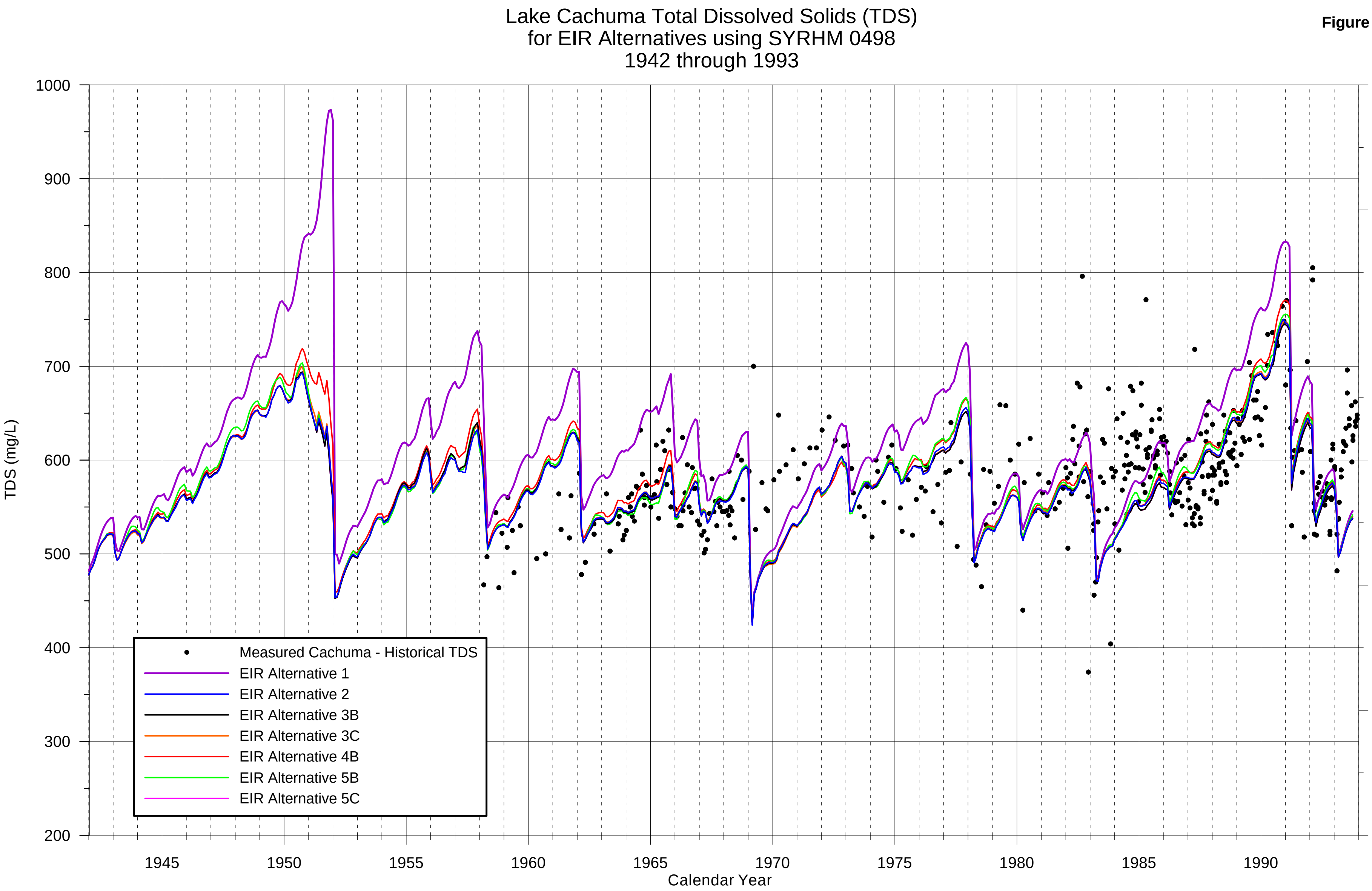
Figures

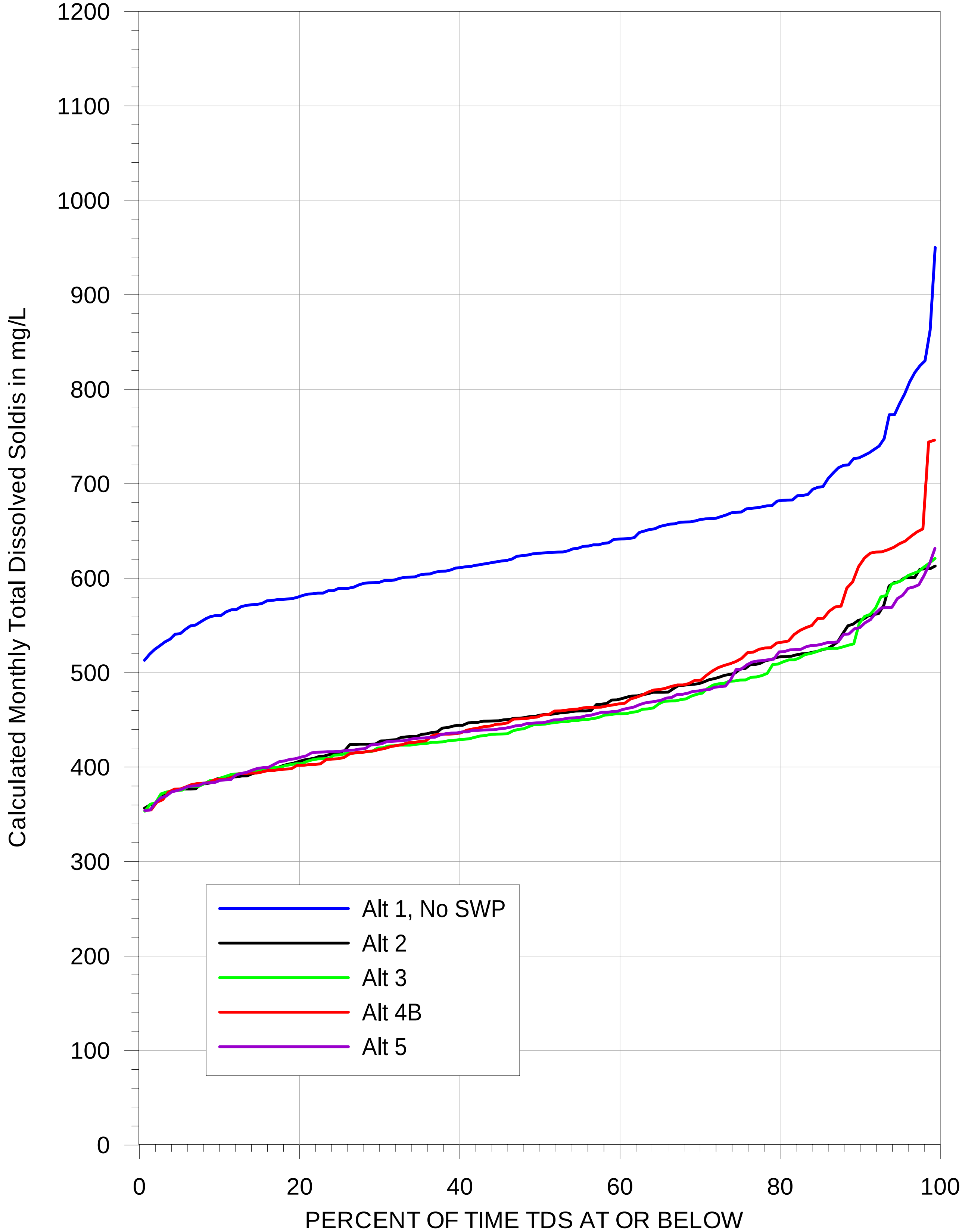
Figure 1



Lake Cachuma Total Dissolved Solids (TDS)
for EIR Alternatives using SYRHM 0498
1942 through 1993
TDS (mg/L)
1000
900
800
700
600
500
400
300
200
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Calendar Year
Measured Cachuma - Historical TDS
EIR Alternative 1
EIR Alternative 2
EIR Alternative 3B
EIR Alternative 3C
EIR Alternative 4B
EIR Alternative 5B
EIR Alternative 5C

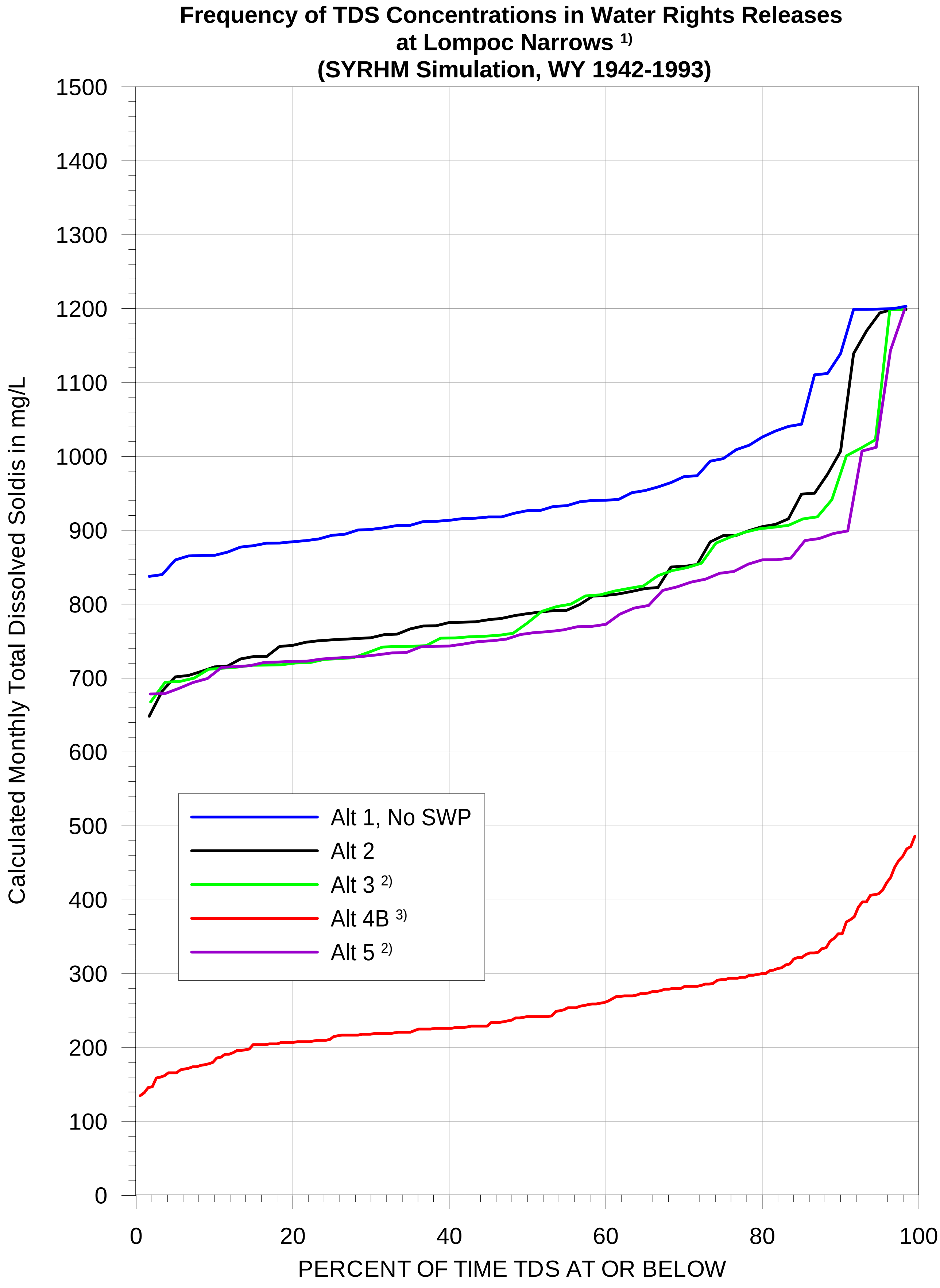
Figure 2

Frequency of TDS Concentrations in Water Rights Releases Below the Dam (SYRHM Simulation, WY 1942-1993)



1) Results from EIR Alternatives 3C and 5C are plotted here; Alts 3B and 5B are very similar to 3C and 5C, respectively.
2) Water rights release TDS for ANA releases are shown here for 4B.

Figure 3



1) Frequency does not include months of no flow or flows less than 0.5 cfs at the Narrows.
2) Results from EIR Alternatives 3C and 5C are plotted here; Alts 3B and 5B are very similar to 3C and 5C, respectively.
3) State Water Project TDS during Below Narrows Account water right releases.

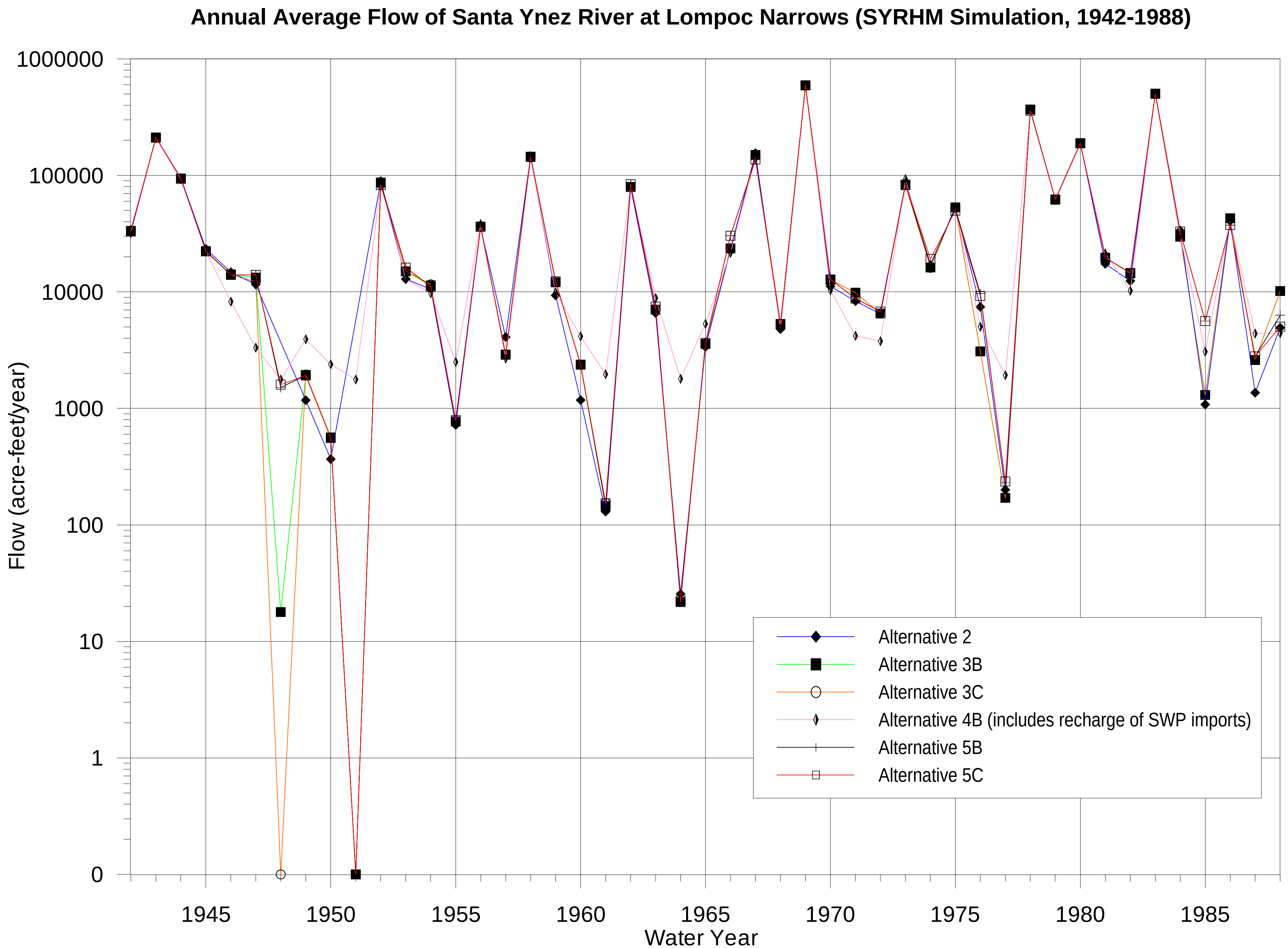
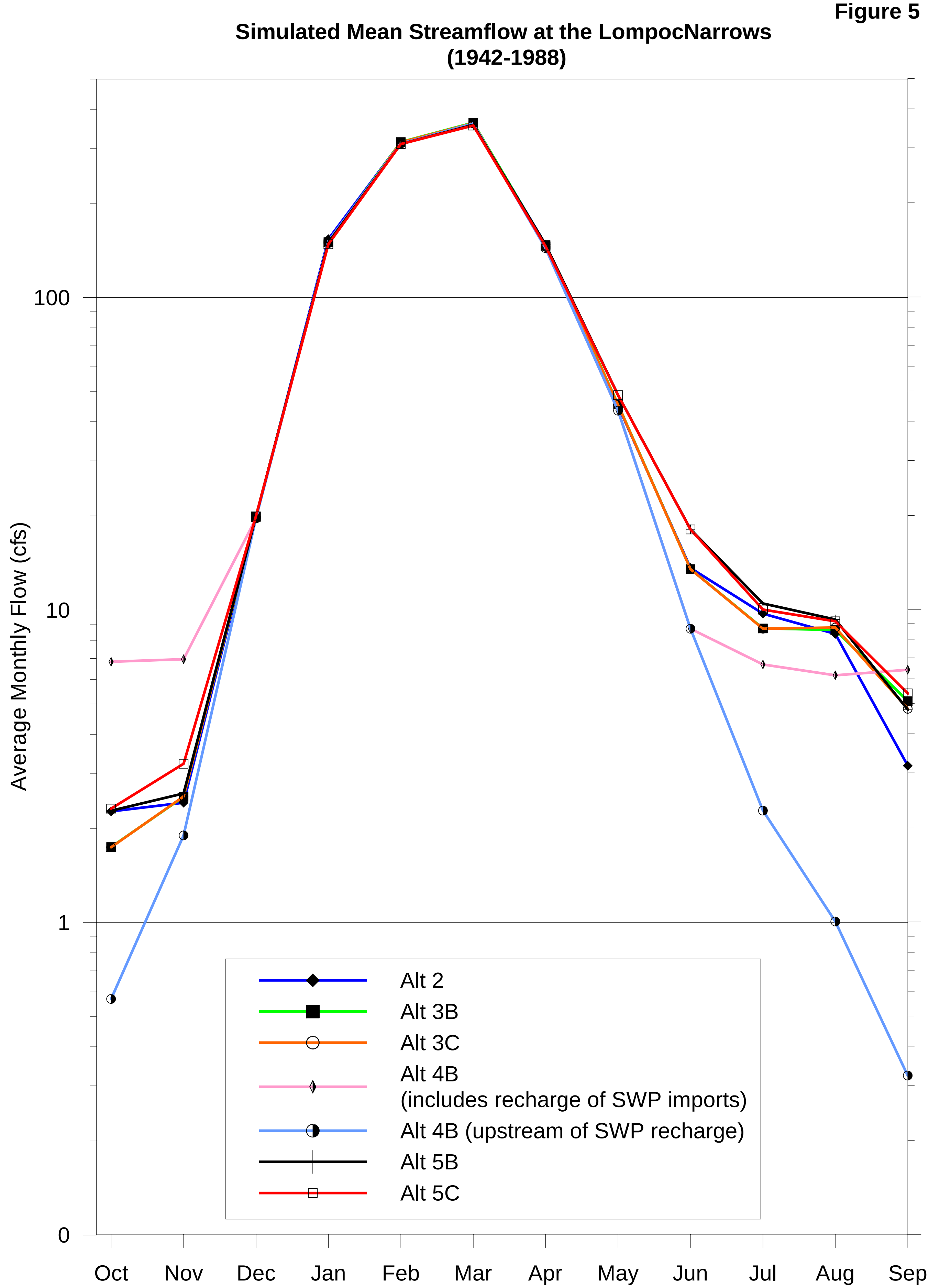

Annual Average Flow of Santa Ynez River at Lompoc Narrows (SYRHM Simulation, 1942-1988)
Flow (acre-feet/year)
1000000
100000
10000
1000
100
10
1
0
1945
1950
1955
1960
1965
1970
1975
1980
1985
Water Year
Alternative 2
Alternative 3B
Alternative 3C
Alternative 4B (includes recharge of SWP imports)
Alternative 5B
Alternative 5C

Figure 4

Figure 5


Simulated Mean Streamflow at the LompocNarrows
(1942-1988)
Average Monthly Flow (cfs)
100
10
1
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Alt 2
Alt 3B
Alt 3C
Alt 4B
(includes recharge of SWP imports)
Alt 4B (upstream of SWP recharge)
Alt 5B
Alt 5C

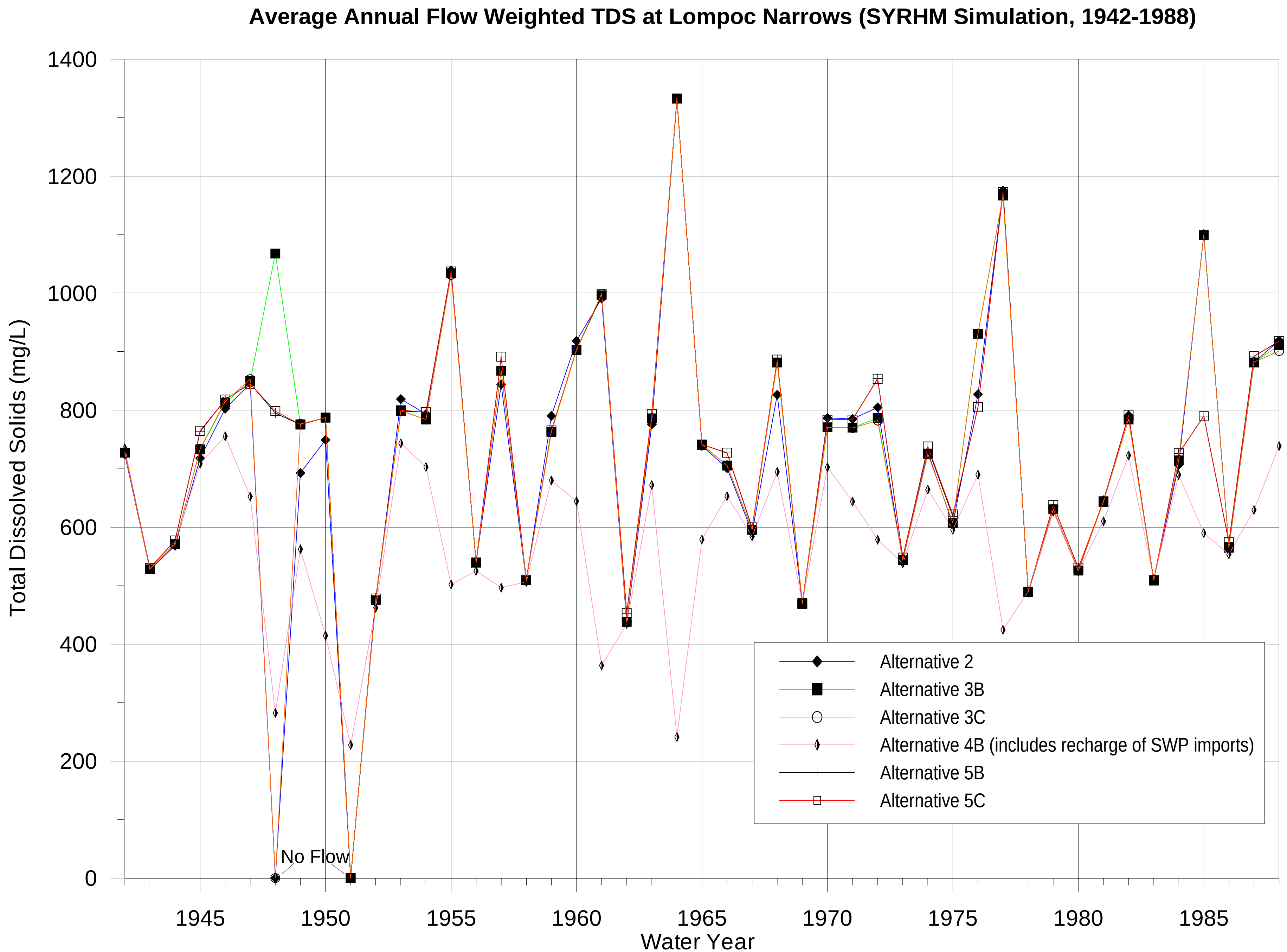
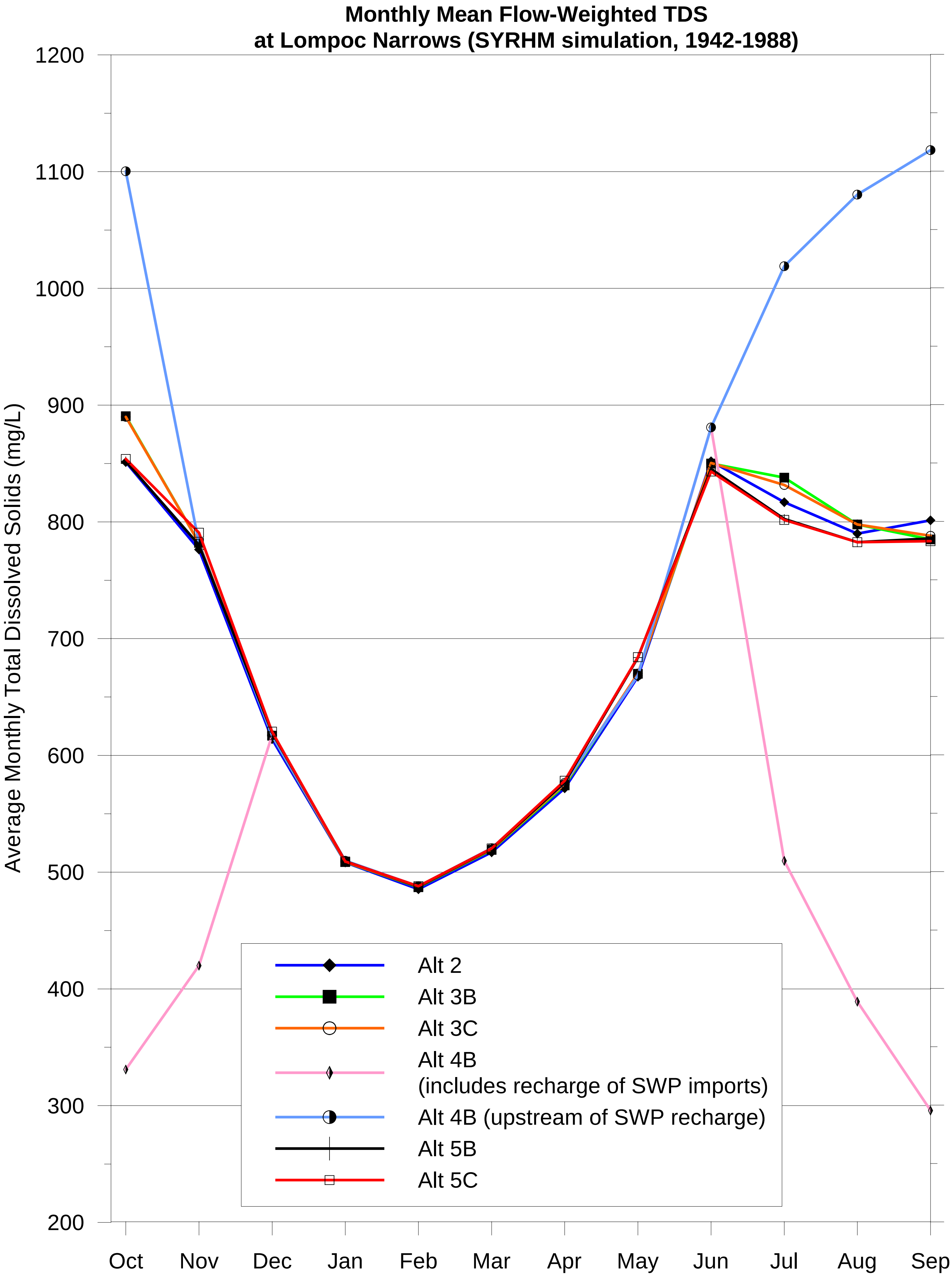
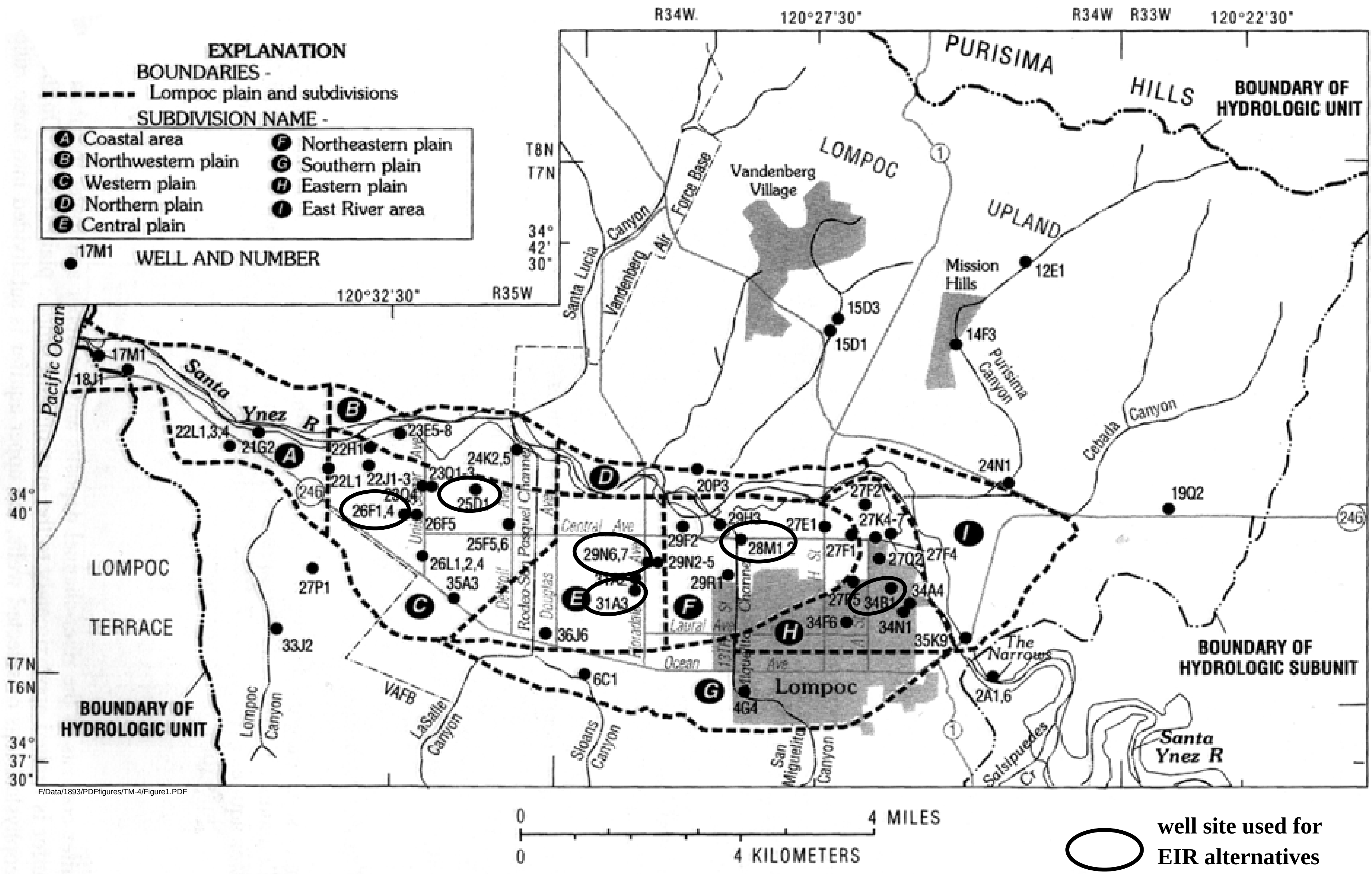

Average Annual Flow Weighted TDS at Lompoc Narrows (SYRHM Simulation, 1942-1988)
Total Dissolved Solids (mg/L)
0
200
400
600
800
1000
1200
1400
1945
1950
1955
1960
1965
1970
1975
1980
1985
Water Year
No Flow
Alternative 2
Alternative 3B
Alternative 3C
Alternative 4B (includes recharge of SWP imports)
Alternative 5B
Alternative 5C

Figure 6

Figure 7



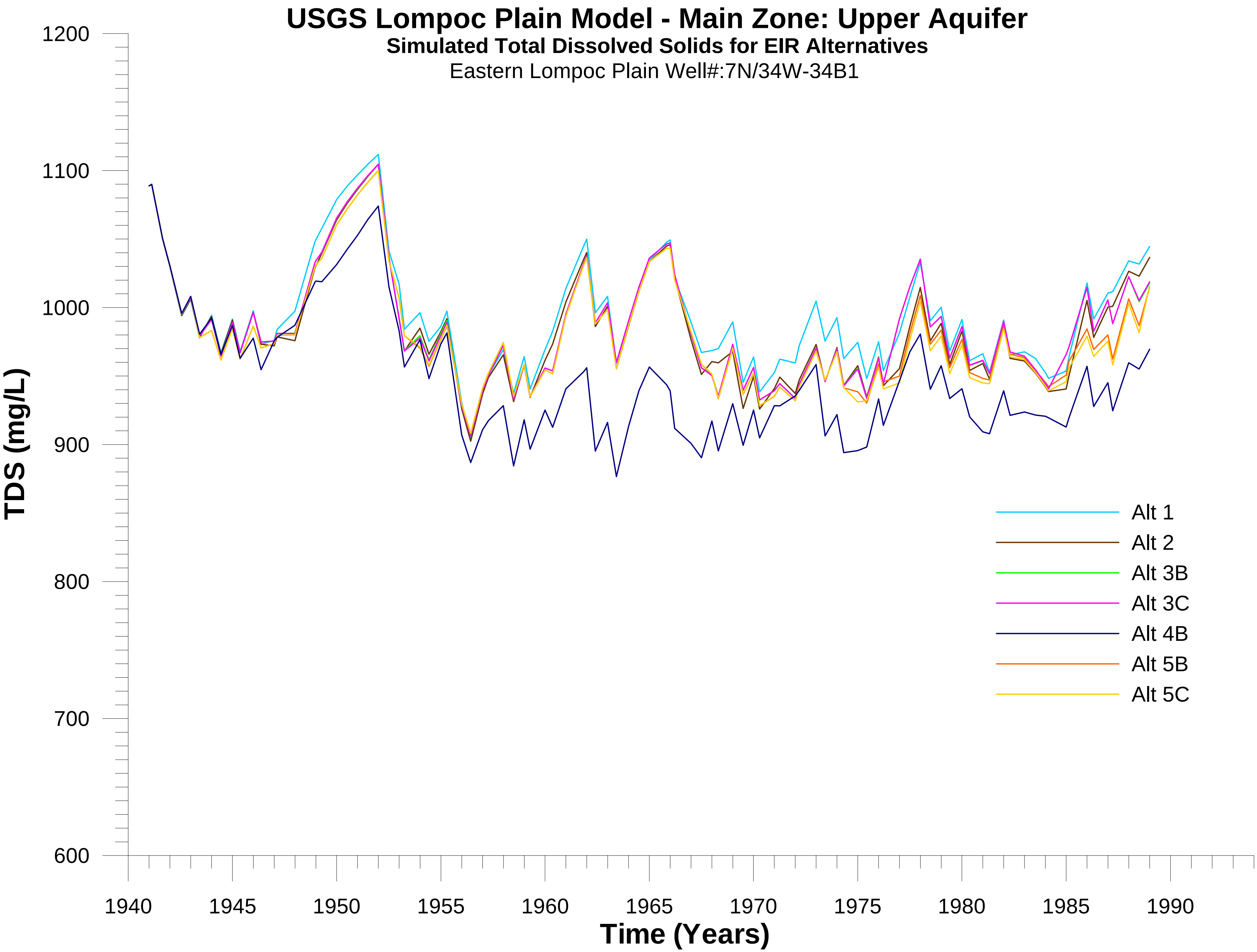
Monthly Mean Flow-Weighted TDS
at Lompoc Narrows (SYRHM simulation, 1942-1988)
Average Monthly Total Dissolved Solids (mg/L)
1200
1100
1000
900
800
700
600
500
400
300
200
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Alt 2
Alt 3B
Alt 3C
Alt 4B
(includes recharge of SWP imports)
Alt 4B (upstream of SWP recharge)
Alt 5B
Alt 5C



well site used for EIR alternatives analysis

Subdivisions of Lompoc Plain and Location of Wells
(Source: Bright, et. al. 1997)

FIGURE 8



F:\DATA\1815\GWMODELS\POST\Alt\USGS\TDS34B1_USGS_EIR.GRF

FIGURE 9

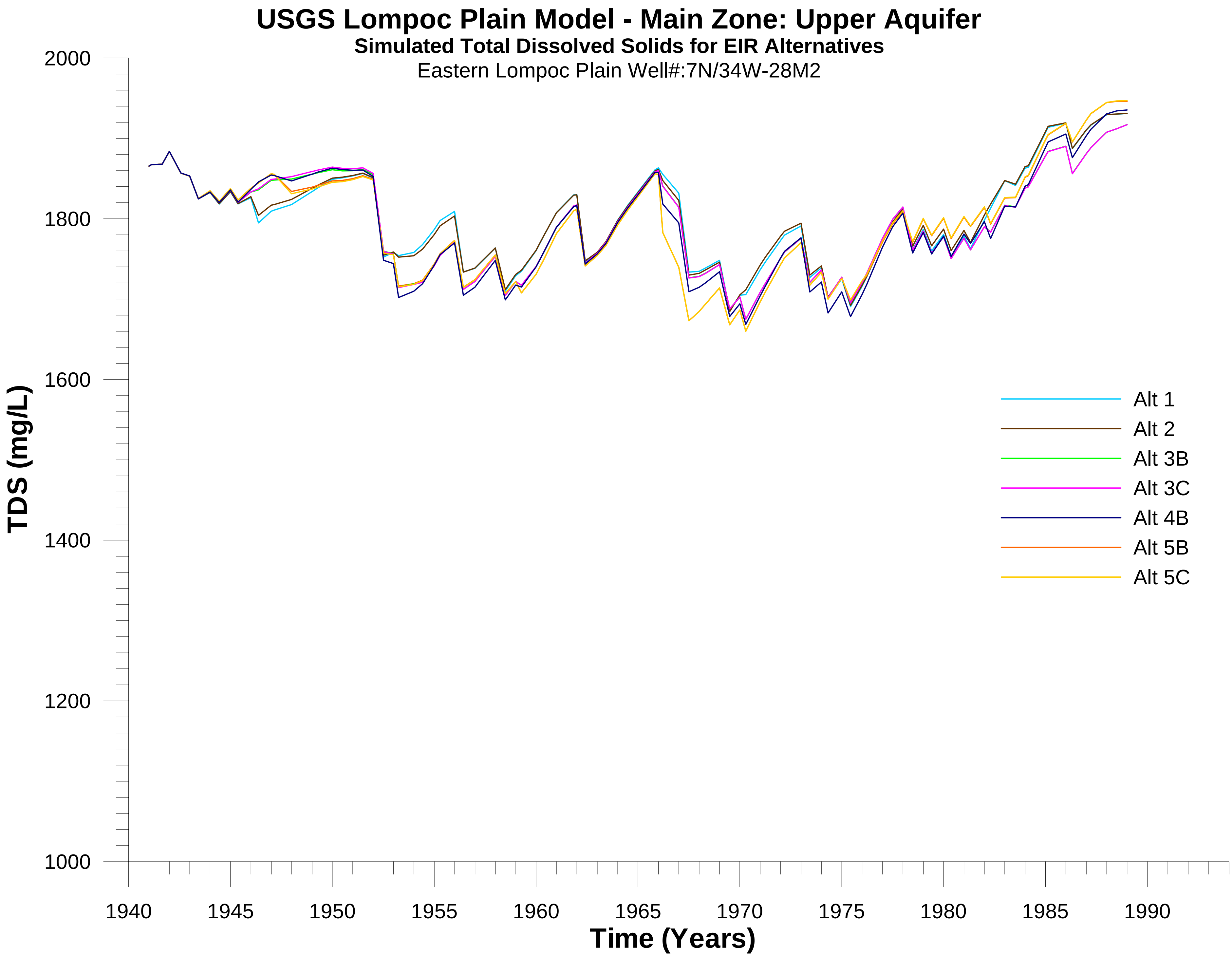


FIGURE 10

F:\DATA\1815\GWMODELS\POST\Alt\USGS\TDS28M2_USGS_EIR.GRF

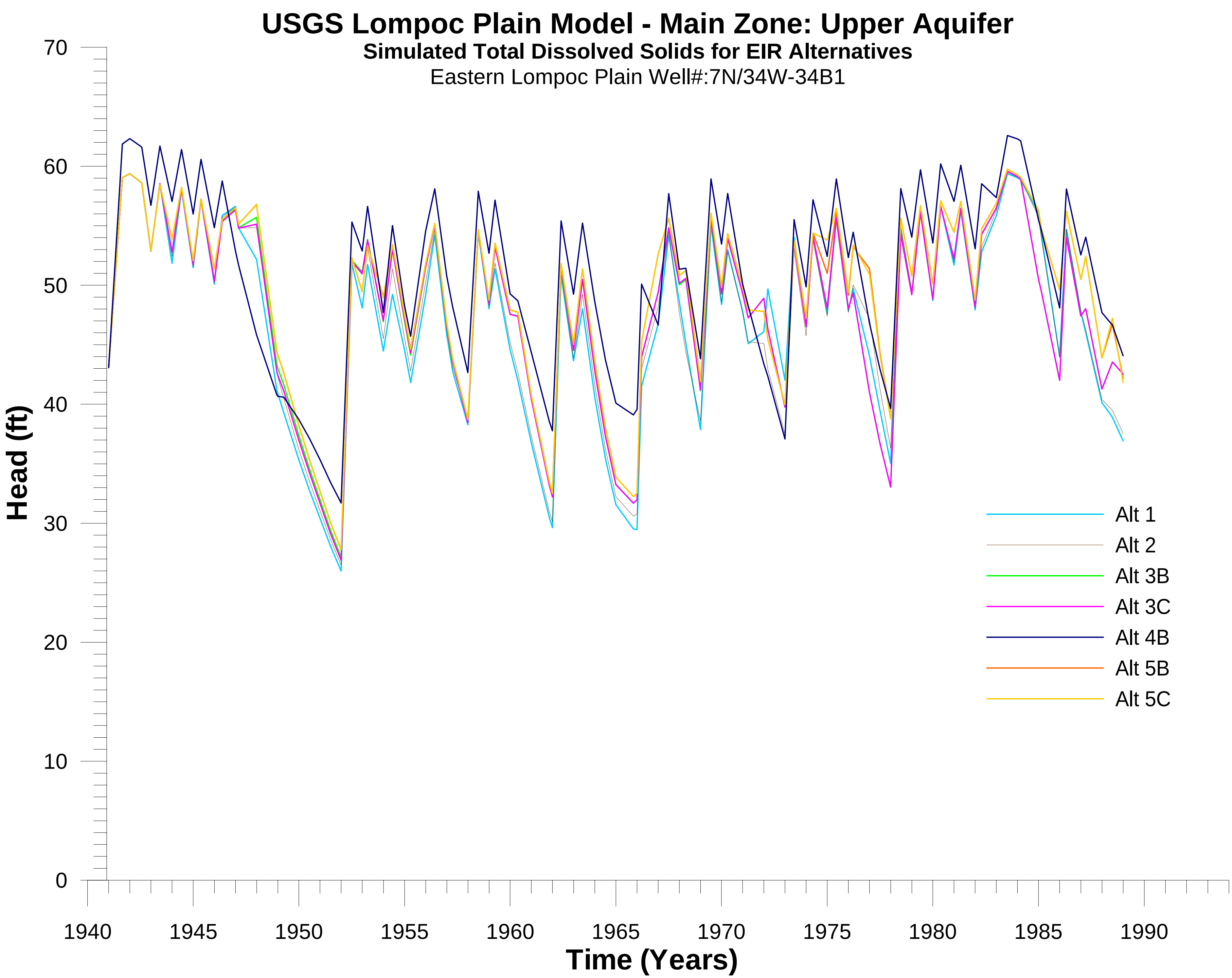


FIGURE 11

F:\DATA\1815\GWMODELS\POST\Alt\USGS\WL\WL34B1_USGS_EIR.GRF

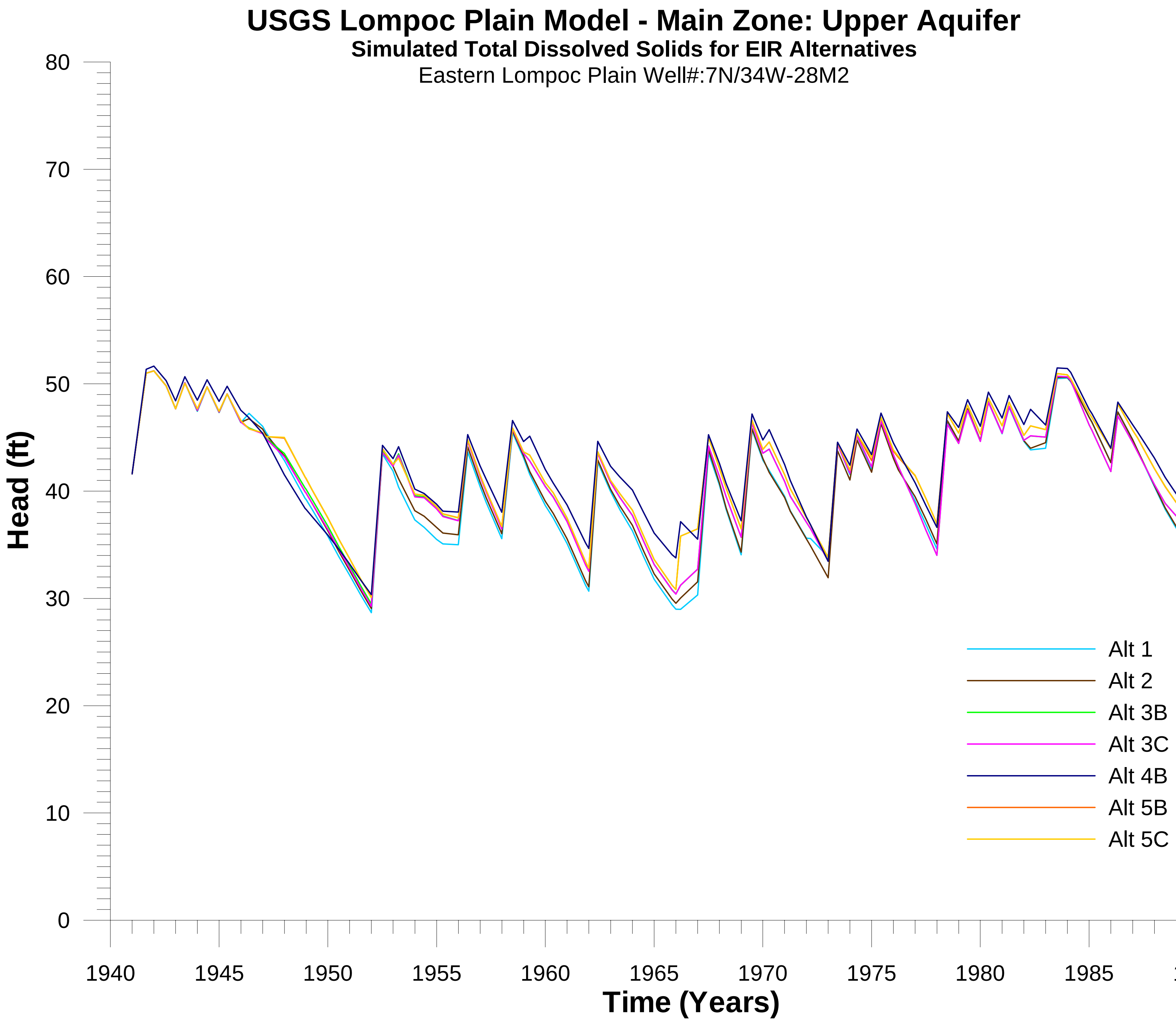
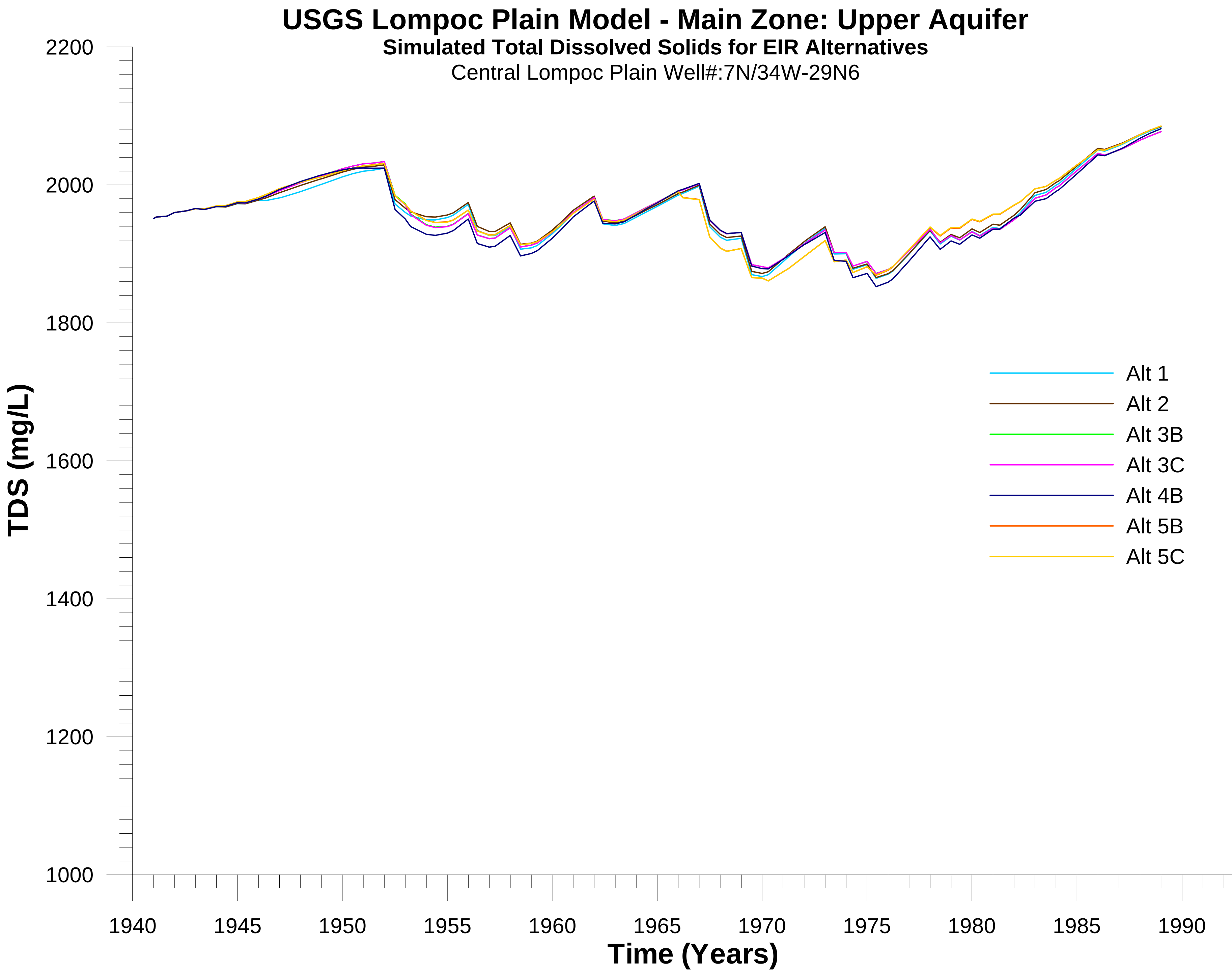


FIGURE 12

F:\DATA\1815\GWMODELS\POST\Alt\USGS\WL\WL28M2_USGS_EIR.GRF



F:\DATA\1815\GWMODELS\POST\Alt\USGS\TDS26F1_USGS_EIR.GRF

FIGURE 13

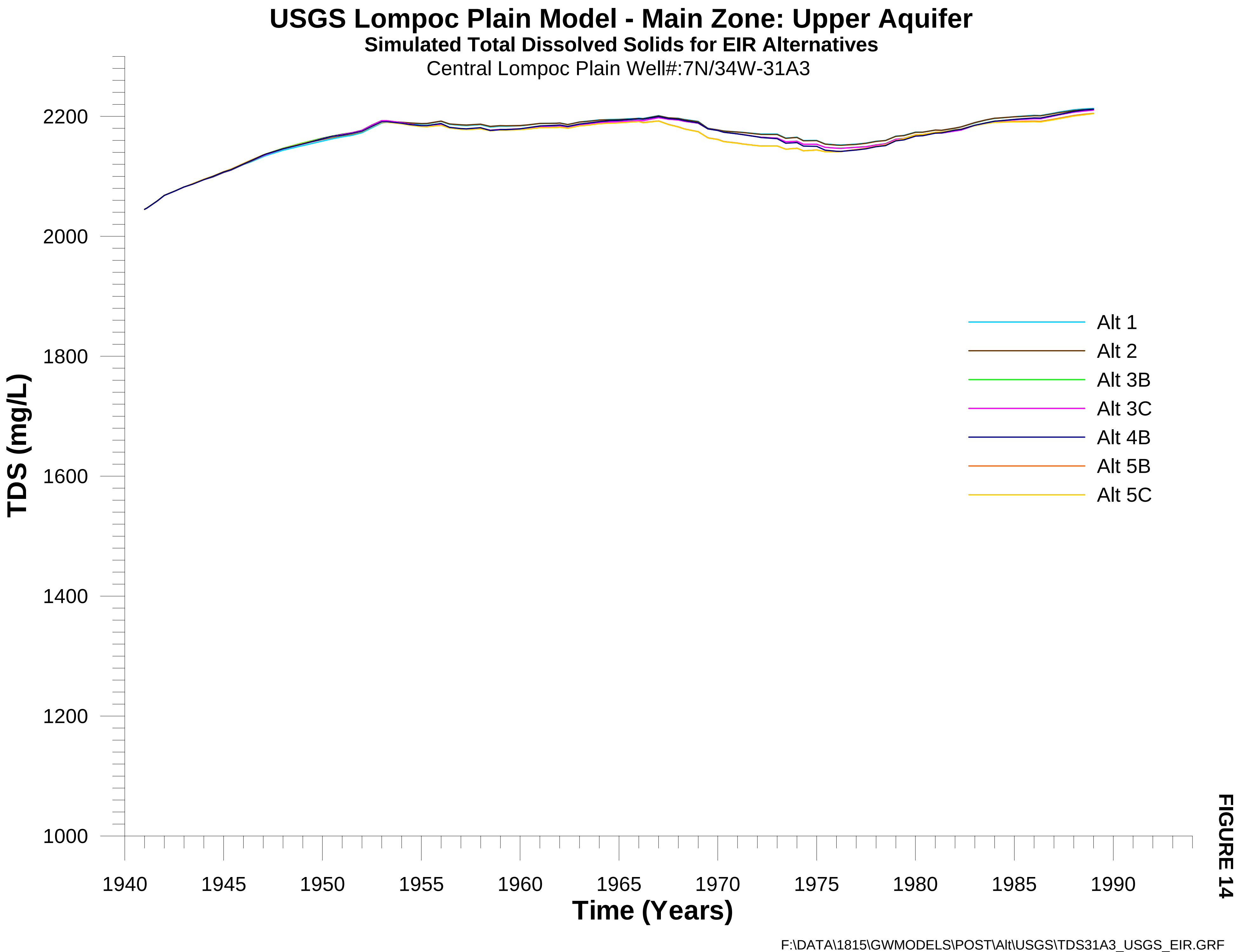
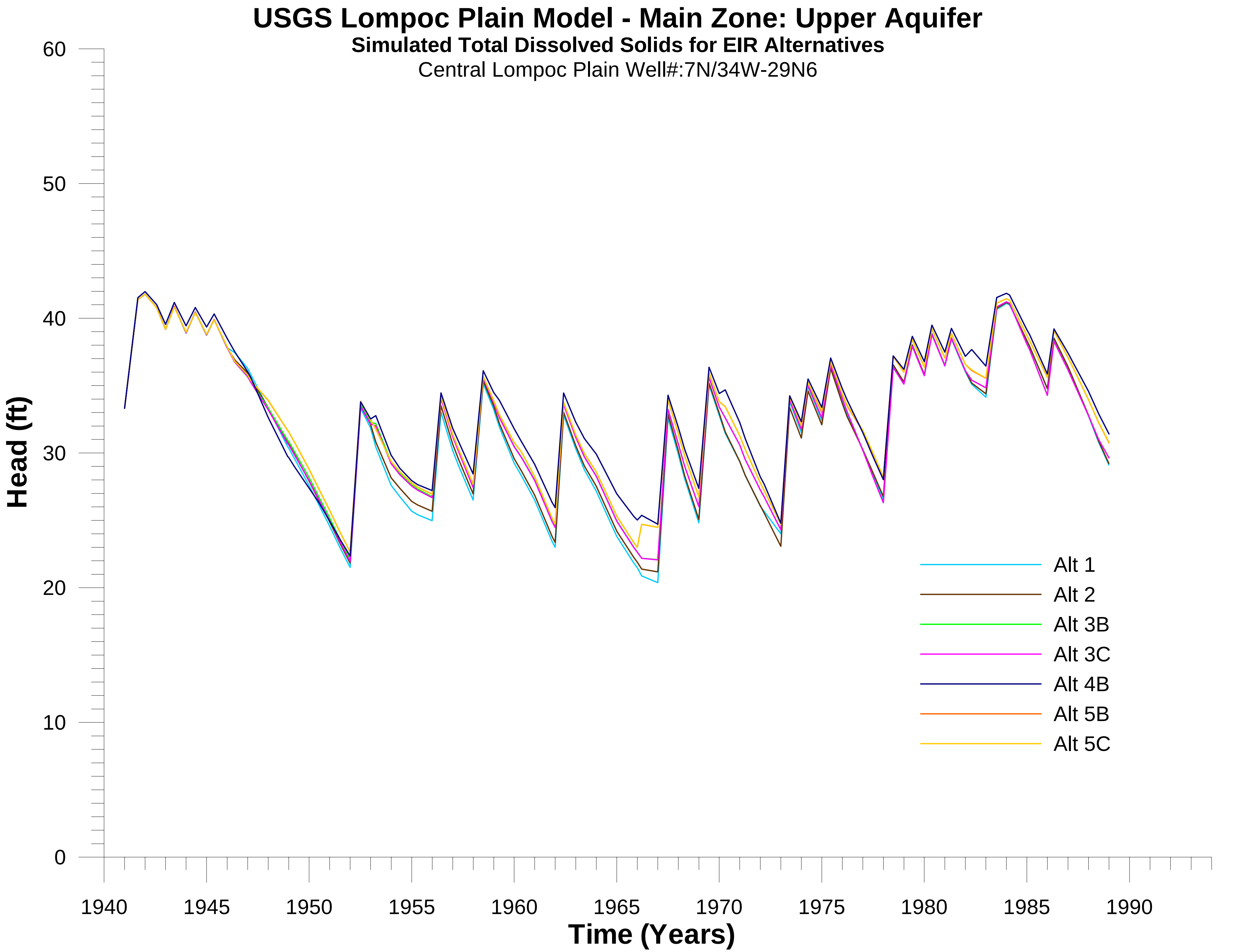

USGS Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Total Dissolved Solids for EIR Alternatives
Central Lompoc Plain Well#:7N/34W-31A3
TDS (mg/L)
2200
2000
1800
1600
1400
1200
1000
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alt\USGS\TDS31A3_USGS_EIR.GRF

FIGURE 14



F:\DATA\1815\GWMODELS\POST\Alt\USGS\WL\WL26F1_USGS_EIR.GRF

FIGURE 15

USGS Lompoc Plain Model - Main Zone: Upper Aquifer

Simulated Total Dissolved Solids for EIR Alternatives

Central Lompoc Plain Well#:7N/34W-31A3

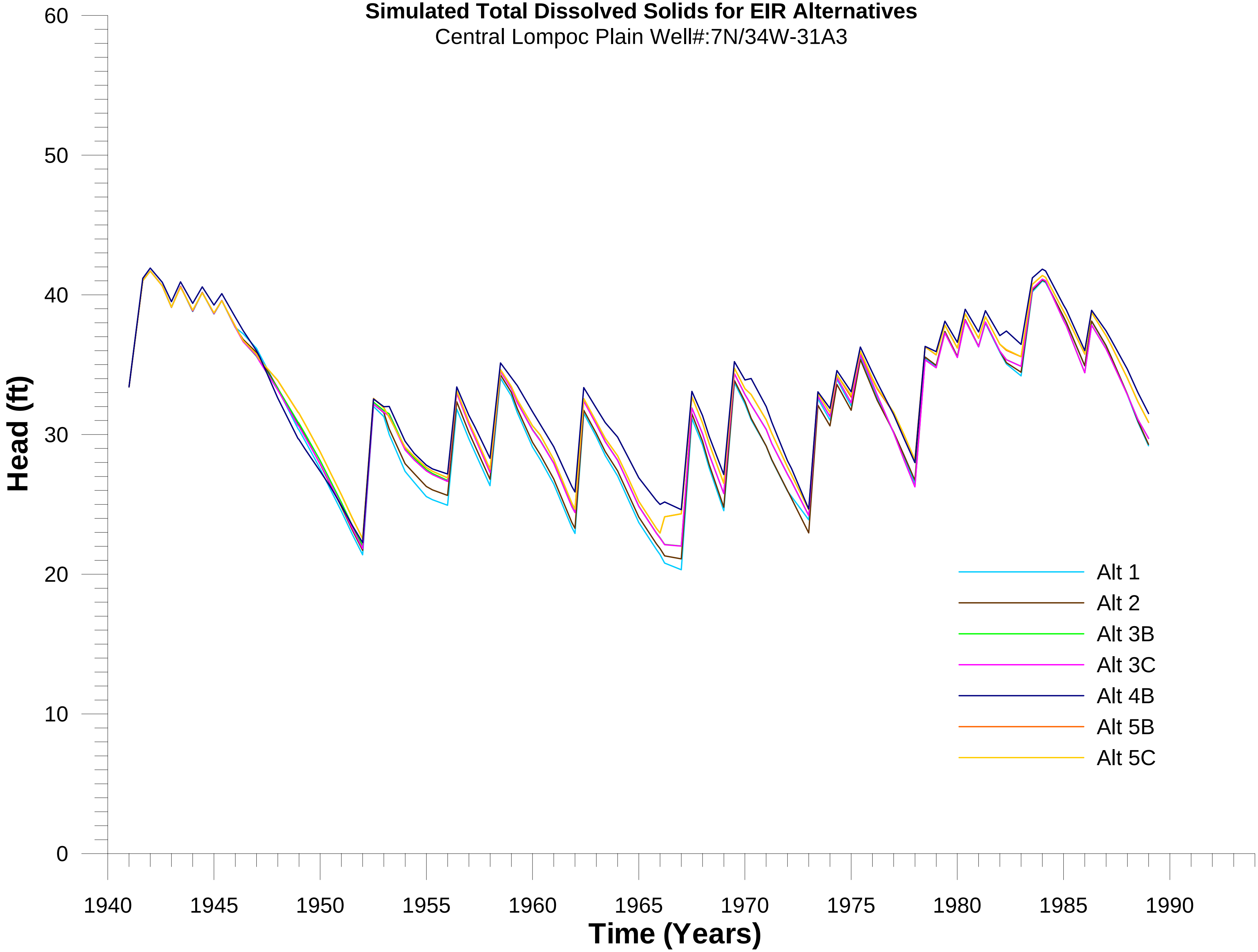


FIGURE 16

F:\DATA\1815\GWMODELS\POST\Alt\USGS\WL\WL31A3_USGS_EIR.GRF

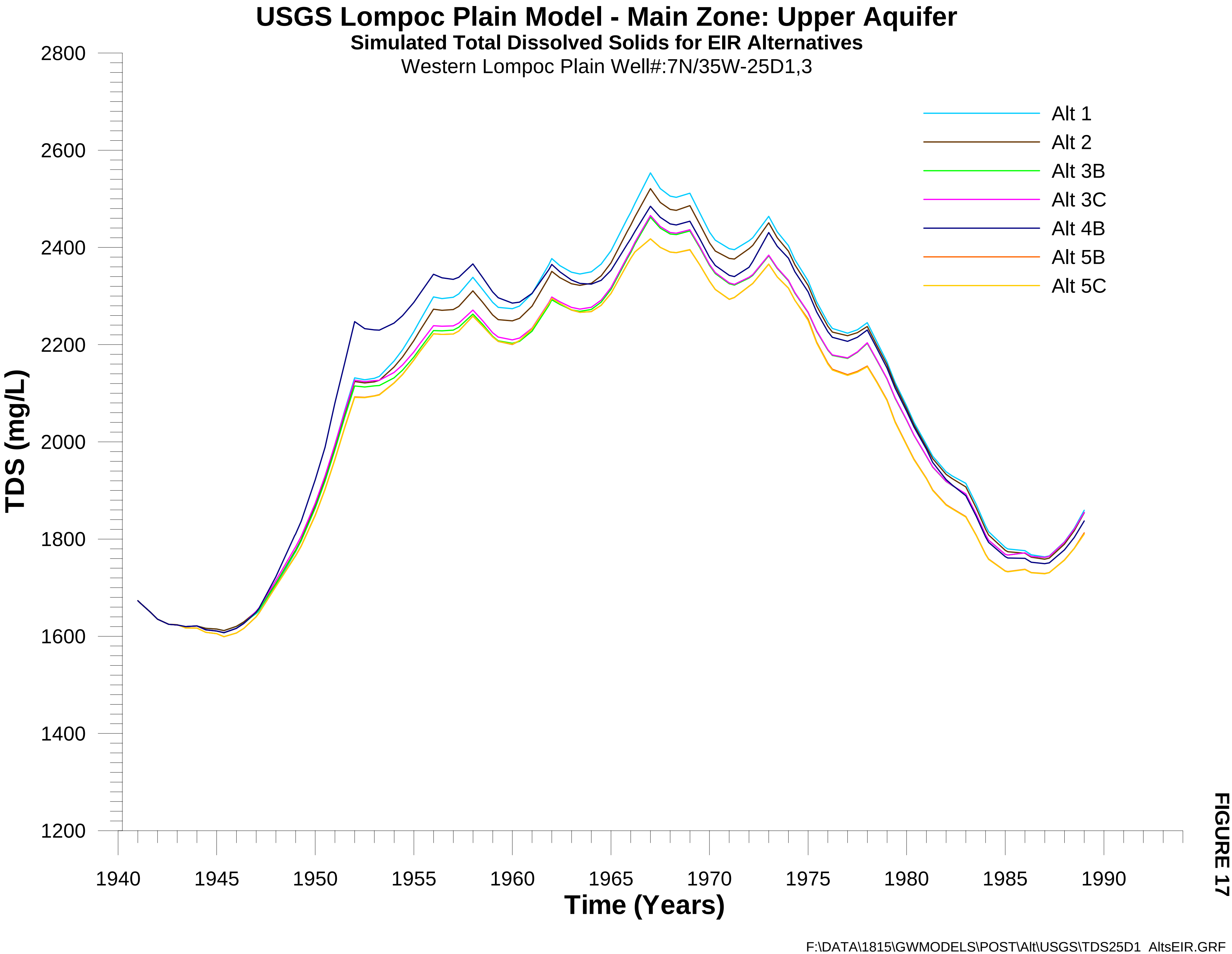

USGS Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Total Dissolved Solids for EIR Alternatives
Western Lompoc Plain Well#:7N/35W-25D1,3
TDS (mg/L)
2800
2600
2400
2200
2000
1800
1600
1400
1200
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alt\USGS\TDS25D1 AltsEIR.GRF

FIGURE 17

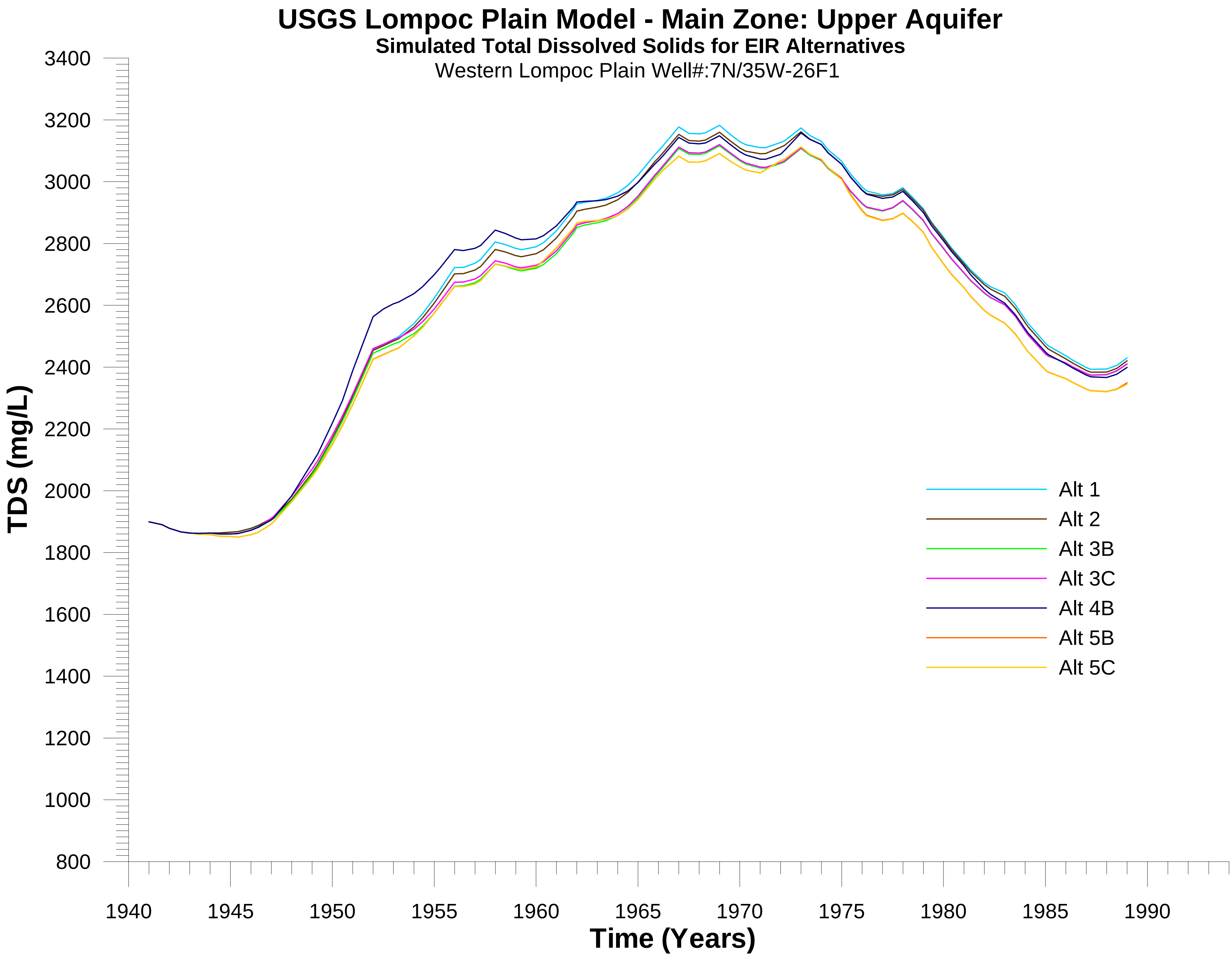
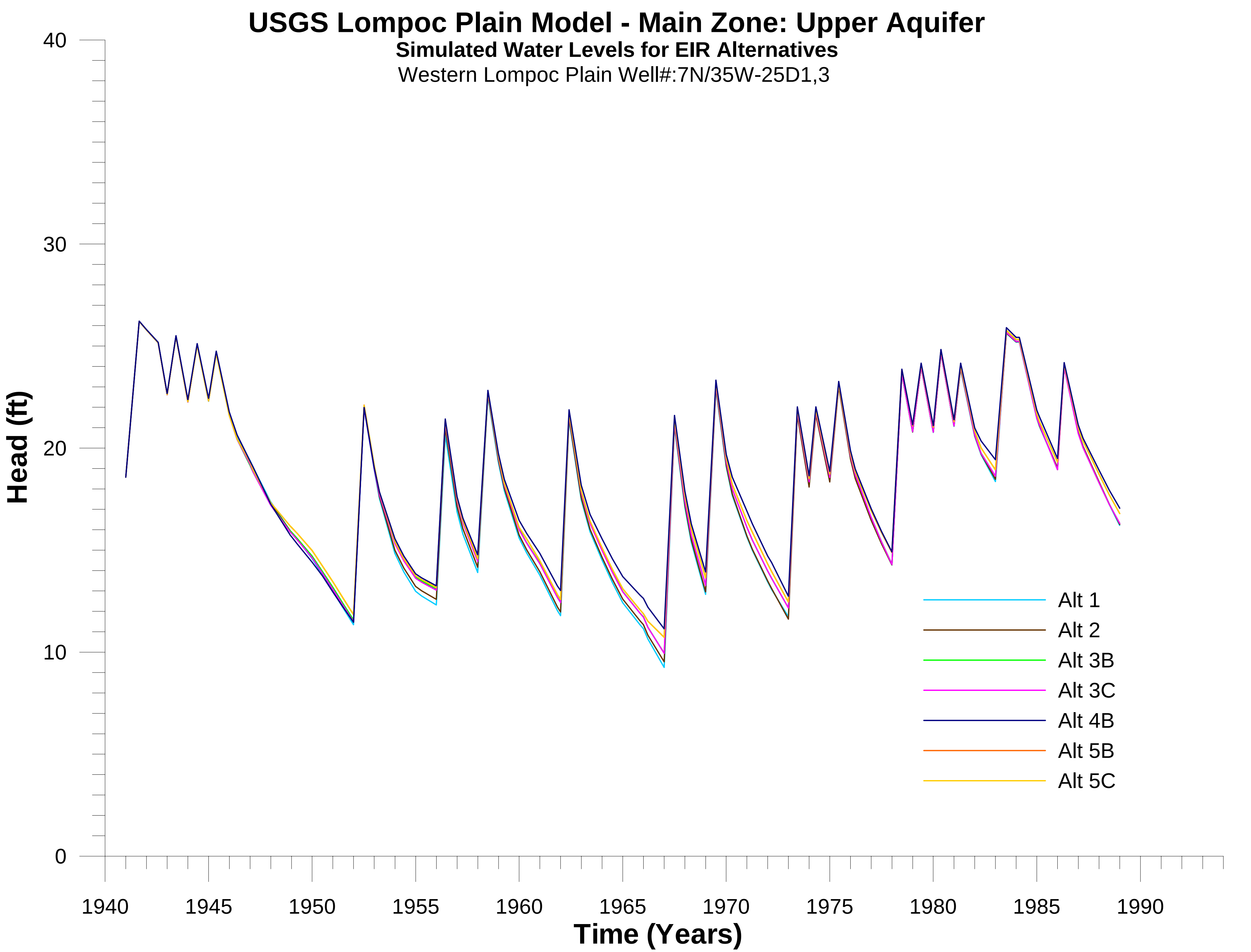


FIGURE 18

F:\DATA\1815\GWMODELS\POST\Alt\USGS\TDS26F1_USGS_EIR.GRF



F:\DATA\1815\GWMODELS\POST\Alts\USGS\WL\WL25D1_USGS_EIR.GRF

FIGURE 19

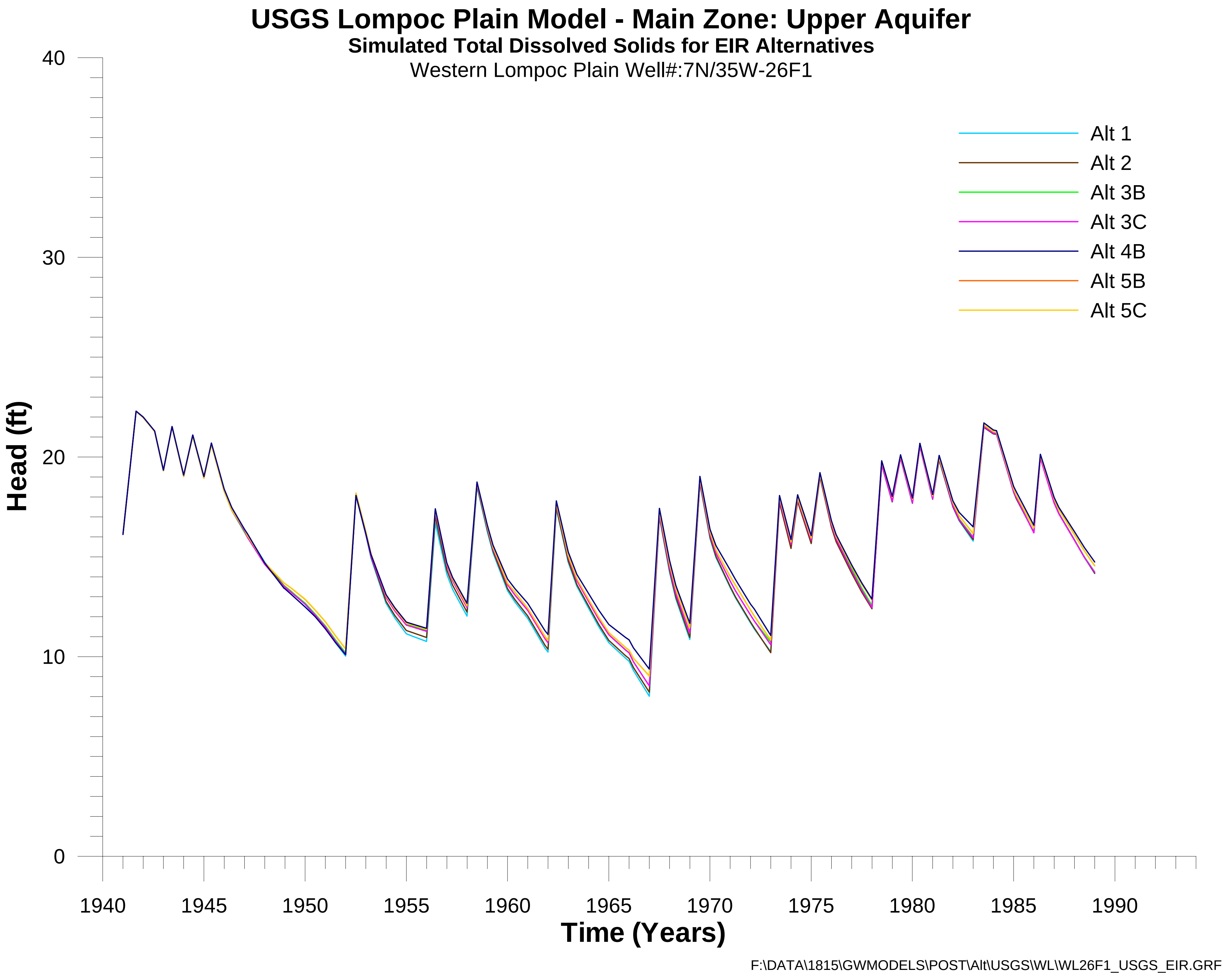

USGS Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Total Dissolved Solids for EIR Alternatives
Western Lompoc Plain Well#:7N/35W-26F1
Head (ft)
40
30
20
10
0
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alt\USGS\WL\WL26F1_USGS_EIR.GRF

FIGURE 20

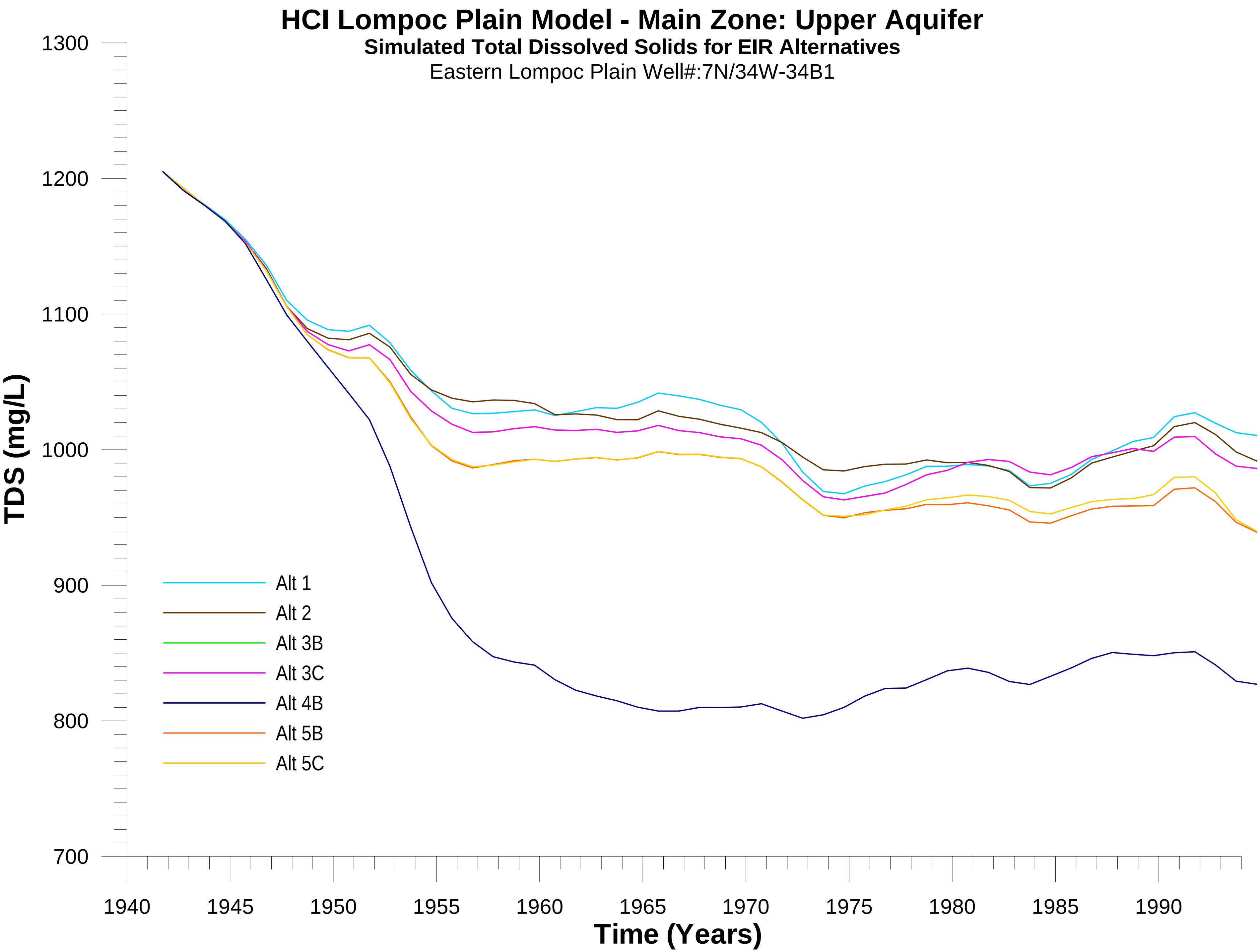


FIGURE 21

F:\DATA\1815\GWMODELS\POST\Alt\HCI\TDS34B1 HCI EIR.GRF

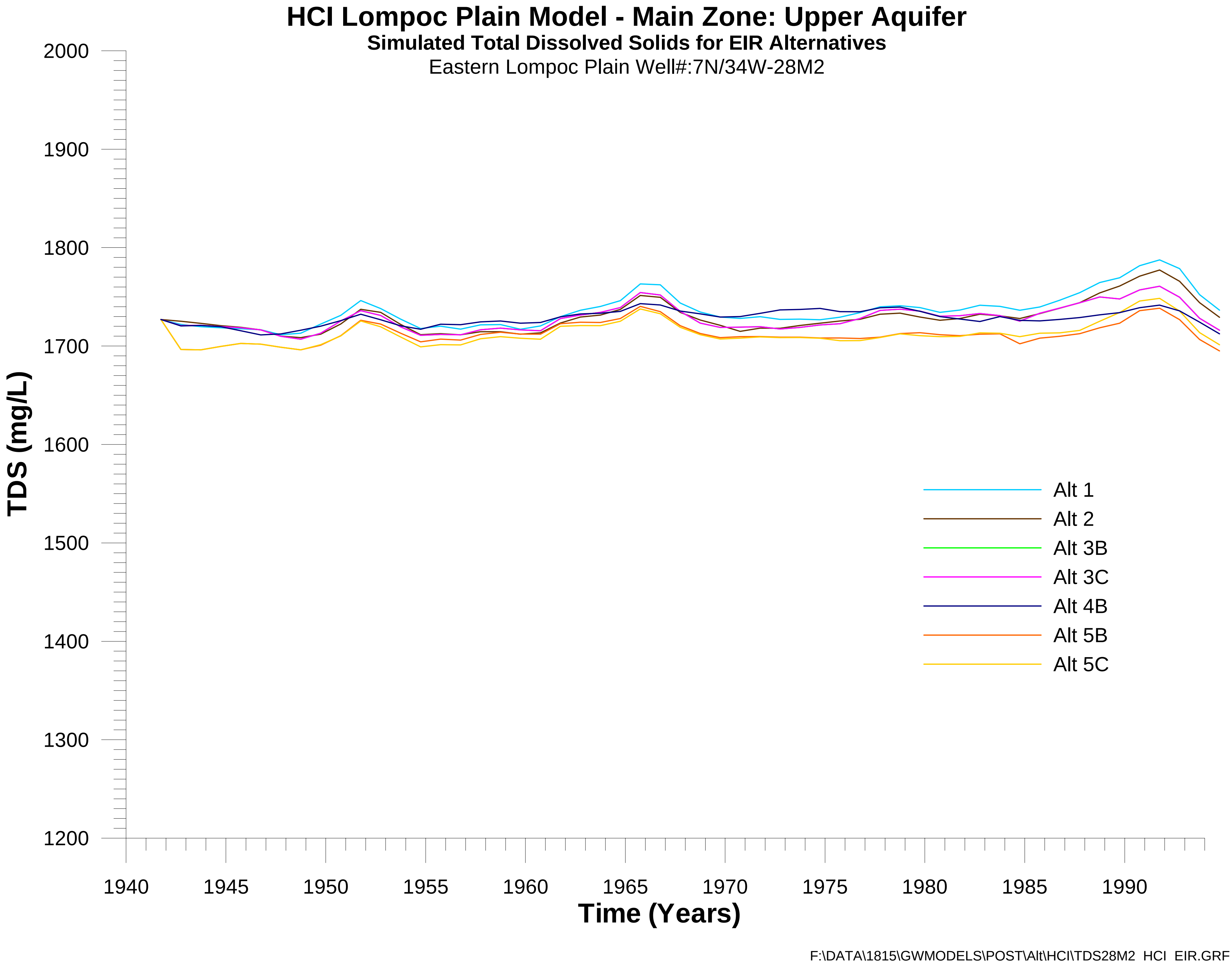

HCI Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Total Dissolved Solids for EIR Alternatives
Eastern Lompoc Plain Well#:7N/34W-28M2
TDS (mg/L)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alt\HCI\TDS28M2 HCI EIR.GRF

FIGURE 22

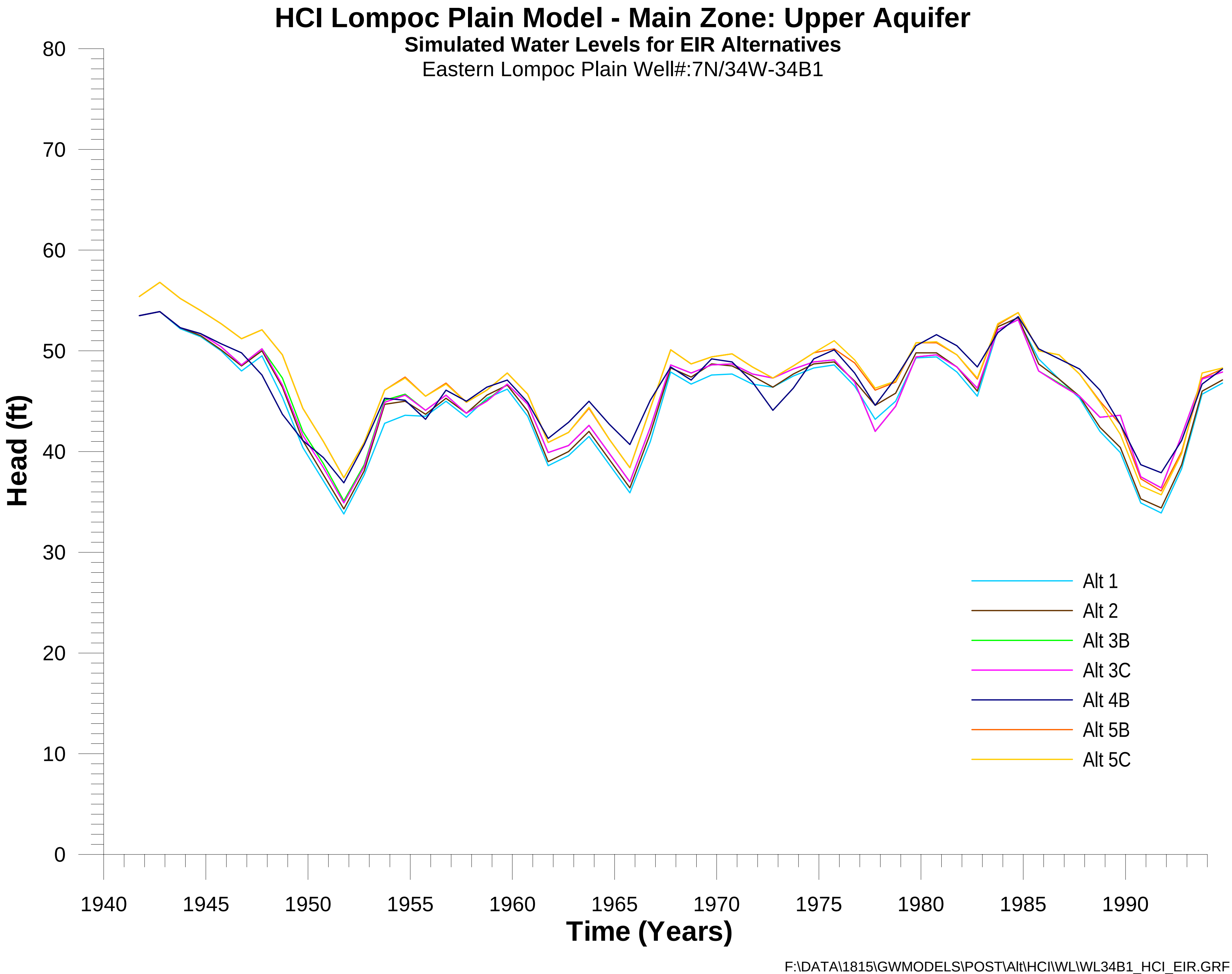
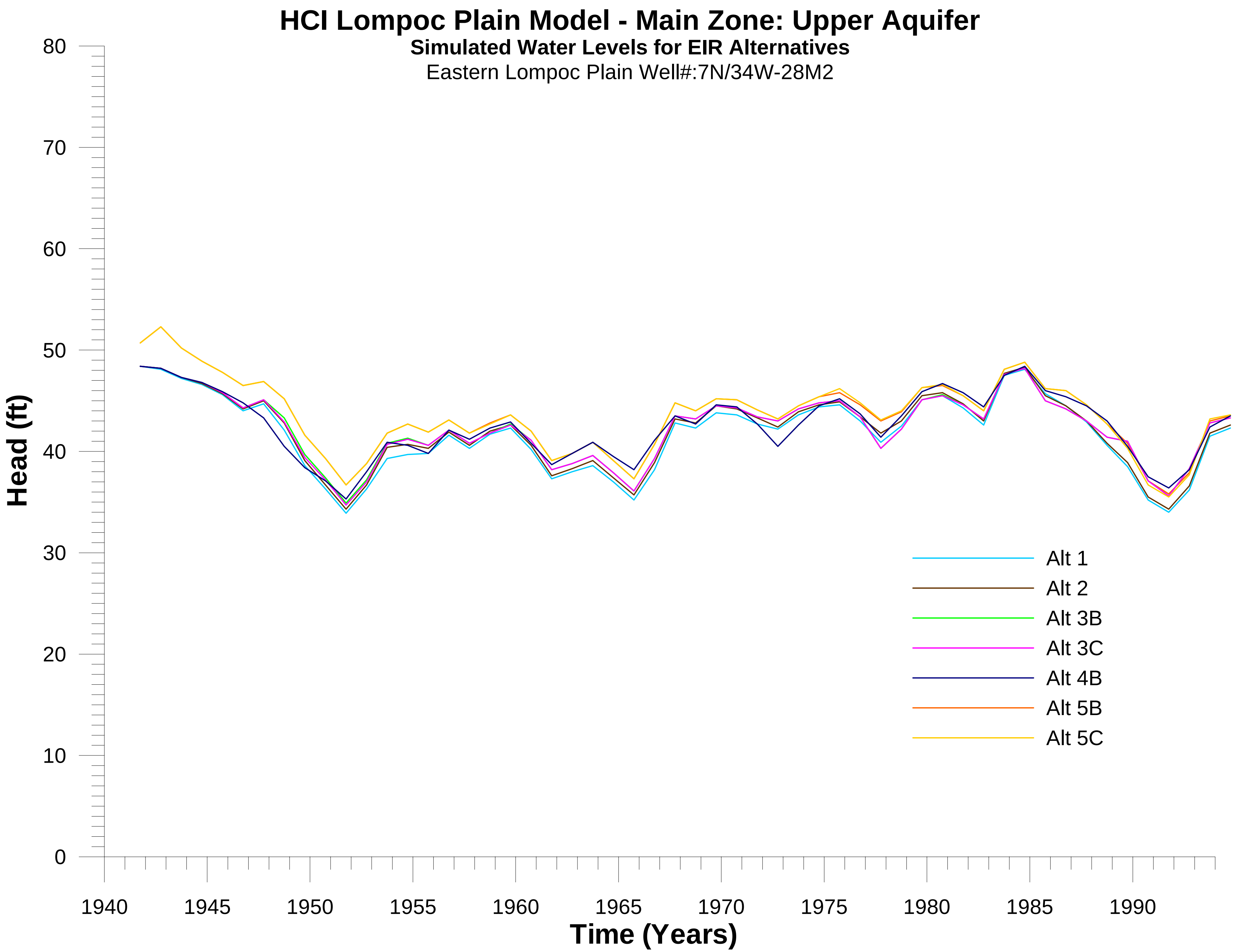

HCI Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Water Levels for EIR Alternatives
Eastern Lompoc Plain Well#:7N/34W-34B1
Head (ft)
Time (Years)
0
10
20
30
40
50
60
70
80
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alt\HCI\WL\WL34B1_HCI_EIR.GRF

FIGURE 23



F:\DATA\1815\GWMODELS\POST\Alt\HCI\WL\WL28M2_HCI_EIR.GRF

FIGURE 24

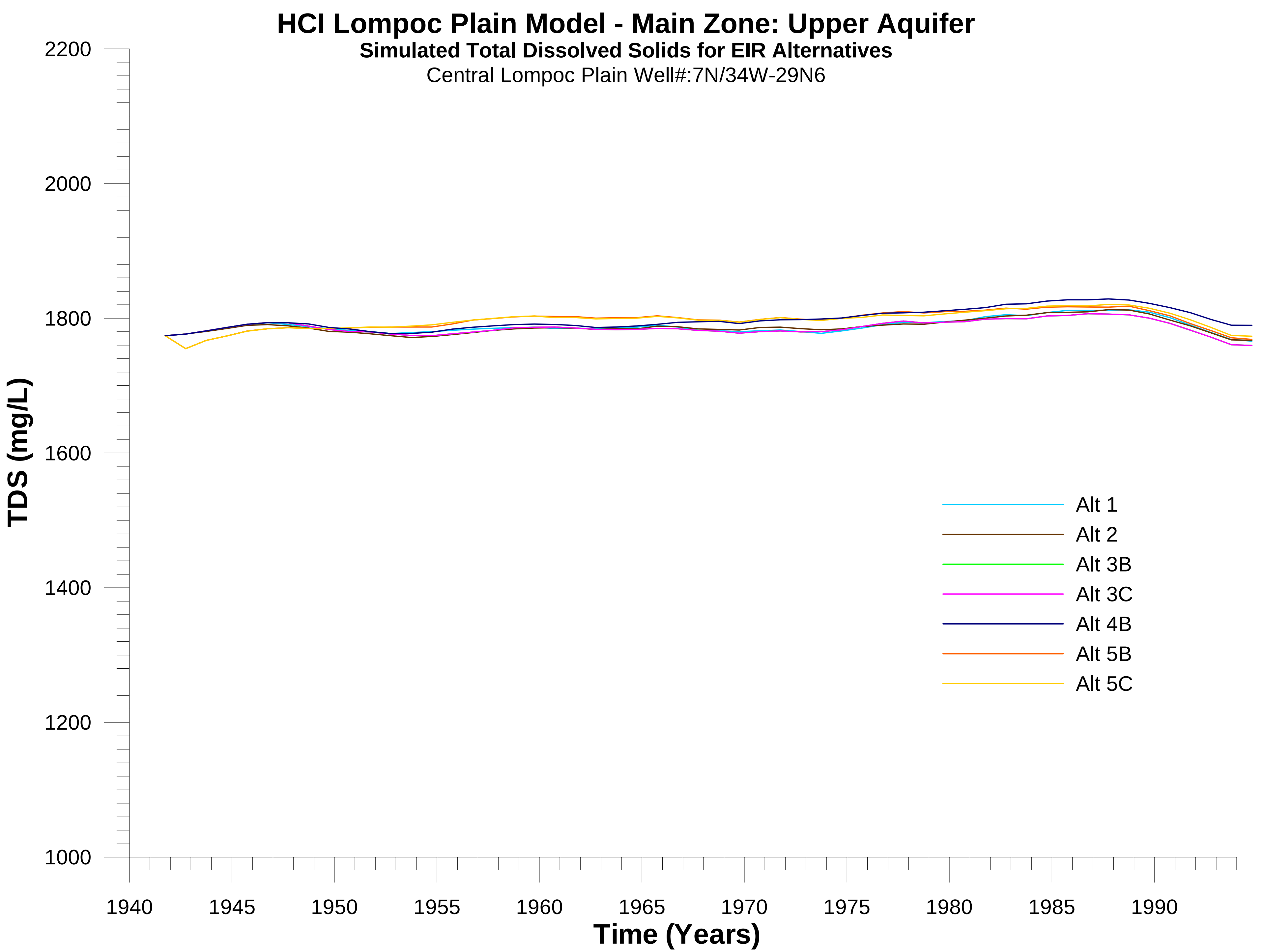

HCI Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Total Dissolved Solids for EIR Alternatives
Central Lompoc Plain Well#:7N/34W-29N6
TDS (mg/L)
2200
2000
1800
1600
1400
1200
1000
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alt\HCI\TDS26F1 HCI EIR.GRF

FIGURE 25

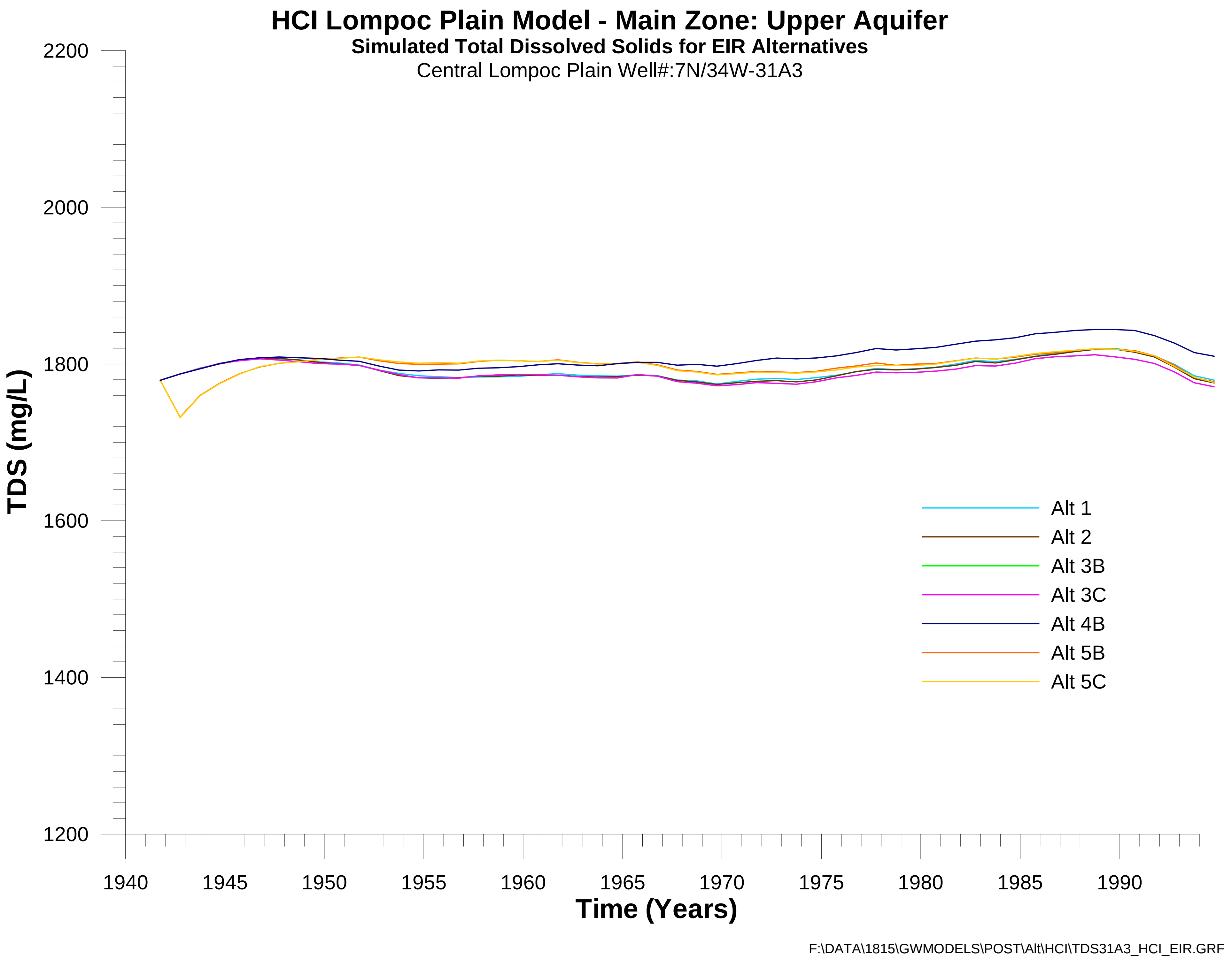

HCI Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Total Dissolved Solids for EIR Alternatives
Central Lompoc Plain Well#:7N/34W-31A3
TDS (mg/L)
2200
2000
1800
1600
1400
1200
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alt\HCI\TDS31A3_HCI_EIR.GRF

FIGURE 26

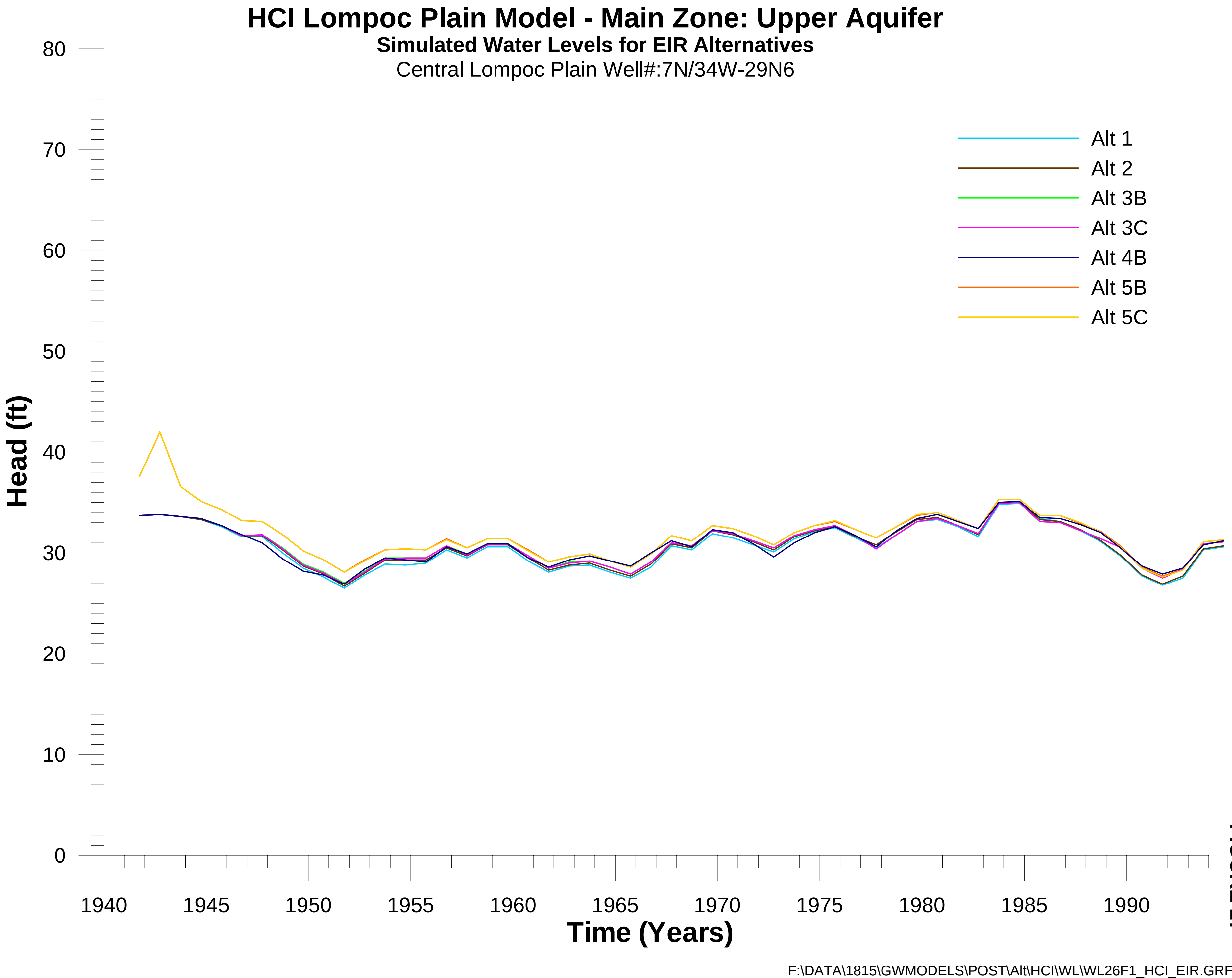

HCI Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Water Levels for EIR Alternatives
Central Lompoc Plain Well#:7N/34W-29N6
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
Head (ft)
0
10
20
30
40
50
60
70
80
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
F:\DATA\1815\GWMODELS\POST\Alt\HCI\WL\WL26F1_HCI_EIR.GRF

FIGURE 27

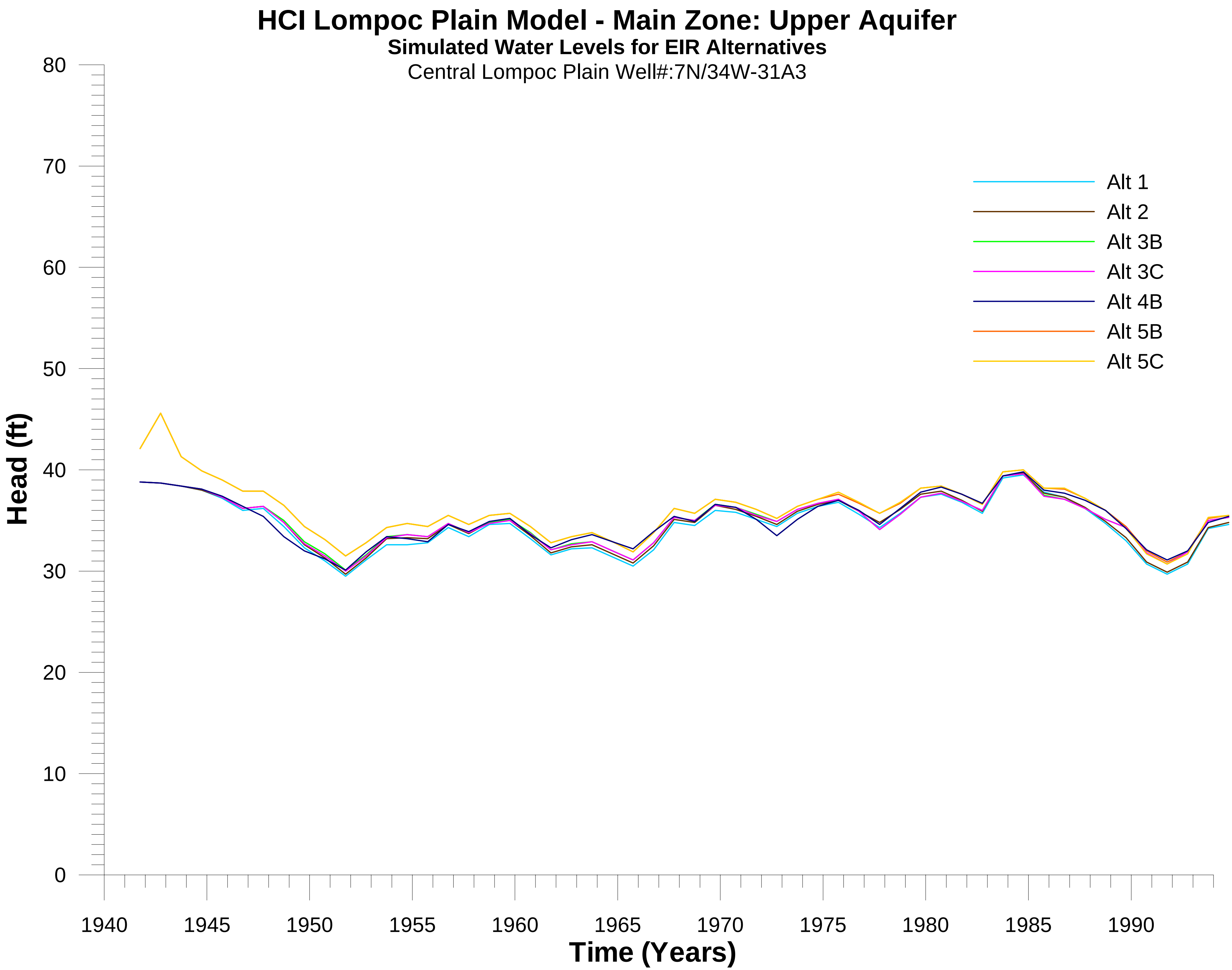


FIGURE 28

F:\DATA\1815\GWMODELS\POST\Alt\HCI\WL\WL31A3_HCI_EIR.GRF

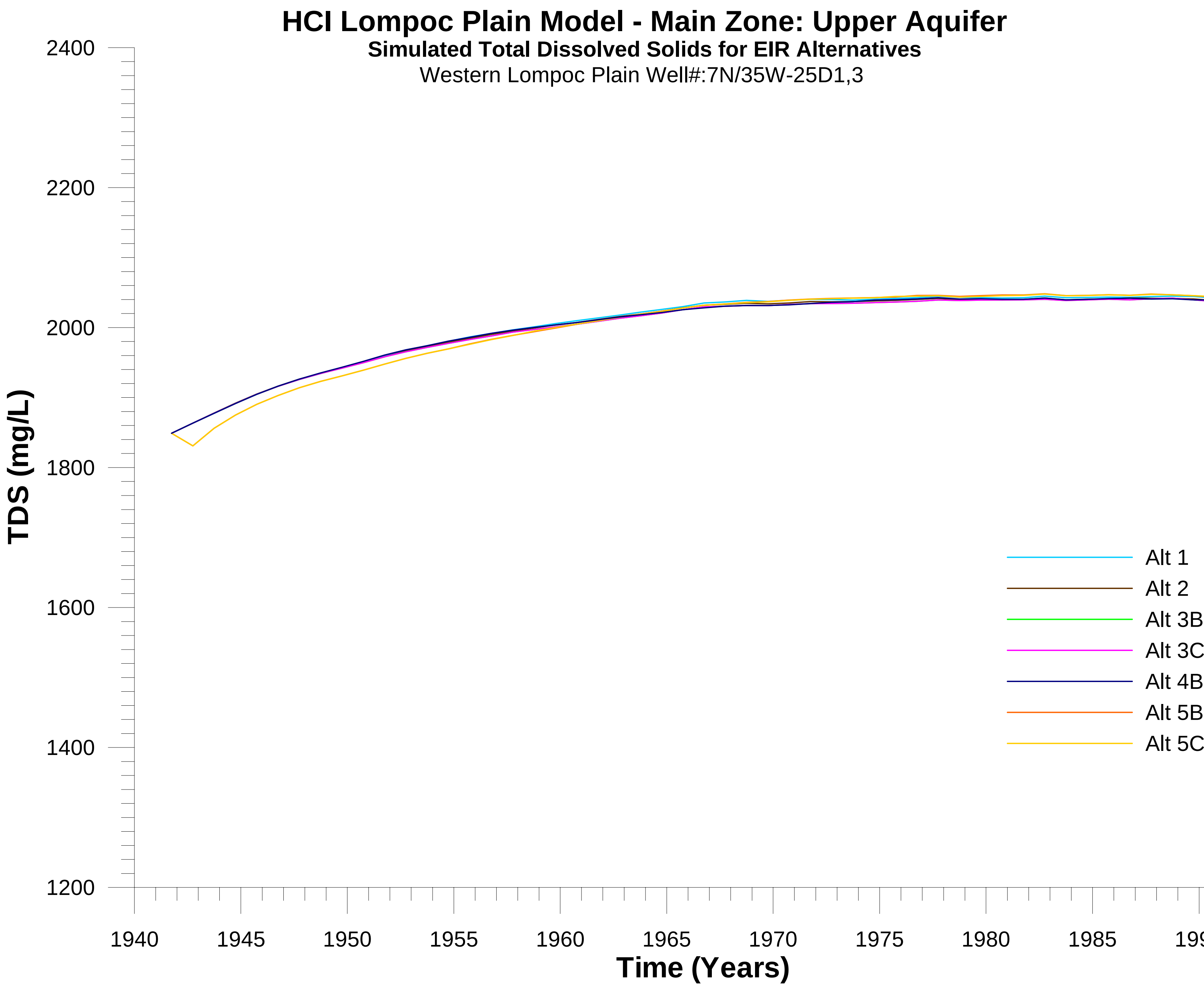


FIGURE 29

F:\DATA\1815\GWMODELS\POST\Alt\HCI\TDS25D1_HCI_EIR.GRF

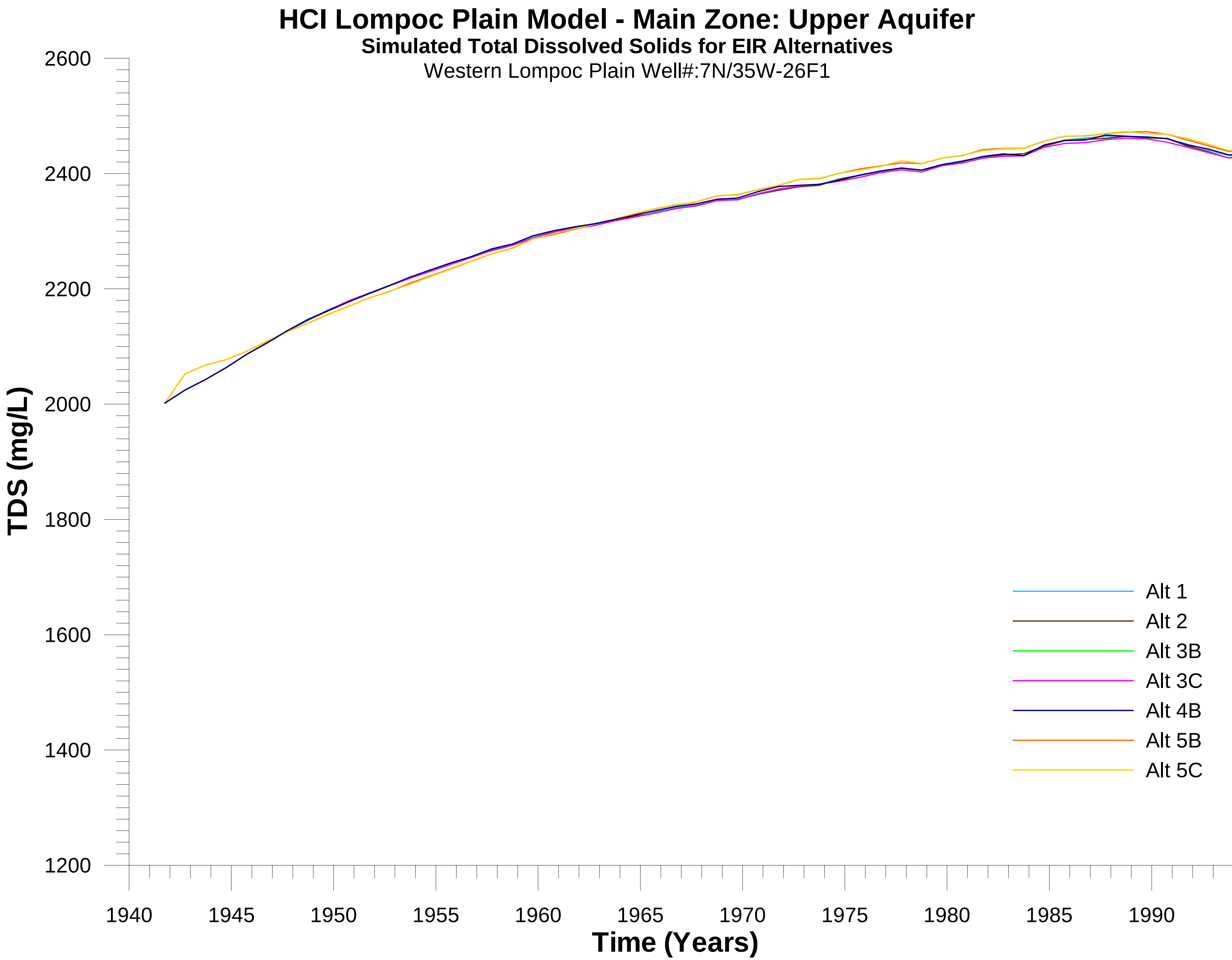


FIGURE 30

F:\DATA\1815\GWMODELS\POST\Alt\HCI\TDS26F1_HCI_EIR.GRF

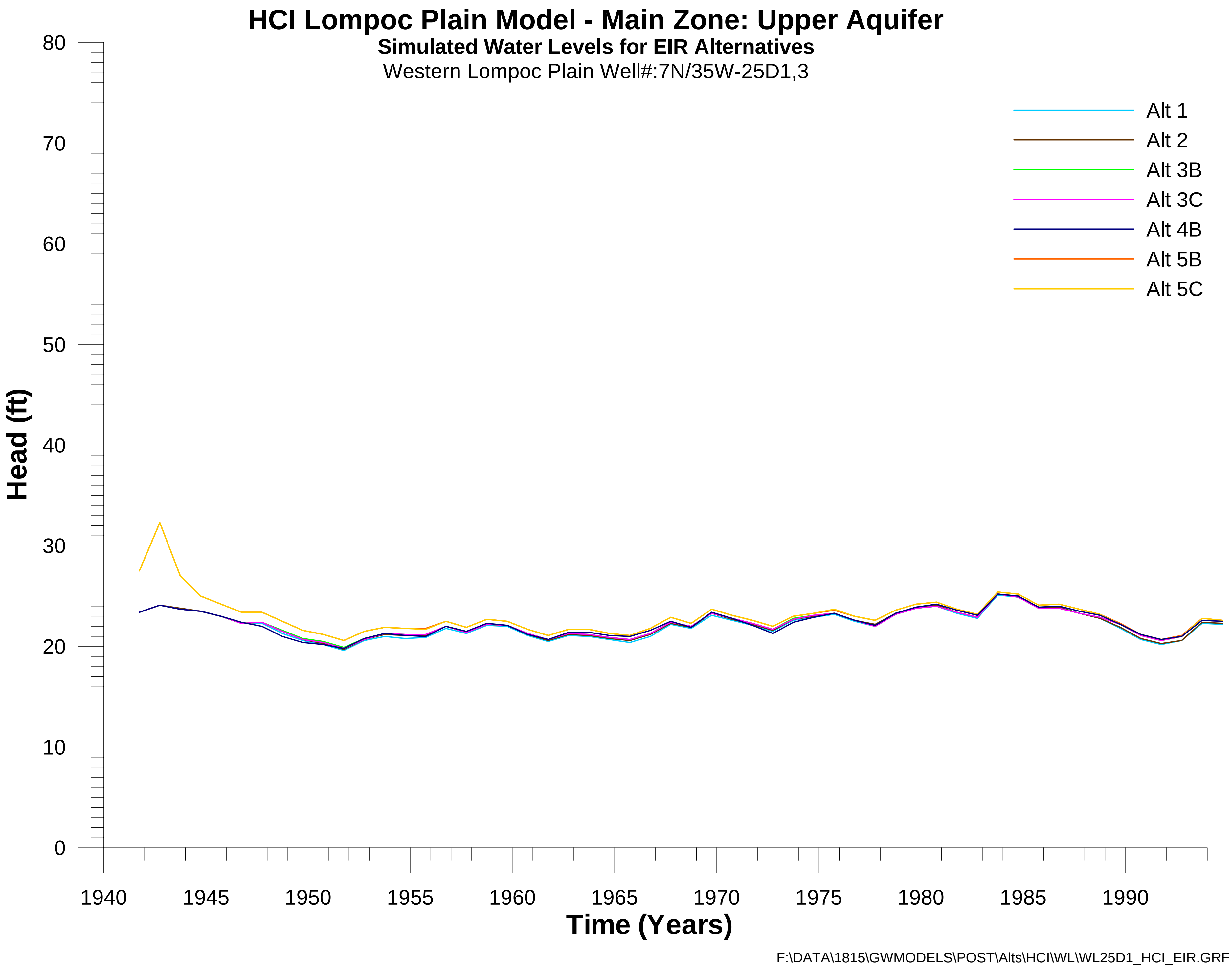

HCI Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Water Levels for EIR Alternatives
Western Lompoc Plain Well#:7N/35W-25D1,3
Head (ft)
80
70
60
50
40
30
20
10
0
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alts\HCI\WL\WL25D1_HCI_EIR.GRF

FIGURE 31

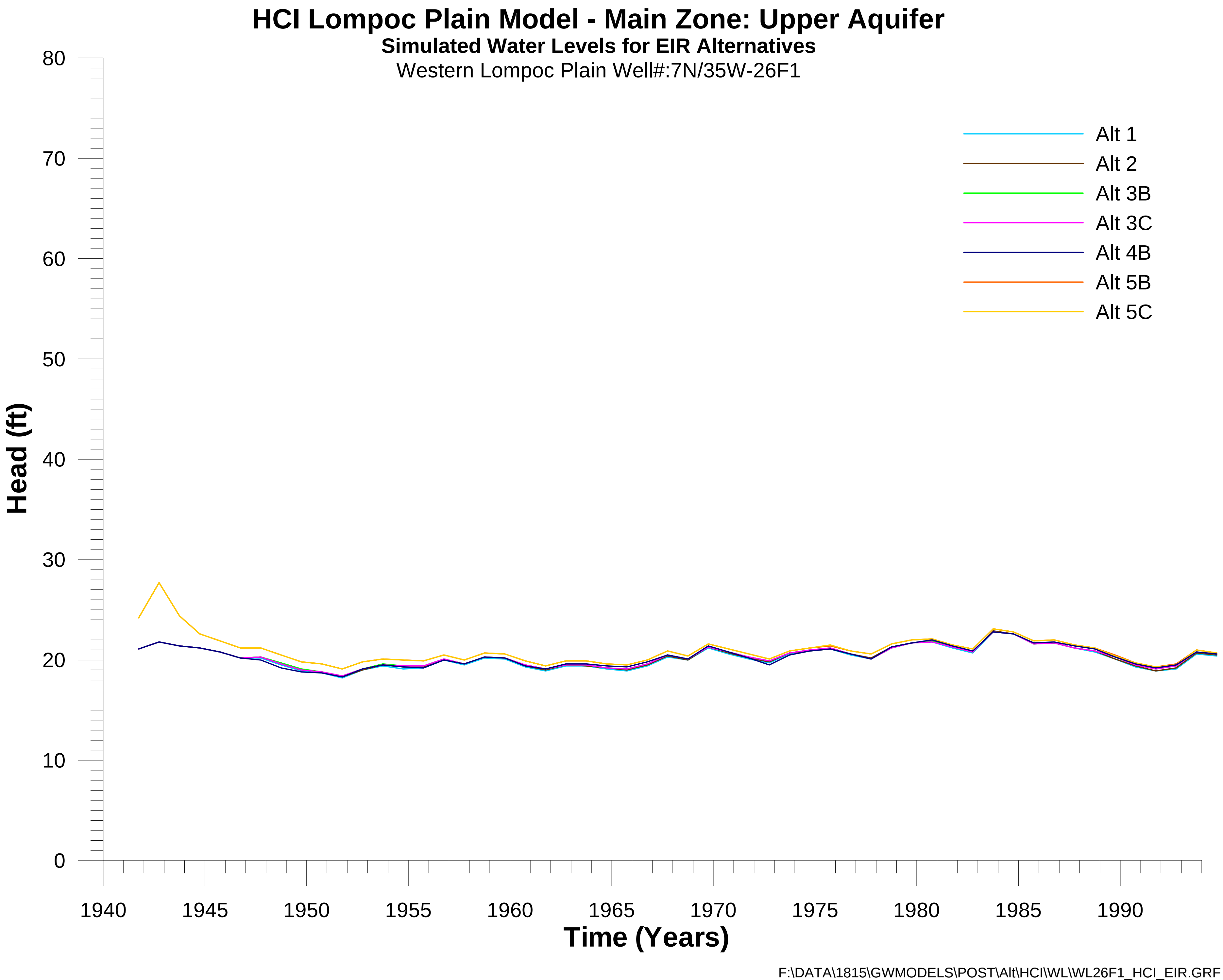

HCI Lompoc Plain Model - Main Zone: Upper Aquifer
Simulated Water Levels for EIR Alternatives
Western Lompoc Plain Well#:7N/35W-26F1
Head (ft)
80
70
60
50
40
30
20
10
0
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
Time (Years)
Alt 1
Alt 2
Alt 3B
Alt 3C
Alt 4B
Alt 5B
Alt 5C
F:\DATA\1815\GWMODELS\POST\Alt\HCI\WL\WL26F1_HCI_EIR.GRF

FIGURE 32

APPENDIX G

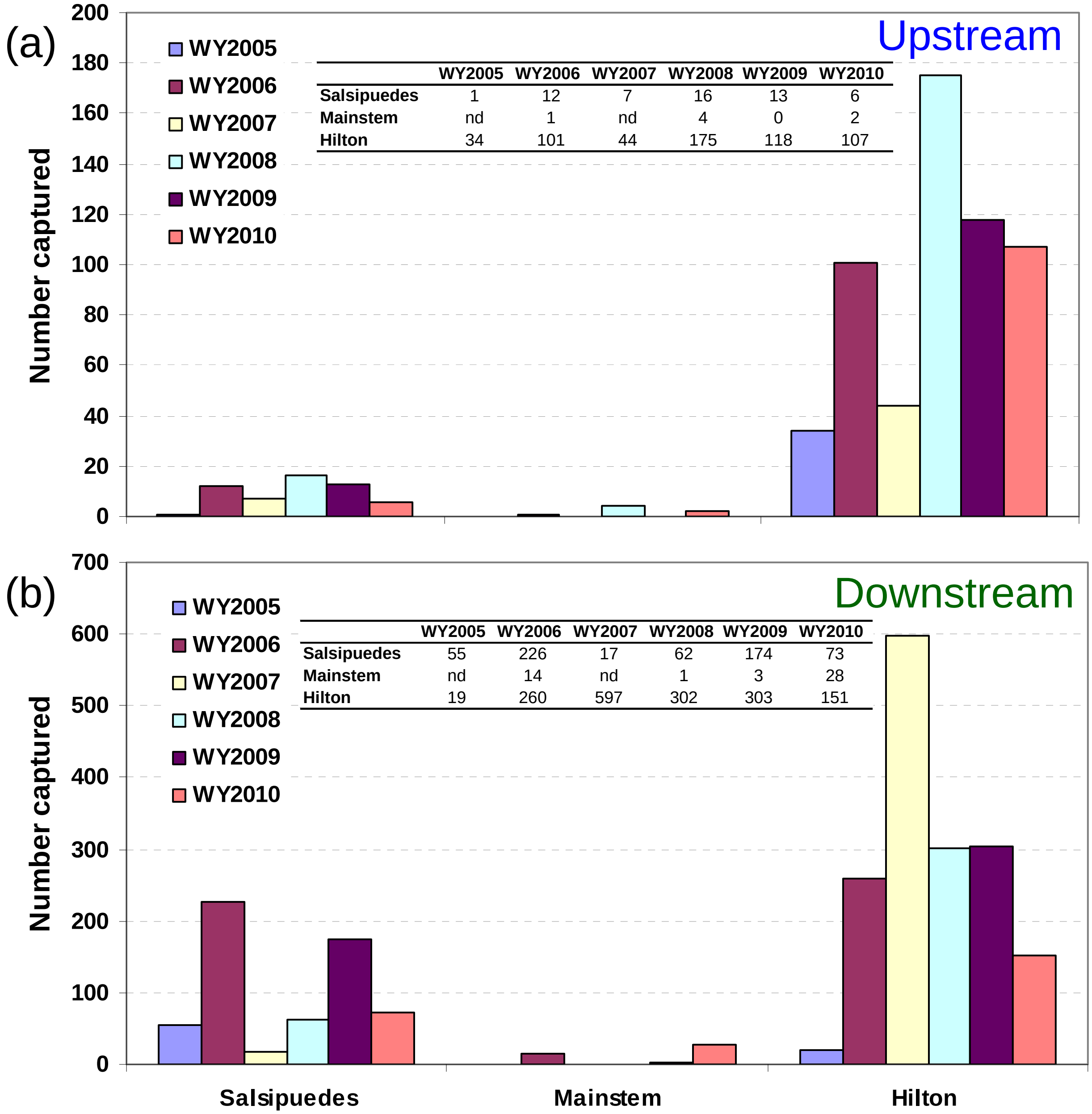
Data from the Lower Santa Ynez River Steelhead / Rainbow Trout Monitoring and Habitat Restoration Program

Requested Data from the Lower Santa Ynez River Steelhead / Rainbow Trout Monitoring and Habitat Restoration Program

July 28, 2010

This dataset is only to be used by Rosi Dagit in the review process of the SWRCB EIR for the Cachuma Project.

If you have any questions, please contact
Tim Robinson at COMB/CCRB 805-687-4011.



	WY2005	WY2006	WY2007	WY2008	WY2009	WY2010
Salsipuedes	1	12	7	16	13	6
Mainstem	nd	1	nd	4	0	2
Hilton	34	101	44	175	118	107

	WY2005	WY2006	WY2007	WY2008	WY2009	WY2010
Salsipuedes	55	226	17	62	174	73
Mainstem	nd	14	nd	1	3	28
Hilton	19	260	597	302	303	151

Figure 1: Migrant capture (a) upstream and (b) downstream totals for WY2005-WY2010 at the Salsipuedes Creek, LSYR Mainstem and Hilton Creek traps. The LSYR Mainstem traps were first deployed in March of 2006 and not deployed WY2007 due to low flow conditions.

Table 1 and Figure 2: Number of smolts captures in WY2000 to the present at the three trapping locations within the Lower Santa Ynez River. The mainstem trap was first installed in the spring of 2006 and was not deployed in WY2007 due to low flow conditions.

	WY2000	WY2001	WY2002	WY2003	WY2004	WY2005	WY2006	WY2007	WY2008	WY2009	WY2010
Salsipuedes	9	131	4	83	19	55	209	2	50	21	70
Mainstem	-	-	-	-	-	-	14	-	1	2	23
Hilton	-	1	20	3	35	7	215	138	83	106	45
Total	***9***	***132***	***24***	***86***	***54***	***62***	***438***	***140***	***134***	***129***	***138***

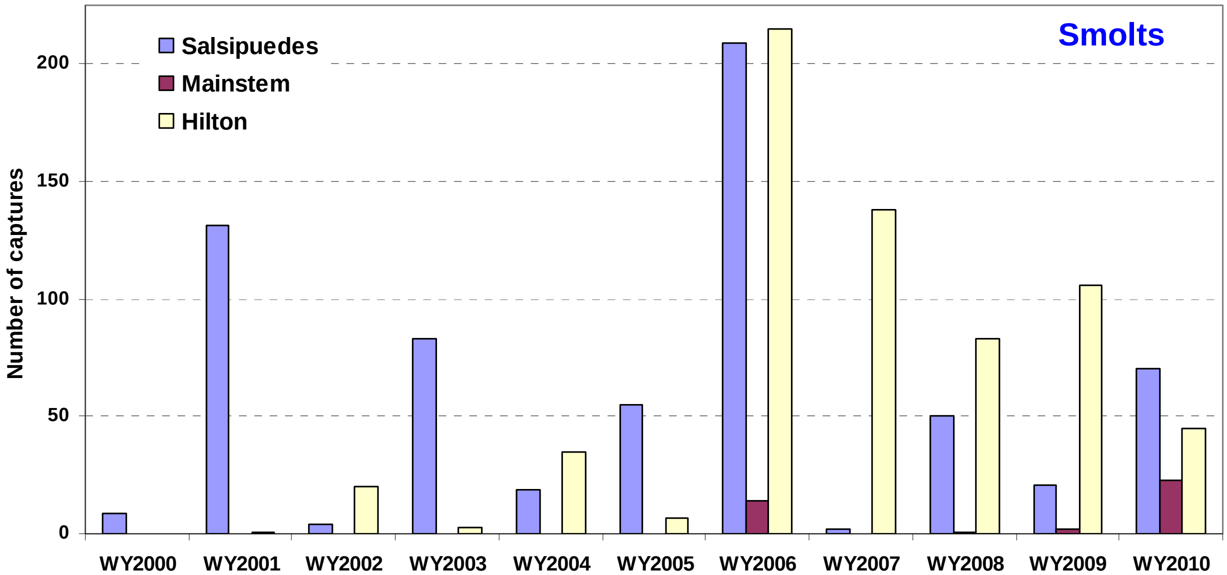


Table 2 and Figure 3: Number of anadromous adult captures in WY2000 to the present at the three trapping locations within the Lower Santa Ynez River

	WY2000	WY2001	WY2002	WY2003	WY2004	WY2005	WY2006	WY2007	WY2008	WY2009	WY2010
Salsipuedes	0	4	0	1	0	1	1	0	7	0	1
Mainstem	-	-	-	-	-	-	0	0	2	0	0
Hilton	0	0	0	0	0	0	0	0	7	1	0
Total	***0***	***4***	***0***	***1***	***0***	***1***	***1***	***0***	***16***	***1***	***1***

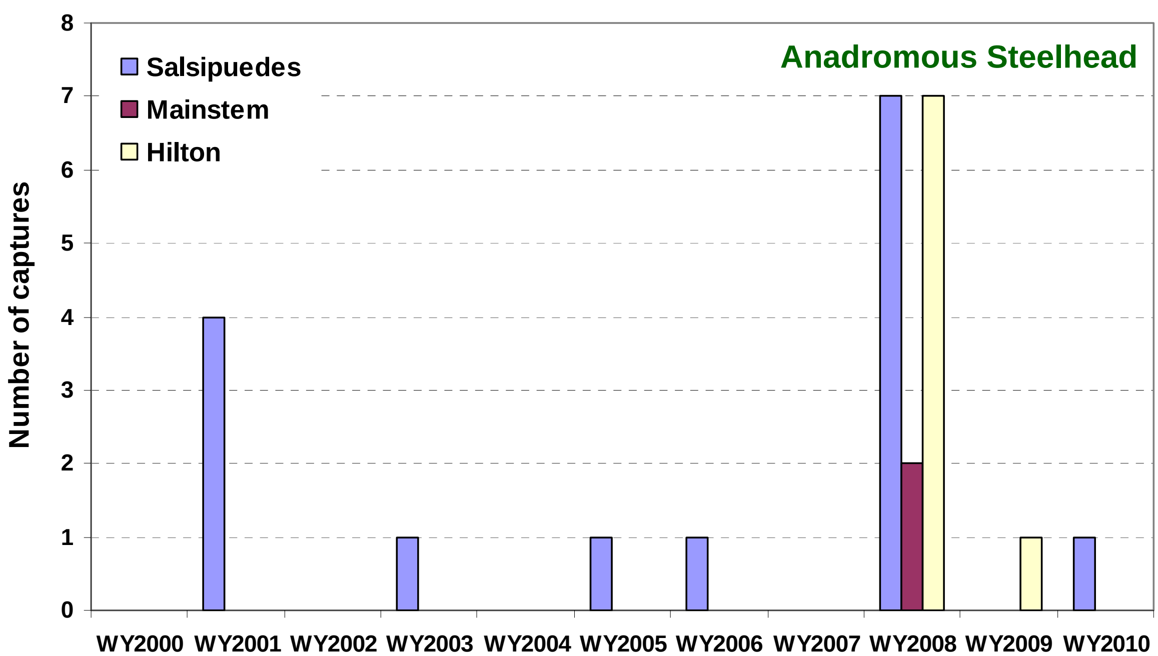


Table 3: WY2005 Tributary upstream and downstream migrant captures for Hilton and Salsipuedes Creek.

Hilton Captures (#)	**Size (mm)**	**Salsipuedes Captures (#)**
	Upstream Traps	
0	>700	0
0	650-699	1
0	600-649	0
0	550-599	0
2	500-549	0
7	450-499	0
8	400-450	0
7	300-399	0
6	200-299	0
4	101-199	0
0	<100	0
34	**Total**	**1**
	Downstream Traps	
0	>700	0
0	650-699	0
0	600-649	0
0	550-599	0
2	500-549	0
0	450-499	0
5	400-449	0
3	300-399	0
2	200-299	9
1	*Smolts*	*9*
0	*Pre-Smolt*	*0*
1	*Res*	*0*
6	101-199	46
6	*Smolts*	*45*
0	*Pre-Smolt*	*1*
0	*Res*	*0*
1	<100	0
0	*Smolts*	*0*
0	*Pre-Smolt*	*0*
1	*Res*	*0*
19	**Total**	**55**

Table 4: WY2006 Tributary upstream and downstream migrant captures for Hilton and Salsipuedes Creek.

Hilton Captures (#)		**Size (mm)**		**Salsipuedes Captures (#)**
		Upstream Traps		
0		>700		0
0		650-699		0
0		600-649		0
1		550-599		0
2		500-549		1
9		450-499		0
20		400-450		0
28		300-399		5
9		200-299		5
17		101-199		1
15		<100		0
101		**Total**		**12**
		Downstream Traps		
0		>700		0
0		650-699		0
0		600-649		0
0		550-599		0
2		500-549		0
4		450-499		0
5		400-449		0
15		(300-399mm)		2
13		(200-299mm)		17
	11	*Smolts*	*11*	
	0	*Pre-Smolt*	*2*	
	2	*Res*	*4*	
45		(101-199mm)		184
	33	*Smolts*	*130*	
	5	*Pre-Smolt*	*49*	
	7	*Res*	*5*	
176		(<100mm)		23
	1	*Smolts*	*4*	
	166	*Pre-Smolt*	*16*	
	9	*Res*	*3*	
260		**Total**		**226**

Table 5: WY2007 Tributary upstream and downstream migrant captures for Hilton and Salsipuedes Creek.

Hilton Captures (#)		**Size (mm)**		**Salsipuedes Captures (#)**
		Upstream Traps		
0		>700		0
0		650-699		0
0		600-649		0
0		550-599		0
0		500-549		0
0		450-499		0
2		400-450		0
11		300-399		0
4		200-299		2
15		101-199		5
12		<100		0
44		**Total**		**7**
		Downstream Traps		
0		>700		0
0		650-699		0
0		600-649		0
0		550-599		0
0		500-549		0
0		450-499		0
4		400-449		0
16		(300-399		1
9		200-299		3
	6	*Smolts*	*0*	
	0	*Pre-Smolt*	*0*	
	3	*Res*	*3*	
362		101-199		12
	92	*Smolts*	*1*	
	40	*Pre-Smolt*	*1*	
	229	*Res*	*10*	
206		<100		1
	0	*Smolts*	*0*	
	0	*Pre-Smolt*	*0*	
	206	*Res*	*1*	
597		**Total**		**17**

Table 6: WY2008 Tributary upstream and downstream migrant captures for Hilton and Salsipuedes Creek.

Hilton Captures (#)	Size (mm)	Salsipuedes Captures (#)
	Upstream Traps	
0	>700	1
4	650-699	2
0	600-649	3
2	550-599	0
2	500-549	0
13	450-499	0
6	400-450	0
31	300-399	0
22	200-299	7
63	101-199	1
32	<100	2
175	**Total**	**16**
	Downstream Traps	
0	>700	0
2	650-699	0
1	600-649	0
1	550-599	0
1	500-549	0
14	450-499	1
13	400-450	0
27	300-399	1
18	200-299	13
4	*Smolt*	*9*
2	*Pre-Smolt*	*1*
12	*Resident*	*3*
176	101-199	41
57	*Smolt*	*33*
18	*Pre-Smolt*	*7*
101	*Resident*	*1*
49	<100	6
0	*Smolt*	*0*
1	*Pre-Smolt*	*0*
48	*Resident*	*6*
302	**Total**	**62**

Table 7: WY2009 Tributary upstream and downstream migrant captures for Hilton and Salsipuedes Creek.

Hilton Captures (#)		Size (mm)		Salsipuedes Captures (#)
		Upstream Traps		
0		>700		0
0		650-699		0
1		600-649		0
0		550-599		0
1		500-549		0
1		450-499		0
2		400-450		0
27		300-399		0
29		200-299		1
33		101-199		9
24		<100		3
118		**Total**		**13**
		Downstream Traps		
0		>700		0
0		650-699		0
0		600-649		0
0		550-599		0
0		500-549		0
1		450-499		0
0		400-449		0
26		00-399		0
24		200-299		2
	6	*Smolts*	*1*	
	0	*Pre-Smolt*	*0*	
	18	*Res*	*1*	
218		101-199		61
	70	*Smolts*	*16*	
	30	*Pre-Smolt*	*4*	
	118	*Res*	*41*	
34		<100		111
	0	*Smolts*	*0*	
	0	*Pre-Smolt*	*1*	
	34	*Res*	*110*	
303		**Total**		**174**

Table 8: WY2010 Tributary upstream and downstream migrant captures for Hilton and Salsipuedes Creek.

Hilton Captures (#)		Size (mm)		Salsipuedes Captures (#)
		Upstream Traps		
0		>700		0
0		650-699		0
0		600-649		0
0		550-599		0
0		500-549		0
2		450-499		0
1		400-450		0
11		300-399		0
39		200-299		4
39		101-199		2
15		<100		0
107		**Total**		**6**
		Downstream Traps		
0		>700		0
0		650-699		0
0		600-649		1
0		550-599		0
0		500-549		0
2		450-499		0
3		400-450		0
9		300-399		0
38		200-299		20
	1	*Smolts*	*18*	
	1	*Pre-Smolt*	*2*	
	36	*Res*	*0*	
84		101-199		50
	39	*Smolts*	*49*	
	4	*Pre-Smolt*	*1*	
	40	*Res*	*0*	
15		<100		2
	0	*Smolts*	*0*	
	0	*Pre-Smolt*	*0*	
	15	*Res*	*2*	
151		**Total**		**73**

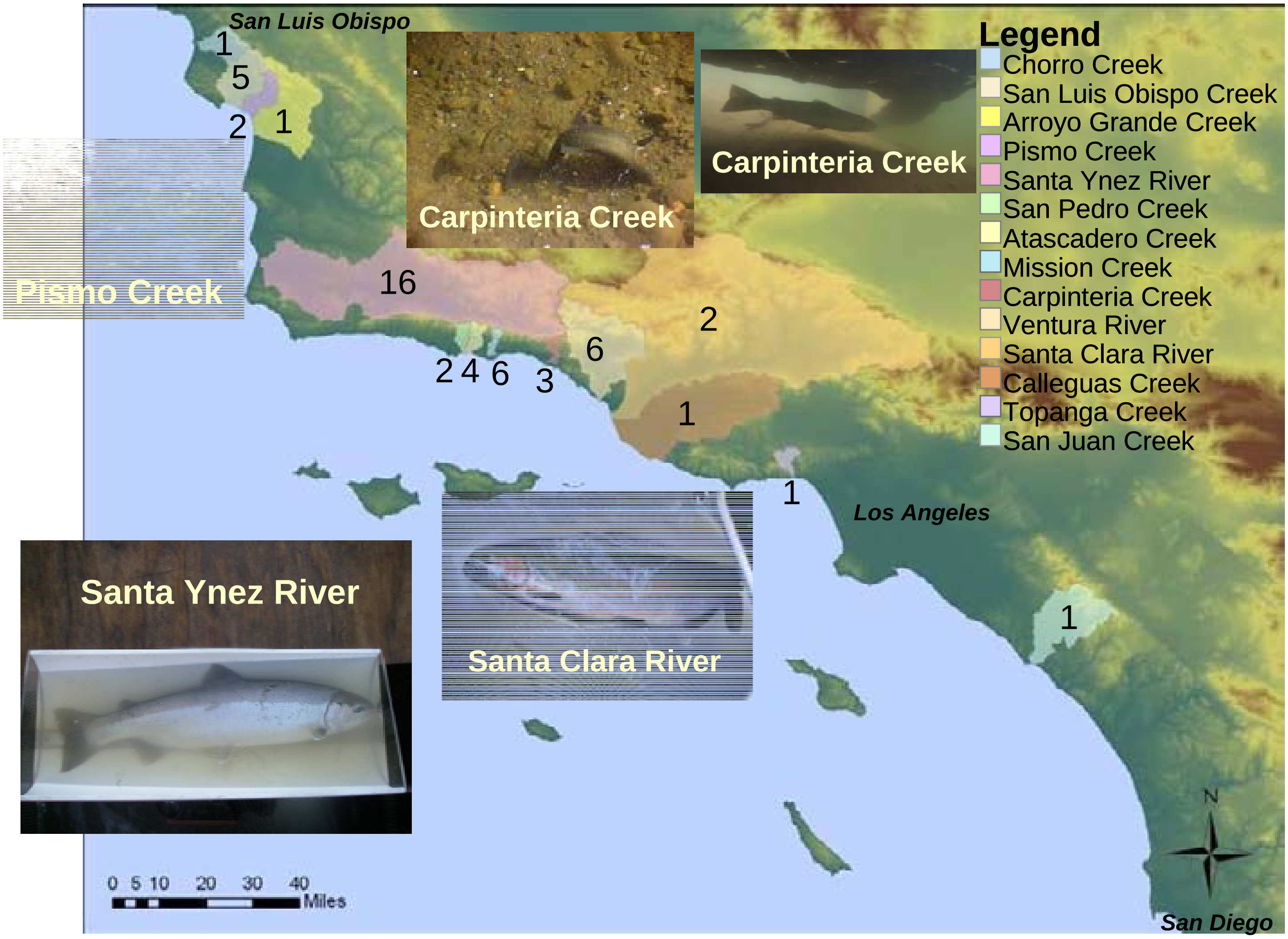


Figure 4: Watersheds within or near by the Southern California Steelhead ESU/DPS with observed anadromous steelhead in WY2008.

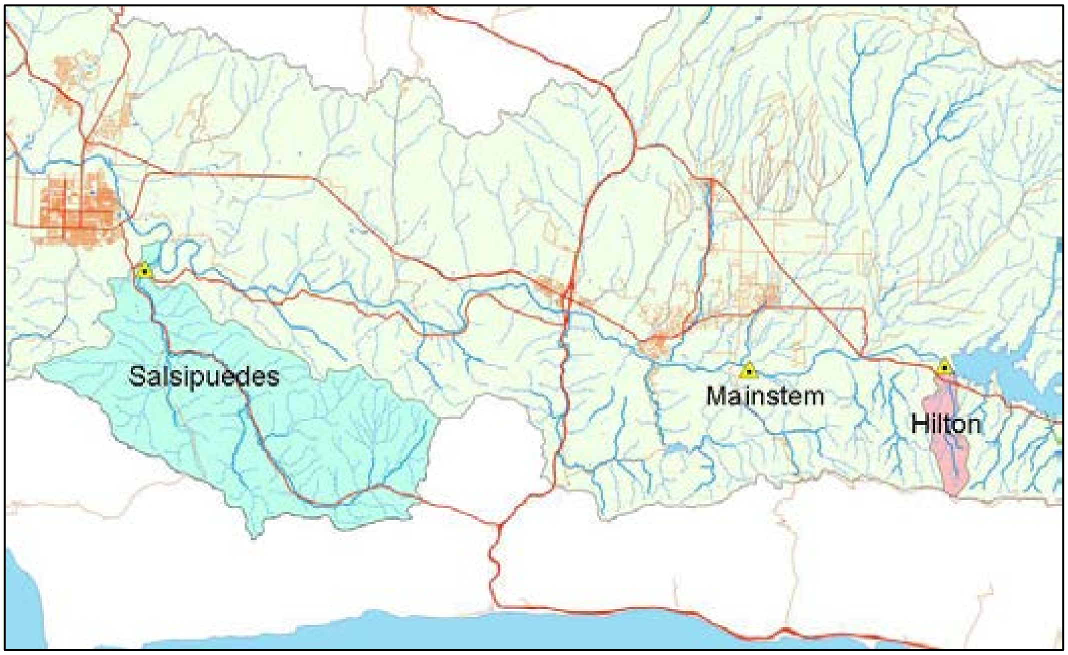


Figure 5: Trapping locations on the Lower Santa Ynez River during WY2008.

Table 9: The 16 anadromous steelhead migrants observed in the Lower Santa Ynez River in WY2008 with notes on the significance of some of those fish.

#	#	Location	Direction	Size	Date	Notes
1	1	Salsipuedes	US	640	2/4	
2	2	Salsipuedes	US	701	2/5	Largest Std capture
3	3	Salsipuedes	DS	496	2/7	
4	4	Salsipuedes	US	635	2/17	
5	5	Salsipuedes	US	663	3/25	
6	6	Salsipuedes	US	675	3/29	
7	7	Salsipuedes	US	608	4/14	
8	1	Mainstem	US	678	2/10	First Std capture on mainstem
9	2	Mainstem	US	600	3/18	Second Std capture on mainstem
10	1	Hilton	US	659	2/7	First Std capture on Hilton
11	2	Hilton	DS	578	2/11	Second Std capture on Hilton
12	3	Hilton	US	691	2/16	
13	4	Hilton	DS	617	3/4	
14	5	Hilton	US	563	3/5	
15	6	Hilton	US	660	3/7	
16	7	Hilton	US	688	3/23	

Table 10: The capture location, genetic origin with county, and the confidence score of the genetic determination for the 16 anadromous steelhead migrants observed in WY2008 within the Lower Santa Ynez River. Of particular importance is the number of steelhead returning to their natal streams.

	Location Captured	Genetic Origin	County	Score
1	Hilton Creek	San Antonio River	Monterrey	55%
2	Hilton Creek	Hilton Creek	Santa Barbara	100%
3	Hilton Creek	Tasajarra Creek	Monterrey	88%
4	Hilton Creek	Hilton Creek	Santa Barbara	100%
5	Hilton Creek	Hilton Creek	Santa Barbara	100%
6	Hilton Creek	Tasajarra Creek	Monterrey	99%
7	Hilton Creek	Hilton Creek	Santa Barbara	90%
8	Salsipuedes Creek	Lopez Canyon Creek	San Luis Obispo	75%
9	Salsipuedes Creek	Lopez Canyon Creek	San Luis Obispo	56%
10	Salsipuedes Creek	Salsipuedes Creek	Santa Barbara	98%
11	Salsipuedes Creek	Salsipuedes Creek	Santa Barbara	100%
12	Salsipuedes Creek	Salsipuedes Creek	Santa Barbara	100%
13	Salsipuedes Creek	Salsipuedes Creek	Santa Barbara	100%
14	Salsipuedes Creek	Salsipuedes Creek	Santa Barbara	100%
15	Santa Ynez River mainstem	Arroyo Grande Creek	San Luis Obispo	70%
16	Santa Ynez River mainstem	Quiota Creek	Santa Barbara	100%

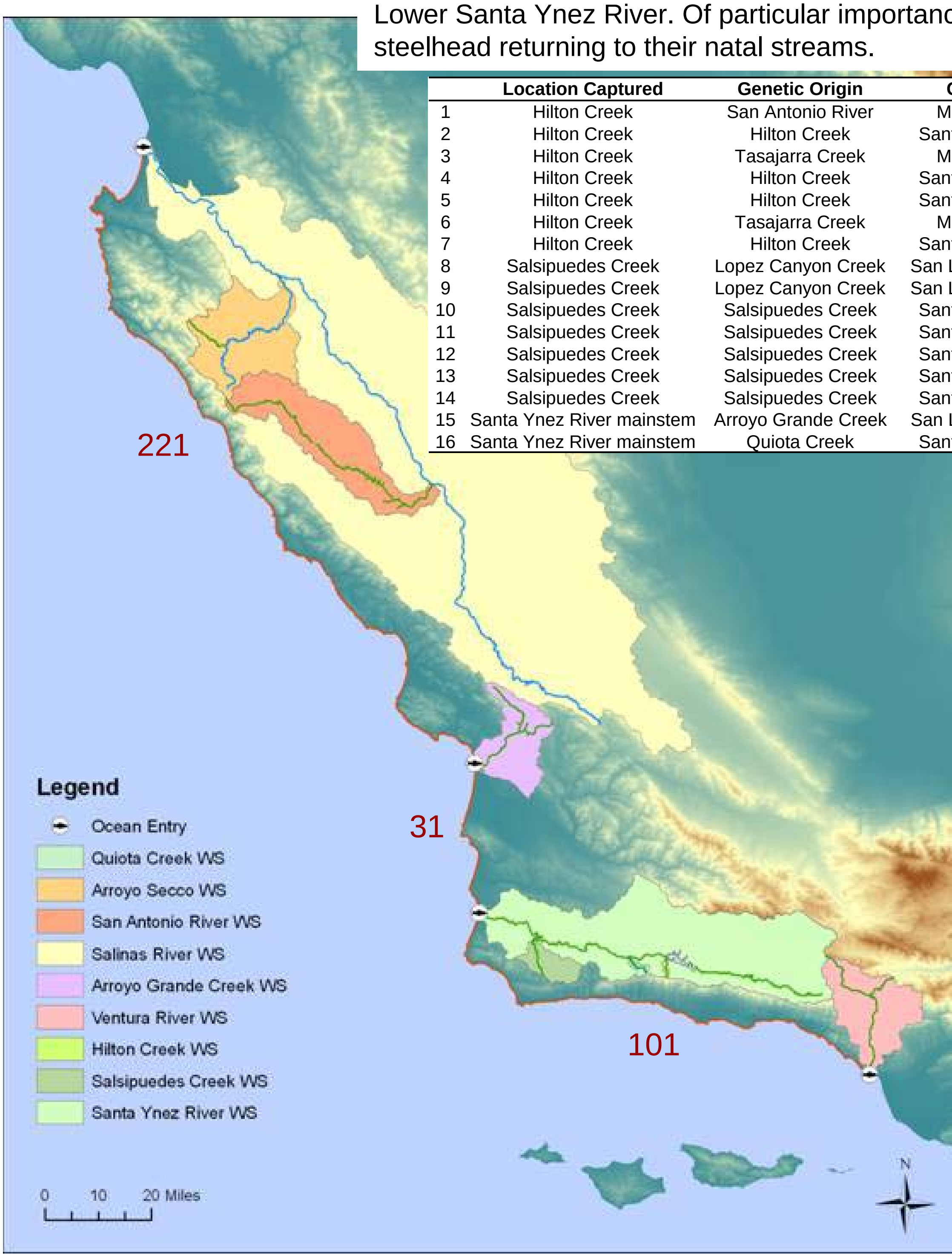


Figure 6: Location of the watersheds and the specific stream in green that contributed steelhead to the Santa Ynez River in WY2008. The numbers in red indicate the coastal distance from the outlet of the watershed of genetic origin to the outlet of the Santa Ynez River (See Table 10 for genetic origin watersheds; the Ventura River watershed was included due to being second on percentage score for one steelhead .

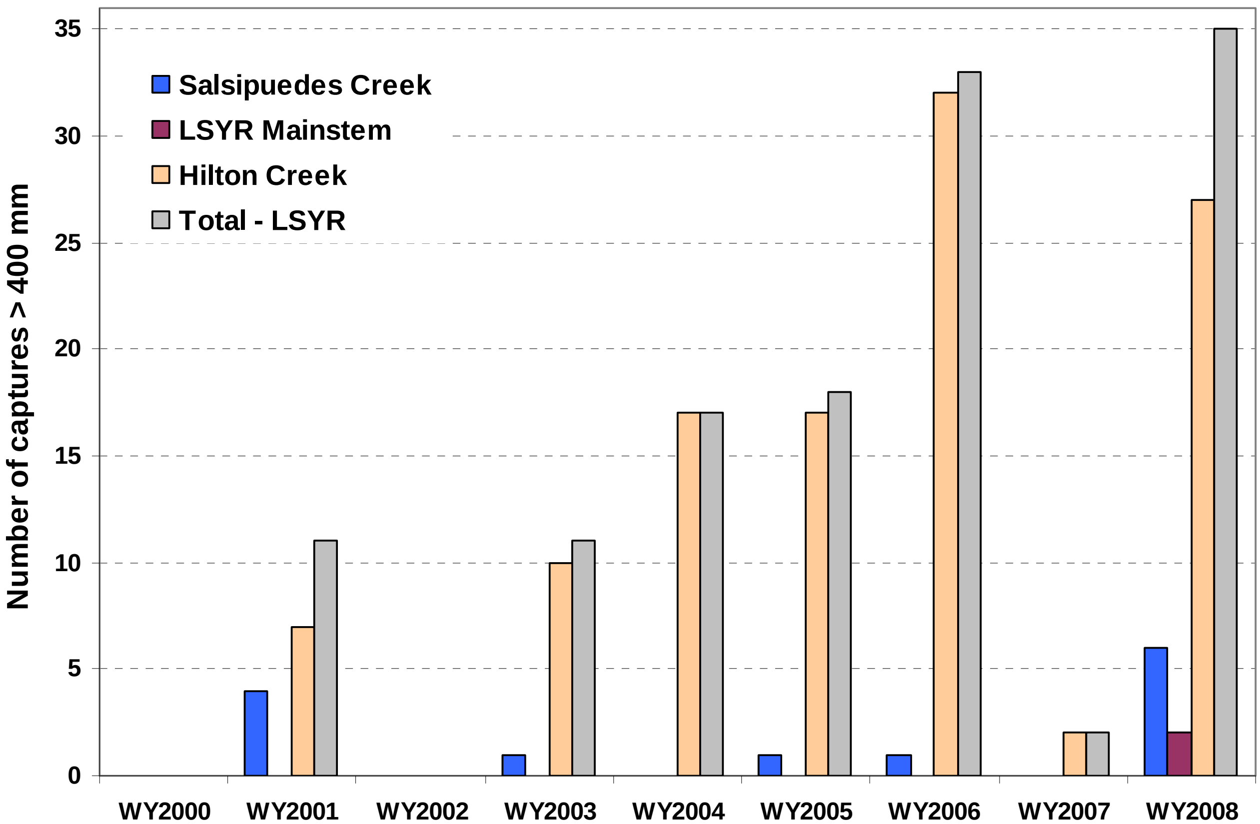


Figure 7: Migrant captures equal to or larger than 400 mm (15.7 inches) observed at the three trap sites from WY2000 through WY2008. The LSYR Mainstem trap was first installed in WY2006. The increased number of larger fish indicate a greater reproduction potential which is particularly evident at Hilton Creek.

Table 11: Spring, summer and fall snorkel survey totals within the Lower Santa Ynez River at the Refugio and Alisal reaches and certain long-term monitoring reaches on Hilton, Quiota, Salsipuedes and El Jaro creeks during Water Years 2005 to the present.

Snorkel Survey	WY2005	WY2006	WY2007	WY2008	WY2009	WY2010
Refugio and Alisal Reaches						
Spring	67	345	89	216	78	38
Summer	84	331	58	646	49	
Fall	91	293	21	305	26	
Hilton Creek						
Spring	1517	2740	1316	2210	545	1256
Summer	1303	1891	1319	1519	863	
Fall	1272	2016	n/a	738*	746	
Quiota Creek						
Spring	n/a	n/a	n/a	243	189	114
Summer	n/a	142	201	81	101	
Fall	n/a	84	78	67	39	
Salsipuedes Creek						
Spring	n/a	109	202	n/a	95	305
Summer	110	131	0	308	46	
Fall	134	74	76	226	26	
El Jaro Creek						
Spring	n/a	35	30	n/a	75	105
Summer	25	35	n/a	405	n/a	
Fall	3	18	n/a	151	11	
Water Year Type						
	Wet	Wet	Dry	Wet	Dry	Wet

n/a= conditions too turbid to snorkel.

Table 12: WY2005 LSYR mainstem snorkel results broken out by three inch size classes.

Survey	Reach	Length Class (inches)									Total
		0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24-27	
Spring	Hwy 154	Not snorkeled due to turbidity									
	Refugio	0	29	1	5	9	4	1	0	0	**49**
	Alisal	0	9	0	2	4	2	1	0	0	**18**
	Avenue	Not snorkeled									
	Cadwell	Not snorkeled									
Summer	Hwy 154	Not snorkeled due to turbidity									
	Refugio	0	77	13	4	7	8	6	2	**0**	**117**
	Alisal	0	7	6	1	6	1	0	0	0	**21**
	Avenue	Not snorkeled									
	Cadwell	Not snorkeled									
Fall	Hwy 154	Not snorkeled due to turbidity									
	Refugio	0	4	52	19	17	11	0	0	**0**	**103**
	Alisal	0	0	10	1	7	2	2	0	**0**	**22**
	Avenue	Not snorkeled									
	Cadwell	Not snorkeled									

Table 13: WY2005 tributary snorkel results broken out by three inch size classes.

Survey	Creek	Length Class (inches)									Total
		0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24-27	
Spring	Hilton	991	440	58	11	7	5	5	0	0	**1517**
	Quiota	Not snorkeled									
	Salsipuedes (R1-4)	Not snorkeled due to turbidity									
	Salsipuedes (R-5)	Not snorkeled due to turbidity									
	El Jaro	Not snorkeled due to turbidity									
Summer	Hilton	429	723	122	19	7	3	0	0	0	**1303**
	Quiota	Not snorkeled									
	Salsipuedes (R1-4)	Not snorkeled due to turbidity									
	Salsipuedes (R-5)	46	57	5	2	0	0	0	0	0	**110**
	El Jaro	9	4	10	2	0	0	0	0	0	**25**
Fall	Hilton	288	801	147	22	5	9	0	0	0	1272
	Quiota	Not snorkeled									
	Salsipuedes (R1-4)	Not snorkeled due to turbidity									
	Salsipuedes (R-5)	0	127	6	1	0	0	0	0	0	**134**
	El Jaro	0	3	0	0	0	0	0	0	0	**3**

Table 14: WY2006 LSYR mainstem snorkel results broken out by three inch size classes.

Survey	Reach	Length Class (inches)									Total
		0-3	**3-6**	**6-9**	**9-12**	**12-15**	**15-18**	**18-21**	**21-24**	**24-27**	
Spring	Hwy 154	Not snorkeled due to turbidity									
	Refugio	0	10	11	4	3	2	2	0	0	**32**
	Alisal	0	3	47	14	8	4	2	1	0	**79**
	Avenue	Not snorkeled									
	Cadwell	Not snorkeled									
Summer	Hwy 154	Not snorkeled due to turbidity									
	Refugio	5	45	68	56	28	8	0	1	0	**211**
	Alisal	3	44	21	57	7	2	0	0	0	**134**
	Avenue	0	2	11	13	6	1	0	0	0	**33**
	Cadwell	Not snorkeled									
Fall	Hwy 154	Not snorkeled due to turbidity									
	Refugio	0	29	56	64	31	24	3	1	0	**208**
	Alisal	0	9	42	29	4	1	0	0	0	**85**
	Avenue	Not snorkeled									
	Cadwell	Not snorkeled									

Table 15: WY2006 tributary snorkel results broken out by three inch size classes.

Survey	Creek	Length Class (inches)									Total
		0-3	**3-6**	**6-9**	**9-12**	**12-15**	**15-18**	**18-21**	**21-24**	**24-27**	
Spring	Hilton	1386	1181	143	20	4	5	1	0	0	**2740**
	Quiota	Not snorkeled									
	Salsipuedes (R1-4)	Not snorkeled due to turbidity									
	Salsipuedes (R-5)	40	42	22	3	2	0	0	0	0	**109**
	El Jaro	2	15	17	1	0	0	0	0	0	**35**
Summer	Hilton	1044	764	65	11	5	1	1	0	0	**1891**
	Quiota	97	34	7	4	0	0	0	0	0	**142**
	Salsipuedes (R1-4)	Not snorkeled due to turbidity									
	Salsipuedes (R-5)	41	53	29	6	1	1	0	0	0	**131**
	El Jaro	11	10	11	1	0	0	0	0	0	**33**
Fall	Hilton	620	1260	116	16	1	2	1	0	0	**2016**
	Quiota	12	66	5	1	0	0	0	0	0	**84**
	Salsipuedes (R1-4)	Not snorkeled due to turbidity									
	Salsipuedes (R-5)	11	28	26	7	2	0	0	0	0	**74**
	El Jaro	0	7	10	1	0	0	0	0	0	**18**

Table 16: WY2007 LSYR mainstem snorkel results broken out by three inch size classes.

Survey	Reach	Length Class (inches)									Total
		0-3	**3-6**	**6-9**	**9-12**	**12-15**	**15-18**	**18-21**	**21-24**	**24-27**	
Spring	Hwy 154	Not snorkeled-turbidity									
	Refugio	0	0	3	12	14	6	0	0	0	**35**
	Alisal	0	0	0	5	25	18	6	0	0	**54**
	Avenue	0	0	0	0	0	0	0	0	0	**0**
	Cadwell	0	0	0	0	0	0	0	0	0	**0**
Summer	Hwy 154	14	55	7	0	0	0	0	0	0	**76**
	Refugio	1	0	3	5	5	1	0	0	0	**15**
	Alisal	0	0	0	10	21	8	0	0	0	**39**
	Avenue	0	0	0	0	0	0	0	0	0	**0**
	Cadwell	0	0	0	0	0	0	0	0	0	**0**
Fall	Hwy 154	0	17	20	0	0	0	0	0	0	**37**
	Refugio	0	0	0	3	6	3	0	0	0	**12**
	Alisal	0	0	0	4	3	2	0	0	0	**9**
	Avenue	0	0	0	0	0	0	0	0	0	**0**
	Cadwell	0	0	0	0	0	0	0	0	0	**0**

Table 17: WY2007 tributary snorkel results broken out by three inch size classes.

Survey	Creek	Length Class (inches)									Total
		0-3	**3-6**	**6-9**	**9-12**	**12-15**	**15-18**	**18-21**	**21-24**	**24-27**	
Spring	Hilton	463	670	171	10	2	0	0	0	0	**1316**
	Quiota	59	129	12	1						**201**
	Salsipuedes (R1-4)	n/s-poor visibility from beaver activity									
	Salsipuedes (R-5)	151	14	27	9	1					**202**
	El Jaro	9	5	9	6	1					**30**
Summer	Hilton	318	802	168	26	5	0	0	0	0	**1319**
	Quiota	32	39	6	1						**78**
	Salsipuedes (R1-4)	n/s-poor visibility from beaver activity									
	Salsipuedes (R-5)	n/s-poor visibility from beaver activity									
	El Jaro	n/s-turbidity									
Fall	Hilton	n/s-poor visibility from lake turnover									
	Quiota	n/s-poor visibility									
	Salsipuedes (R1-4)	n/s-poor visibility from beaver activity									
	Salsipuedes (R-5)	26	26	13	8	2	1				**76**
	El Jaro	n/s-poor visibility									

Table 18: WY2008 LSYR mainstem snorkel results broken out by three inch size classes.

Survey	Reach	Length Class (inches)									Total
		0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24-27	
Spring	Hwy 154	Not snorkeled due to turbidity									
	Refugio	68	83	1	14	14	4	1	1	4	**190**
	Alisal	18	6	0	2	0	0	0	0	0	**26**
	Avenue	0	4	0	1	1	0	0	0	0	**6**
	Cadwell	0	0	0	0	0	0	0	0	0	**0**
Summer	Hwy 154	Not snorkeled due to turbidity									
	Refugio	23	447	21	6	17	8	4	0	2	**528**
	Alisal	2	111	3	0	0	2	0	0	0	**118**
	Avenue	Not snorkeled									**0**
	Cadwell	Not snorkeled									**0**
Fall	Hwy 154	8	100	20	4	1	0	0	0	0	**133**
	Refugio	1	217	11	14	15	4	1	0	0	**263**
	Alisal	0	34	7	0	1	0	0	0	0	**42**
	Avenue	Not snorkeled									**0**
	Cadwell	Not snorkeled									**0**

Table 19: WY2008 tributary snorkel results broken out by three inch size classes.

Survey	Reach	Length Class (inches)									Total
		0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24-27	
Spring	Hilton	1318	749	127	12	3	1				**2210**
	Quiota	188	43	12	0	0	0	0	0	0	**243**
	Salsipuedes (R1-4)	135	52	24	5	0	0	0	0	0	**216**
	Salsipuedes (R-5)	232	62	9	3	1	0	0	1	0	**308**
	El Jaro	342	61	1	1	0	0	0	0	0	**405**
Summer	Hilton	634	785	88	11	1	0	0	0	0	**1519**
	Quiota	61	14	6	0	0	0	0	0	0	**81**
	Salsipuedes (R1-4)	Not snorkeled due to turbidity									**0**
	Salsipuedes (R-5)	Not snorkeled due to turbidity									**0**
	El Jaro	Not snorkeled due to turbidity									**0**
Fall	Hilton	168	521	44	5	0	0	0	0	0	**738**
	Quiota	29	31	7	0	0	0	0	0	0	**67**
	Salsipuedes (R1-4)	Not snorkeled due to turbidity									**0**
	Salsipuedes (R-5)	149	69	6	2	0	0	0	0	0	**226**
	El Jaro	68	79	4	0	0	0	0	0	0	**151**

Table 20: WY2009 LSYR mainstem snorkel results broken out by three inch size classes.

Survey	Reach	Length Class (inches)									Total
		0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24-27	
Spring	Hwy 154	Not snorkeled due to turbidity									
	Refugio	0	2	14	13	3	6	1	0	0	**39**
	Alisal	1	1	25	8	4	0	0	0	0	**39**
	Avenue	Not snorkeled									**0**
	Cadwell	Not snorkeled									**0**
Summer	Hwy 154	Not snorkeled due to turbidity									
	Refugio	0	1	11	12	4	4	0	0	0	**32**
	Alisal	0	1	7	6	3	0	0	0	0	**17**
	Avenue	Not snorkeled									**0**
	Cadwell	Not snorkeled									**0**
Fall	Hwy 154	1	34	6	0	0	0	0	0	0	**41**
	Refugio	0	0	5	9	5	0	0	0	0	**19**
	Alisal	0	0	1	3	3	0	0	0	0	**7**
	Avenue	Not snorkeled									**0**
	Cadwell	Not snorkeled									**0**

Table 21: WY2009 tributary snorkel results broken out by three inch size classes.

Survey	Reach	Length Class (inches)									Total
		0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24-27	
Spring	Hilton	227	224	88	5	0	0	0	1	0	**545**
	Quiota	185	4	0	0	0	0	0	0	0	**189**
	Salsipuedes (R2)	Not snorkeled due to turbidity									**0**
	Salsipuedes (R-5)	28	61	6	0	0	0	0	0	0	**95**
	El Jaro	34	35	6	0	0	0	0	0	0	**75**
Summer	Hilton	319	380	140	21	3	0	0	0	0	**863**
	Quiota	89	11	1	0	0	0	0	0	0	**101**
	Salsipuedes (R2)	13	2	2	1	0	0	0	0	0	**18**
	Salsipuedes (R-5)	11	15	2	0	0	0	0	0	0	**28**
	El Jaro	Not snorkeled									**0**
Fall	Hilton	167	482	93	4	0	0	0	0	0	**746**
	Quiota	27	10	2	0	0	0	0	0	0	**39**
	Salsipuedes (R2)	0	5	1	0	0	0	0	0	0	**6**
	Salsipuedes (R-5)	3	14	2	1	0	0	0	0	0	**20**
	El Jaro	2	7	1	1	0	0	0	0	0	**11**

Table 22: Biological Opinion (BO) tributary project inventory with the anticipated completion date specified in the BO and their status to date.

Tributary Projects	BO Completion Date	Status
Hwy 1 Bridge on Salispuedes Creek	2001	Completed (2002)
Cross Creek Ranch on El Jaro Creek	2005	Completed (2009)
Hwy 101 Culvert on Nojoqui Creek	2005	Proposed removal from BO
Quiota Creek Crossing 1	2003	In design*
Quiota Creek Crossing 3	2003	In design
Quiota Creek Crossing 4	2003	In design
Quiota Creek Crossing 5	2003	In design
Quiota Creek Crossing 7	2003	In design
Quiota Creek Crossing 9	2003	In design
Cascade/Chute Passage on Hilton Creek	2000	Completed (2005)
Hwy 154 Culvert on Hilton Creek	2002	Proposed removal from BO
Total:	**11**	
Projects completed and in design:	***9***	
Projects suggested to be removed:	***2***	

* Grant applications submitted.

Table 23: Non-BO tributary projects already completed or scheduled for completion.

Tributary Projects	Status
Jalama Road Bridge on Salsipuedes Creek	Completed (2004)
San Julian Ranch on El Jaro Creek	Completed (2008)
Quiota Creek Crossing 2	In design*
Quiota Creek Crossing 6	Completed (2008)
Quiota Creek Crossing 8	In design
Total:	**5**
Projects completed:	***3***
Projects remaining:	***2***

* Grant applications submitted.

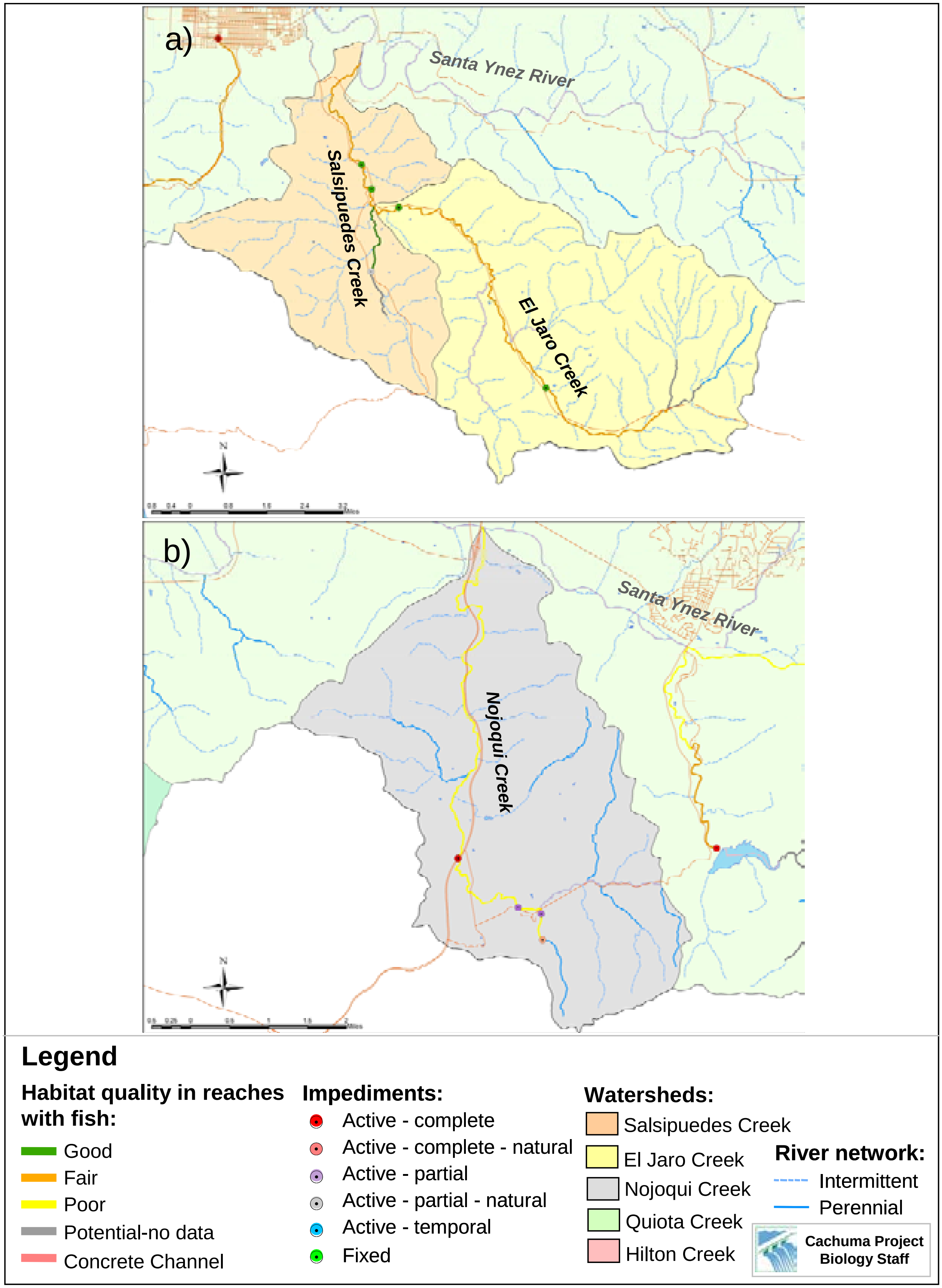


Figure 8: Tributaries of the Lower Santa Ynez River that are identified in the Biological Opinion to have steelhead habitat: a) Salsipuedes and El Jaro creeks, and b) Nojoqui Creek. Stream habitat quality and impediments with their status have been included.

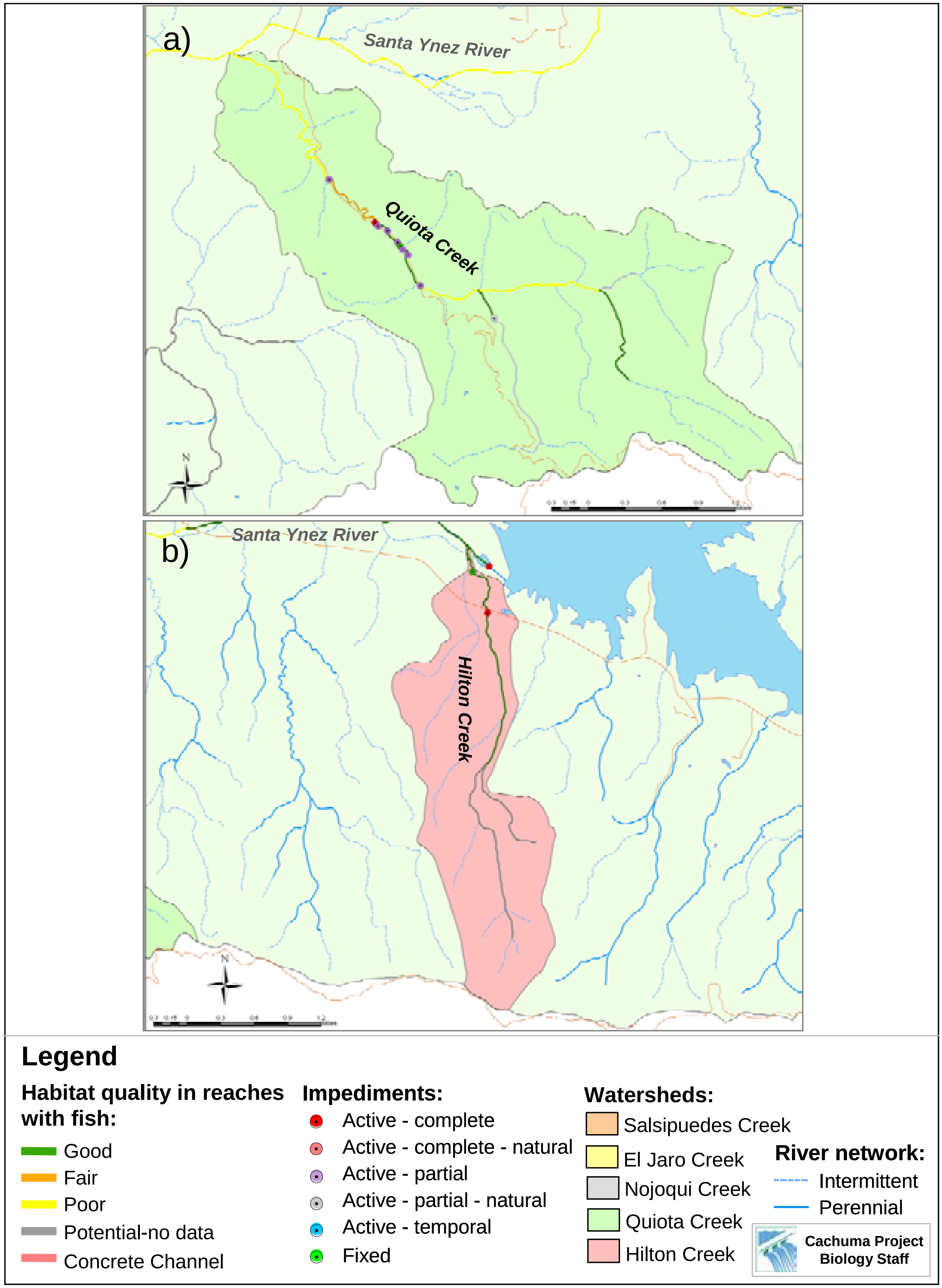


Figure 9: Tributaries of the Lower Santa Ynez River that are identified in the Biological Opinion to have steelhead habitat: a) Quiota Creek, and b) Hilton Creek. Stream habitat quality and impediments with their status have been included.

Figure 10: Fish passage and habitat restoration in the fall of 2008 at Rancho San Julian on El Jaro Creek.

Figure 11: Fish passage and habitat restoration in the fall of 2008 at Refugio Road on Quiota Creek Crossing 6.

Figure 12: Fish passage and habitat restoration in the fall of 2009 at Cross Creek Ranch on El Jaro Creek, a tributary of Salsipuedes Creek and the Santa Ynez River.

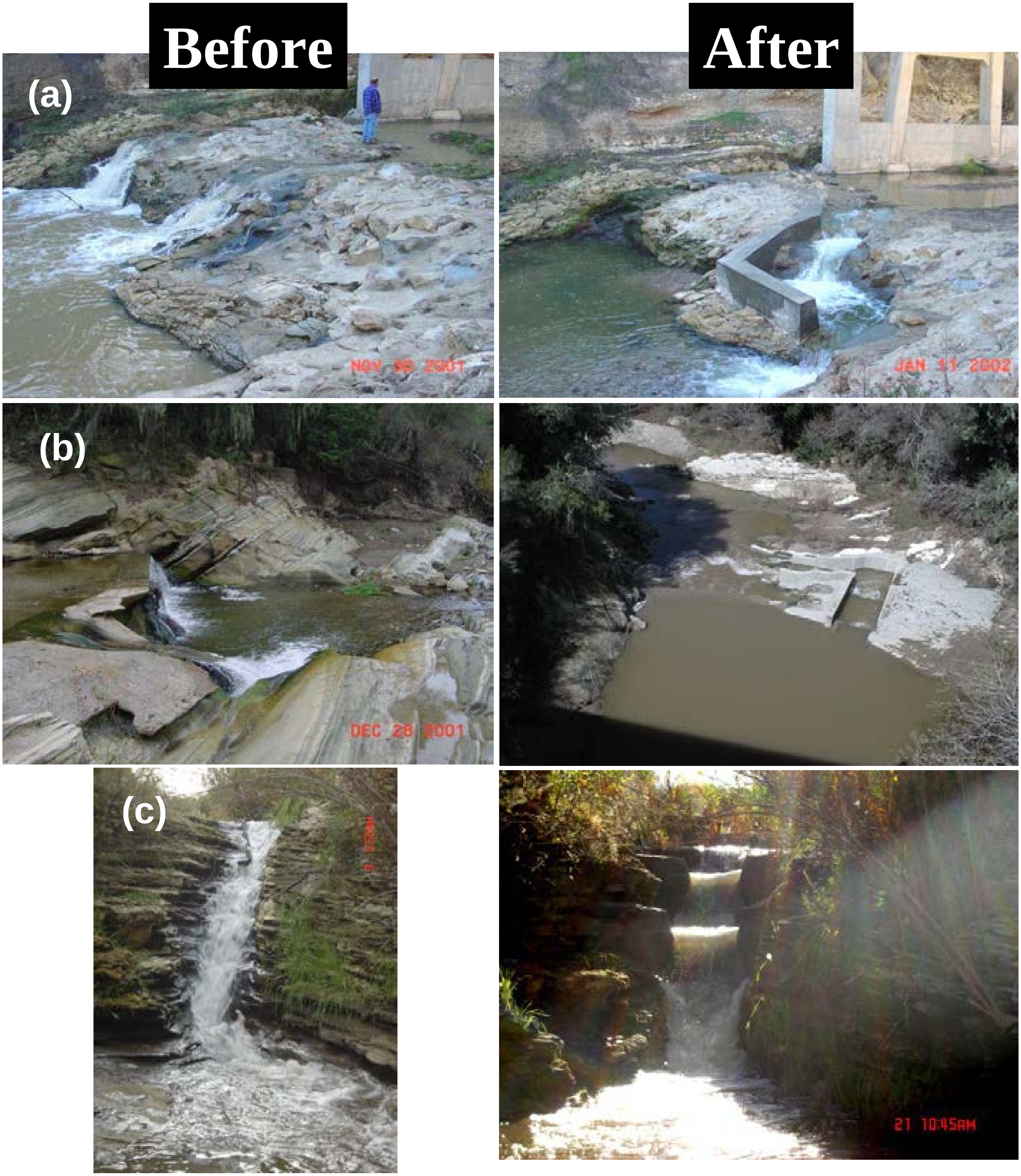


Figure 13: Fish passage and habitat restoration at (a) Hwy 1 Bridge on Salsipuedes Creek (completed in 2002), (b) Jalama Road Bridge on Salsipuedes Creek (completed in 2004), and (c) Cascade Chute barrier on Hilton Creek.

APPENDIX H

Settlement Agreement

SETTLEMENT AGREEMENT BETWEEN CACHUMA CONSERVATION RELEASE BOARD, SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1, AND THE CITY OF LOMPOC, RELATING TO OPERATION OF THE CACHUMA PROJECT

This Agreement is entered into this 17th day of December, 2002, by and between , **CACHUMA CONSERVATION RELEASE BOARD** ("**CCRB**"), a joint powers agency consisting of the City of Santa Barbara, Montecito Water District, Goleta Water District and Carpinteria Valley Water District ("**CCRB Members**"), **SANTA YNEZ RIVER WATER CONSERVATION DISTRICT,** a California water conservation district ("**Santa Ynez**"), **SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO. 1,** an improvement district of Santa Ynez ("**ID#1**"), and the **CITY OF LOMPOC**, a general law city ("**Lompoc**").

EXPLANATORY RECITALS:

A. The United States Bureau of Reclamation ("USBR") has constructed and is operating the Cachuma Project as authorized by the Congress of the United States, including Lake Cachuma impounded behind Bradbury Dam, and operates the Cachuma Project pursuant to permits issued by the State Water Resources Control Board ("State Board") and, pursuant to permits and orders of the State Board, is required to, among other things, collect certain data, maintain essential records related to project operations, and to make releases below Bradbury Dam for the protection of downstream water rights; and

B. CCRB Members and ID#1 have contracted with USBR through the Santa Barbara County Water Agency for the yield from the Cachuma Project, and are collectively referred to as "Cachuma Member Units". CCRB is established by that certain "Joint Powers

Agreement Creating Cachuma Conservation-Release Board" dated February 11, 1974, for specific purposes, including to represent the CCRB Members in promoting their common objective to maximize for beneficial use the water supply made available from the Cachuma Project; and

C. Santa Ynez, among other things, acts to represent and protect holders of water rights downstream of Bradbury Dam so that the Cachuma Project does not interfere with downstream water rights nor adversely affect water quality of the Santa Ynez River; and

D. ID#1, located downstream of Bradbury Dam and within Santa Ynez, among other things, acts to help ensure sufficient water is released so as to protect its downstream water rights, and as a Member Unit of the Cachuma Project, seeks to maximize the yield of the Cachuma Project for beneficial use within its boundaries; and

E. Lompoc, located downstream of Bradbury Dam and within Santa Ynez, acts to, among other things, help ensure that sufficient water is released so that the Cachuma Project does not interfere with its downstream water rights nor adversely affect the quality of water recharged from the Santa Ynez River; and

F. In furtherance of Order WR 94-5, by Notice dated September 25, 2000, the State Board noticed hearings concerning "Hearing to Review the US Bureau of Reclamation Water Right Permits 11308 and 11310 (Applications 11331 and 11332) to Determine Whether any Modifications in Permit Terms and Conditions are Necessary to Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir) and to Consider Change Petitions for Water Rights Permits 11308 and 11310"; the first phase of which hearing concerning proposed Change in Place and Purpose of Use Petitions was conducted on November 6, 2000; and a second phase of said hearing is anticipated in the Spring of 2003 will consider whether changes in said Permit terms and conditions are necessary to protect public trust resources and downstream water rights (said hearings herein being collectively referred to as "94-5 Hearings"); and

G. The parties to this Agreement along with others, including the California Department of Fish and Game and the United States Fish and Wildlife Service, have entered into a series of Memoranda of Understanding, the last effective December 1, 2000 ("Fish MOU"), in order to develop a consensus process to address public trust resource issues affected by the Cachuma Project. Further purposes of the Fish MOU are to implement the Lower Santa Ynez River Fish Management Plan ("FMP") and the Terms and Conditions of the United States National Marine Fisheries Service Biological Opinion ("NMFS BO") entitled "U. S. Bureau of Reclamation operation and maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California", dated September 11, 2000 pursuant to Section 7 of the Endangered Species Act. Among other things, the parties to this Agreement intend by this Agreement to jointly advocate for the State Board to issue orders for the future operation of the Cachuma Project as provided at Paragraph 4 hereof; and

H. It is the desire of the parties to this Agreement to resolve actual and potential disputes which exist among them relative to the obligation of USBR to make releases from Bradbury Dam for protection of downstream water rights such that entering into Phase 2 of the 94-5 Hearings, the parties to this Agreement are in agreement that, subject to potential termination as provided at Paragraph 5 hereof, the downstream water rights holders are protected and that the State Board need not take any additional actions in protection of downstream water rights holders at this time; and

I. The parties to this Agreement, all of which have been involved in the consensus process leading to the Fish MOU to protect public trust resources, desire to coordinate the protection of public trust resources and downstream water right releases so as to provide for protection of such public trust resources and maximize the beneficial use of water from the Santa Ynez River, all in a manner consistent with the FMP and the Terms and Conditions of the NMFS BO; and

J. In conjunction with the 94-5 Hearings, the State Board is expected to consider and certify an Environmental Impact Report which will consider the environmental effects of any changes in the terms and conditions of the Cachuma Project permits, including certain modified operations set forth in this Agreement.

EXECUTORY AGREEMENTS:

NOW, THEREFORE, in consideration of the above recitals and the mutual promises made herein, the parties to this Agreement agree as follows:

1. **Downstream Water Rights Releases**

1.1 **Support of WR 89-18.**

The parties to this Agreement agree that releases pursuant to State Board Order WR 73-37 as modified by WR 89-18 (herein collectively called "WR 89-18") and modified as provided in this Agreement will adequately protect downstream water rights and will not significantly adversely affect water quality otherwise available to downstream water right holders and collectively agree to support WR 89-18 and the modifications as provided in this Agreement before the State Board, as the appropriate mechanism for administering downstream water rights releases. The parties to this Agreement agree to advocate for, to be bound by, to comply with, and not to seek judicial challenge, of a State Board order to operate the Cachuma Project according to WR 89-18, modified as provided in this Agreement.

1.2 **Conjunctive Operation with Fish Releases.**

For purposes of operating downstream water rights releases in conjunction with releases required under the NMFS BO in a manner to reduce the impacts on the Cachuma Project water supply, while meeting the target rearing flows required by the NMFS BO, which is an obligation of the Cachuma Project, Santa Ynez shall order downstream water rights releases pursuant to Condition 5 of WR 89-18 (modifying condition No. 5 of Permits 11308 and 11310) consistent with Exhibit "A" hereto.

1.3 **Conjunctive Operation of Below Narrows Account.**

In order to resolve a dispute which may exist between all or some of the parties to this Agreement as to whether and under what conditions "Curve B" may apply in lieu of "Curve A" insofar as determining Below Narrows Account ("BNA") credits as provided in Paragraph 2.2.1 of Condition 5 of WR 89-18, the parties to this Agreement agree that BNA credits shall be computed as set forth in Exhibit "B" hereto. This arrangement shall include, under circumstances described in Exhibit B, the availability of "Accumulated Drought Water Credits" from the BNA for the benefit of the Cachuma Member Units under conditions therein described.

1.4 **Technical Amendments to WR 89-18.**

In order to accommodate changed circumstances and in furtherance of implementation of paragraphs 1.2 and 1.3 of this Agreement, the parties to this Agreement shall jointly support the technical amendments set forth at Exhibit "C" hereto as modifications to be made to WR 89-18.

1.5 **Deliveries During Releases.**

The parties to this Agreement will, as provided in Exhibit D, make best efforts to maximize the delivery by the Central Coast Water Authority ("CCWA") of State Water Project (SWP) water with lower concentrations of total dissolved solids ("TDS") into the outlet works at Bradbury Dam during WR 89-18 water rights releases consistent with the NMFS BO. This will be accomplished through the commingling of SWP water with WR 89-18 water rights releases in the outlet works of Bradbury Dam when downstream water rights releases are being made. Generally, SWP deliveries by CCWA are of lower TDS concentrations compared to water released from Lake Cachuma under WR 89-18. The objective of such commingling operations is to maximize the delivery of SWP Water to lower the TDS in the lower Santa Ynez River and at the Narrows. Such coordinated program shall be carried out as set forth in Exhibit "D" hereto.

1.6 **Subsequent Review of Conjunctive Operations.**

The conjunctive operation provisions of Paragraph 1.2, 1.3 and 1.5 will be reviewed and evaluated at the end of a ten (10) year period following this Agreement becoming effective and may thereafter be revised upon mutual agreement of Santa Ynez, ID #1, Lompoc and CCRB, with the concurrence of USBR and State Board when applicable. If a party requests a revision of this Agreement following such review, and cannot reach agreement with the other parties within 180 days of the request, the matter will then be submitted to a mediator mutually agreeable to the parties to this Agreement. If after ninety (90) days the mediation effort is unsuccessful or the parties cannot agree on a mediator, any party may then request that the State Board review the matter in the manner provided by law. In order to seek a revision, a party must demonstrate by substantial evidence that the objectives of Paragraph 1.2, 1.3 or 1.5 are not being met.

2. **Modified Winter Storm Operations.**

The parties to this Agreement support USBR's adoption and continued use of "Modified Winter Storm Operations" as described in USBR Technical Memorandum No. WR-8130-RA-TM-00-2, entitled "Risk Based Evaluation, Modified Storm Operations-Bradbury Dam", dated February, 2000 and the Santa Barbara County Water Agency report entitled "Report of Modified Storm Operations, Bradbury Dam, Cachuma Project, Santa Barbara County, California", dated December 29, 1998.

3. **Resolution of Litigation and Claims by City of Lompoc.**

3.1 Lompoc hereby waives and forever discharges USBR and the parties to this Agreement from all of its existing financial damage claims relative to impacts of the operation of the Cachuma Project upon Lompoc water rights and upon TDS of water quality in the Lompoc groundwater basin based upon: (a) alleged injury prior to the date of this Agreement, and (b) alleged injury after the date of this Agreement during such times as this Agreement is in effect and during such time as a matter related to Paragraph 1.5 has not been referred to the State Board pursuant to Paragraph 1.6.

3.2 Lompoc hereby withdraws its protest to the Cachuma Project Change in Place and Purpose of Use presented in connection with Phase 1 of the 94-5 hearings.

4. **Protection of Public Trust Resources.**

The parties to this Agreement will mutually support before the State Board in Phase 2 of the 94-5 Hearings the Terms and Conditions of the NMFS BO and the FMP as the preferred operational program for the Cachuma Project in order to address public trust resource issues.

5. **Effective Date and Termination.**

5.1 This Agreement shall be deemed effective upon the date first stated above, provided that Paragraphs 1.2, 1.3 and 1.4 shall not become effective until the State Board issues an order or adopts a decision amending the terms and conditions of the USBR's water right permits confirming that downstream water rights releases will continue to be made consistent with WR 89-18, as modified by the technical changes enumerated at Exhibit "C" hereto, without any material change.

5.2 This Agreement shall terminate and shall be of no further force and effect if (i) the State Board, following the completion of the hearing required by Order WR 94-5, issues an order that does not require that downstream water rights releases continue to be made consistent with WR 89-18, as modified by this Agreement, without any material change, and (ii) within 90 days of finalizing any State Board order under (i), any party provides written notice to the other parties of invoking this Paragraph 5.2.

6. **Standard Provisions.**

6.1 **Notices.**

Notices may be given to the parties to this Agreement and interested entities by mailing written notice, with first class postage prepaid, as follows (except as a party may provide written notice to all of the parties to this Agreement of a change of address):

To: United States Bureau of Reclamation
Attention: Regional Water Rights Officer
2800 Cottage Way, Room E-2903, MP440
Sacramento, CA 95825

Cachuma Conservation Release Board
Attention: Manager
3301 Laurel Canyon Road
Santa Barbara, CA 93105

Santa Ynez River Water Conservation District
Attention: General Manager
P. O. Box 719
Santa Ynez, CA 93460-0719

Santa Ynez River Water Conservation District,
Improvement District No. 1
Attention: District Manager
P. O. Box 157
Santa Ynez, CA 93460

City of Lompoc
Attention: City Administrator
City Hall, 100 Civic Center Plaza
Lompoc, CA 93436

6.2 **Headings.**

The titles and headings of this Agreement are for purposes of convenience only, and shall be given no substantive meaning in interpreting this Agreement.

6.3 **Counterparts.**

This Agreement may be executed in counterparts and as so executed shall constitute one agreement which shall be binding on all parties to this Agreement notwithstanding that all parties to this Agreement are not signatory to the original or the same counterpart.

6.4 **California Law Applies.**

This Agreement shall be construed pursuant to the laws of the State of California.

CACHUMA CONSERVATION RELEASE BOARD

By: ______________________

APPROVED AS TO FORM

By: ______________________

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT

By: ______________________

APPROVED AS TO FORM

By: ______________________

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO. 1

By: ______________________

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CACHUMA CONSERVATION RELEASE BOARD

By:______________________________

APPROVED AS TO FORM

By:______________________________

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT

By:______________________________

APPROVED AS TO FORM

By:______________________________

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CACHUMA CONSERVATION RELEASE BOARD

By:____________________________

APPROVED AS TO FORM

By:____________________________

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT

By:____________________________

APPROVED AS TO FORM

By:____________________________

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO. 1

By: Harlan J. Burchardi

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APPROVED AS TO FORM

By: Gregory K. Wilkinson

CITY OF LOMPOC

By:________________________________

APPROVED AS TO FORM

By:__________________________

APPROVED AS TO FORM

By:______________________________

CITY OF LOMPOC

By:______________________________

APPROVED AS TO FORM

By:______________________________

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Exhibit A

PROCEDURES FOR CONJUNCTIVE OPERATION WITH FISH RELEASES

The purpose of operating the downstream water right releases in conjunction with the fish water releases is to reduce the impacts on the Cachuma Project water supply while meeting the target rearing flows described by the United States National Marine Fisheries Service Biological Opinion ("NMFS BO".).

The downstream water right releases contributing to the conjunctive use operations consist of either releases from the Above Narrows Account or combined releases from the Above and Below Narrows Accounts. To assure that the downstream water right releases in the future (including with the Lake Cachuma surcharge) are similar to the historical practices, the following criteria are adopted:

1. Santa Ynez will cause downstream water right releases to be made that will also meet the target rearing flows in the mainstream of Santa Ynez River as required by the NMFS BO for an average of 65 days per year in years which are Designated for Water Right Releases, as described below in Paragraph 3.
2. The ten-year moving average of 65 days shall be the average of the most recent 10 years Designated for Water Right Releases. For the purpose of calculating the ten-year moving average, the initial year shall start in 1985.
3. For the purpose of the above calculations, all years are "Designated for Water Right Releases" except: (a) a year with a spill from Lake Cachuma exceeding 20,000 acre-feet; (b) a year immediately following the spill year with the spill amount exceeding 100,000 acre-feet; and (c) a year when there is less than 30,000 acre-feet of storage in Lake Cachuma.

4. To the extent water right releases are made in those years that are not Designated for Water Right Releases, then the number of days with water right releases shall be added to the next designated year.

5. In the event the ten-year moving average is calculated to be less than 65 days in a year when the storage in the Lake is less than 100,000 acre-feet (elevation 714.00 feet[1] m.s.l.), additional releases from the Above Narrows Account shall be made to meet the target rearing flows at the Hwy. 154 Bridge for the number of days necessary to raise the calculated ten-year average to 65 days. Such releases shall not be required when the storage in the Lake is more than 100,000 acre-feet (elevation 714.00 feet m.s.l.).

6. In a month when Lake Cachuma inflow is calculated by the USBR to be less than 25 acre-feet and no downstream water right releases are made in that month, releases up to 25 acre-feet from the Above Narrows Account shall be made in the following month to meet the target rearing flows required by the NMFS BO at the Hwy. 154 Bridge or Alisal Bridge, whichever is in effect. Such releases are included in the calculation of the ten-year moving average. Provisions of this paragraph do not apply when the storage in the Lake is less than 30,000 acre-feet.

7. Nothing in this Settlement Agreement or this Exhibit affects or diminishes the provision of Paragraph 1.6 of Condition 5 of SWRCB Order WR 73-37.

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[1] Lake Cachuma bathymetric survey of year 2000

Exhibit B

PROCEDURES FOR CONJUNCTIVE OPERATION OF BELOW NARROWS ACCOUNT

1. With respect to calculation of Below Narrows Account (BNA) credits as provided at Paragraph 2.2 of Condition 5 in WR 89-18, BNA credits shall be computed using the Upper Curve (Curve A) at all times and the credits are accrued to the BNA. (Curve A (Upper Curve) and Curve B (Lower Curve) herein referred to are depicted in USBR Exhibit 1, Attachment E, dated December 1, 1988, referenced in said Paragraph 2.2.)

2. When the accumulated flow at the Narrows at the beginning of a month exceeds 50,000 acre-feet for that Water Year (October 1 through September 30), the use of the Lower Curve (Curve B) is triggered for the purpose herein provided. The difference in the credit amount between the Upper and Lower Curves will be calculated in that month and each subsequent month in that Water Year and is referred to as the "Upper Curve Water" ("UCW").

3. Cachuma Member Units shall accumulate a drought water credit equal to one-half of the UCW, except as provided in Paragraph 6. Such accumulated credits shall be called the Accumulated Drought Water Credit (ADWC) and shall not exceed a total of 3,200 acre-feet.

4. The ADWC shall be reduced proportionately when there is a spill reduction in the Below Narrows Account as provided in Paragraph 2.7 of Condition 5 in WR 89-18.

5. When the storage level in Lake Cachuma is less than 100,000 acre-feet (elevation 714.00 feet[1] m.s.l.), any BNA water in Lake Cachuma up to the ADWC shall be

held and made available to the Cachuma Member Units if and when they so notify USBR while the reservoir remains below the 100,000 acre-feet (elevation 714.00 feet m.s.l.) level for the purpose of reducing Project shortages. To the extent such BNA water is used to reduce Project shortages, the ADWC shall be reduced .

6. If the BNA water in the Lake is less than the ADWC when the storage level in Lake Cachuma is less than 100,000 acre-feet (elevation 714.00 feet m.s.l.), one-half of BNA credits created while the Lake remains below the 100,000 acre-feet (elevation 714.00[1] feet m.s.l.) level shall be held and made available to the Cachuma Member Units up to the ADWC and consistent with the provisions of Paragraph 5.

7. Upon the effective date of Paragraph 1.3 of the Settlement Agreement, an amount equal to 1,500 acre-feet of the BNA water shall be credited to the Cachuma Member Units as the initial ADWC. After the effective date of Paragraph 1.3 of the Settlement Agreement, and prior to the occurrence of the first spill from Lake Cachuma the initial ADWC shall be reduced to the extent UCW is accumulated in the ADWC pursuant to Paragraph 3. In any event, with the occurrence of such first spill after the effective date of Paragraph 1.3 of the Settlement Agreement, the amount remaining in the initial ADWC shall be reduced to zero.

8. The amount of deduction from the BNA for the last five years as set forth in Paragraph 2.2.1 of Condition 5 of WR 89-18 and Attachment F of USBR Exhibit 1 referenced in Paragraph 2.2.1 is deemed to be zero.

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[1] Lake Cachuma bathymetric survey of year 2000.

Exhibit C

TECHNICAL AMENDMENTS TO WR 89-18

Explanation of Technical Amendment No. 1

Since 1993, water has been released from Lake Cachuma for the purpose of studying and maintaining fish habitat in the upper part of the Santa Ynez River downstream of Bradbury Dam. As a result of such releases, a flow condition has been created in the Santa Ynez River at the San Lucas Bridge (Highway 154 bridge) and at other downstream locations. In consideration of Paragraph 1.4 of Condition 5 of SWRCB Order WR 89-18 and in consultation with Santa Ynez, the USBR moved the livestream observation in the Santa Ynez River at the San Lucas Bridge (Hwy. 154) to near the Hwy 154 crossing of San Lucas Creek (near Hwy. 154 crossing of the Santa Ynez River) in 1993. San Lucas Creek is the main tributary to the Santa Ynez River immediately upstream of the San Lucas Bridge.

As a result of fish water releases under the United States National Marine Fisheries Service Biological Opinion ("NMFS BO"), the parties have considered the proper application of Paragraph 1.4 of Condition 5 of SWRCB Order WR 89-18. The parties have agreed to the following amendments to WR 89-18:

Technical Amendment No. 1

(1.) Insert the following at the bottom of Paragraph 1.4 of Condition 5 of WR 89-18:

> "In addition, fish water released for maintenance of habitat, adaptive management and passage flows in the Santa Ynez River which is in transit between Bradbury Dam and the Narrows shall not be considered to be surface flow of the Santa Ynez River. When such fish water

releases are made and flow measured in San Lucas Creek at the Highway 154 crossing is less than 0.3 cfs, the livestream in the Santa Ynez River at the San Lucas Bridge (river mile 45.7) is deemed to be non-existent."

"When fish water releases are made and there is a visible stream of water flowing on the surface of the Santa Ynez River bed at the San Lucas Bridge (river mile 45.7), at the Mission Bridge near Solvang (river mile 38), at U.S. Highway 101 Bridge near Buellton (river mile 34.31), at the Santa Rosa damsite (river mile 25.3) and at Robinson Bridge near Lompoc (river mile 12.9), the flow measured at the Narrows Gage is adjusted as provided in Attachment H to USBR Exhibit 1, dated December 1, 1988, entitled "Correlation of Flow at Narrows to Live Stream Conditions Between the Narrows and Floradale Avenue" to meet the criteria for a livestream condition.

(2.) Add a third paragraph on Page 1 of said Attachment H to Exhibit 1 of the USBR to provide as follows:

"When fish water releases are made and there is a visible stream of water flowing on the surface of the Santa Ynez River bed at the San Lucas Bridge (river mile 45.7), at the Mission Bridge near Solvang (river mile 38), at U. S. Highway 101 Bridge near Buellton (river mile 34.31), at the Santa Rosa damsite (river mile 25.3) and at Robinson Bridge near Lompoc (river mile 12.9), the flow measured at the Narrows for the current day is reduced by: (i) an amount equal to one half of fish water released from Lake Cachuma during the same day or (ii) the amount of flow measured near the Mission

Bridge (Solvang) during the same day, whichever is less. If the adjusted measured flow at the Narrows for the current day is less than zero, it is deemed to be zero. The adjusted daily flow measured at the Narrows is used as the measured flow at the Narrows for the current day in the attached tabulation. The accumulated daily flows from October 1 through the preceding day measured at the Narrows and the accumulated daily flows for the preceding ten (10) days measured at the Narrows are not adjusted for the fish releases and they are based on measured flows at the Narrows. The adjustment for the fish releases provided in this paragraph is not applicable if there is a spill from Lake Cachuma during the current day."

(3.) Amend first sentence of item (p) under Condition 6 of WR 89-18 as follows:

"(p) A record of all daily flows and quality (as measured in EC/TDS) passing the Narrows as provided by the United States Geological Survey."

(4.) Establish a measuring station on San Lucas Creek by adding the following item under Condition 6 of WR 89-18:

"(q) A record of flow in San Lucas Creek at the Highway 154 crossing."

(5.) Provide daily flows of Santa Ynez River measured near the Mission Bridge (Solvang) by adding the following item under Condition 6 of WR 89-18:

"(r) A record of all daily flows and quality (as measured in EC/TDS) measured near the Mission Bridge (Solvang) as provided by United States Geological Survey."

Explanation For Technical Amendment No. 2

As described in Paragraph 1.3 of the Settlement Agreement and its Exhibit B, the Conjunctive Operation with the Below Narrows Account is intended to resolve any issue relating to when Curve A or B as described in Paragraph 2.2.1 of Condition 5 in WR 89-18 and Attachment F of USBR Exhibit 1 should be used and the quantity of BNA water to be credited to the Project once a "trigger" for the Lower Curve is established. It is noted that this compromise continues the use of the Upper Curve for purposes of establishing BNA credits, but under certain conditions sets aside a portion of the BNA credits for the Cachuma Member Units to utilize when most needed, that is during dry conditions.

Technical Amendment No. 2

(1) Delete Paragraph 2.2.1 of Condition 5 set forth in WR 89-18 and Attachment F of USBR Exhibit 1and modify the second paragraph in Attachment E of said USBR Exhibit 1 to provide as follows: "Curve B will not be used for the purpose of calculating the BNA credits".

(2) Add as Paragraph 2.5.1 of Condition 5

> "(2.5.1) Notwithstanding Paragraph 2.5, BNA water in Lake Cachuma up to the Accumulated Drought Water Credit (ADWC) shall be made available to the Cachuma Member Units when and so long as the Lake Cachuma storage level remains below 100,000 acre-feet in accordance with the "Procedures for Conjunctive Operation of Below Narrows Account" depicted on USBR Exhibit _____, dated __________, 2003."

Explanation of Technical Amendment No. 3.

CCWA delivers SWP water to the South Coast through Lake Cachuma and Tecolote Tunnel. Consistent with the measurements performed for the SWP deliveries, the following amendments are provided under Condition 6 of WR 89-18.

Technical Amendment No. 3

(1) Amend item (d) under Condition 6 of WR 89-18 as follows:

"(d) Daily inflow to Lake Cachuma, including underground flows, by proper computations of tunnel diversions, reservoir releases, spills, Central Coast Water Authority (CCWA) deliveries into Lake Cachuma, and change in storage."

(2) Add item under Condition 6 of WR 89-18:

"(s) Continuous records of CCWA deliveries into Lake Cachuma."

Exhibit D

PROCEDURES FOR MAXIMIZING DELIVERIES OF CCWA WATER TO LAKE CACHUMA DURING DOWNSTREAM WATER RIGHTS RELEASES

The following procedures will be undertaken:

1. On or about April 10 of each year, Santa Ynez shall provide to the USBR, CCRB, Lompoc and ID#1 a preliminary schedule estimating the number and duration of WR 89-18 water rights releases during the next twelve (12) months and indicating in which months anticipated releases will be made.

2. It is noted that SWP water is delivered to Lake Cachuma from the forebay of the Central Coast Water Authority (CCWA) Santa Ynez Pumping Plant. The pumping plant is equipped with five pumping units; only four units are required to pump the design flow of 22 cfs (5.5 cfs per pump) to Lake Cachuma and one unit is reserved as a standby pump. The present performance of the pumping units (about 7.5 cfs per pump) exceeds the design flow. Variations in the discharge rate from the pumping plant are accommodated through varying the number of pumps in operation.

   CCRB Members shall request deliveries through the CCWA to maximize their deliveries of SWP water into Lake Cachuma during those months when water rights releases are scheduled as provided in Paragraph 1 above. This will be accomplished in the following manner: During the periods when downstream water rights releases are made: (i) CCRB Members through CCWA shall request deliveries of an amount of SWP water to the forebay of the Santa Ynez Pumping Plant at flow rates sufficient to ensure that at least two pumping units at the Santa

Ynez Pumping Plant are capable of delivering water to Lake Cachuma; and (ii) ID #1 shall coordinate with CCWA while preserving its scheduled deliveries of SWP water and Cachuma exchange water so as to facilitate the operation of at least two pumping units at the Santa Ynez Pumping Plant, as provided at Subparagraph (i) above.

3. The delivery of CCWA water to Lake Cachuma during downstream water rights releases, as provided for in Paragraphs 1 and 2 above, shall be subject to the following conditions:

   A. In coordinating deliveries and water rights releases as provided for herein, CCRB Members and ID #1 shall not be required to take actions which are inconsistent with the annual quantities of SWP water and Cachuma exchange water which they otherwise would have ordered.

   B. To the extent there is a failure in the CCWA delivery system, including the SWP facility, which prevents delivery of SWP water to Lake Cachuma, the coordination of deliveries shall not occur during the affected period and will not be made up in later periods.

   C. The parties recognize that there is a limitation in the capacity of the CCWA pipeline to deliver SWP water to Lake Cachuma. To the extent the delivery capacity is increased in the future, such increase will enhance the deliveries of SWP water to the South Coast and at the same time should increase the amount of SWP water available for commingling when downstream water rights releases are made. In this regard, if the delivery capacity of the CCWA pipeline to the Santa Ynez Pumping Plant is increased in the future, more than two pumping units should be available to be utilized during the WR 89-18 releases.

D. Nothing in this Settlement Agreement or this Exhibit is intended to be inconsistent with the CCWA Water Supply Agreements.

E. The parties recognize that blending restrictions imposed by the NMFS BO may limit the ability to commingle SWP water with downstream water rights releases.

4. The parties agree to periodically review operations under this Exhibit D and, if necessary, CCRB Members and ID#1 will make good faith operational adjustments to maximize SWP water deliveries to Lake Cachuma during WR 89-18 releases, consistent with the purposes of Section 1.5 of the Settlement Agreement and this Exhibit "D."