NSJ-42

STATE OF CALIFORNIA

PETE WILSON, *Governor*

STATE WATER RESOURCES CONTROL BOARD
THE PAUL R. BONDERSON BUILDING
901 P STREET
SACRAMENTO, CA 95814
(916) 657-2050

FAX: (916) 657-2388

Mailing Address
DIVISION OF WATER RIGHTS
P.O. BOX 2000, Sacramento, CA 95812-2000

NOTICE OF PUBLIC HEARING

The State Water Resources Control Board will hold a hearing regarding the diversion and use of water from Mokelumne River in Amador, Calaveras, and San Joaquin Counties

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Starting November 9th at 9:00 am and continued if necessary November 10th, 12th, 13th and 16th through 18th, 1992

Paul R. Bonderson Building
First Floor Hearing Room
901 P Street, Sacramento, CA

SUBJECT OF HEARING

The purpose of this hearing is to receive evidence that will assist the State Water Resources Control Board (State Water Board) in determining the measures needed to protect fish and public trust resources in the lower Mokelumne River. The hearing will focus primarily on the water rights of East Bay Municipal Utility District (EBMUD), and to a lesser extent, the water rights of Woodbridge Irrigation District (WID) and North San Joaquin Water Conservation District (NSJ). The hearing will evaluate both interim and long-term measures that could be taken to protect fish and other public trust resources and will determine if additional conditions should be included in the water right permits and licenses of EBMUD, WID, and NSJ.

KEY ISSUES

1. What are the public trust resources and uses of the Lower Mokelumne River? What are the public trust resources and uses of Pardee and Camanche Reservoirs? What water levels, flows, temperatures, water quality, or other measures are needed to preserve or enhance the uses and resources in the reservoirs and in the lower Mokelumne River?

2. What are the existing and projected water demands of EBMUD, WID, and NSJ? What water rights do these agencies have to satisfy their current and future demands? Can these agencies implement measures to reduce existing and projected demands? Are alternative points of diversion or rediversion available that can concurrently satisfy agency demands and public trust needs? What will be the impacts of the alternatives?

3. How much water is available in the Mokelumne River watershed to meet the demands of EBMUD, WID, NSJ, and for the public trust uses and resources of Camanche and Pardee reservoirs and the lower Mokelumne River?

4. What interim and long-term actions should the State Water Board take regarding streamflow, temperature, minimum pool, fish screens, water quality, the operation of Camanche and Pardee reservoirs, or other measures to protect fish and other public trust uses and resources in Camanche and Pardee reservoirs and in the lower Mokelumne River?

BACKGROUND

General The Mokelumne River is a valuable public resource that provides a wide variety of benefits and uses. The Mokelumne River is the primary source of water for EBMUD which supplies drinking water to approximately 1.1 million people in Alameda and Contra Costa Counties. The Mokelumne River provides water for agricultural use by the WID and NSJ and other diverters. Pardee and Camanche Reservoirs provide recreation and support resident fish populations. The lower Mokelumne River supports many important species of fish, including fall run chinook salmon, steelhead trout, American shad, and striped bass.

The average annual runoff of the Mokelumne River is 734,000 acre-feet (AF); however, runoff has ranged from a low of 129,000 AF in 1977 to a high of 1,820,000 AF in 1983. Flow in the Lower Mokelumne River is regulated principally by Pardee and Camanche Reservoirs which are owned and operated by EBMUD. Pardee reservoir was constructed in 1929 and has a capacity of 209,950 AF. Camanche reservoir was constructed in 1964 and has a capacity of 430,880 AF. In addition to municipal supplies, Pardee and Camanche reservoirs are also used for flood control, generation of hydroelectric power, and recreational purposes.

Fishery Management Plan Pursuant to Section 10003 of the Public Resources Code, the DFG has completed the "Lower Mokelumne River Fisheries Management Plan, November 1991". On February 20, 1992 the DFG requested that the State Water Board revise the existing water rights in accordance with the recommendations contained in the plan. The Fishery Management Plan proposes a series of measures to protect the river's public trust resources, including fall run chinook salmon, steelhead trout, and American shad.

Complaint In 1987, the California Sportfishing Protection Alliance (CSPA) filed a complaint against EBMUD. The primary objective of the complaint is to provide higher instream flows in the lower Mokelumne River for the benefit of fish. The State Water Board advised CSPA and all other interested parties that no action would be taken on the complaint until completion of the Fishery Management Plan and conclusion of the hearing described in this notice.

Study Plan At an August 7, 1991 Workshop, the State Water Board approved a Study Plan that describes the process, the studies that will be completed, and time schedule for State Water Board action. As outlined in the Study Plan, DFG and EBMUD have negotiated agreements providing for interim measures to be taken for the protection of fish during 1990/91, 91/92, and 92/93.

Water Rights Table 1 provides a summary of the water rights of EBMUD, WID, and NSJ.

Penn Mine Penn Mine, an abandoned mine located near Camanche Reservoir, has been a significant source of pollution in the lower Mokelumne River. There is a separate process for developing solutions to the problems created by Penn Mine. The State Water Board is working on a remedial action plan in conjunction with the U.S. Environmental Protection Agency and the Central Valley Regional Water Quality Control Board. The plan will evaluate interim and long-term solutions to those problems. That process is a related, but separate, process from this water right hearing.

FERC The Federal Energy Regulatory Commission (FERC) issued license No. 2916 to cover EBMUD's hydro-power operations at Pardee and Camanche. At the request of the DFG, the CSPA, and the Committee to Save the Mokelumne River, FERC initiated a proceeding to review EBMUD's FERC license. FERC is collecting information and is preparing an Environmental Impact Statement with the objective of determining if new fish bypass terms should be established to protect fish in the Lower Mokelumne River.

HEARING PARTICIPATION

IF YOU WANT TO TAKE PART IN THIS HEARING you should carefully read the enclosure entitled "Information Concerning Appearance at Water Rights Hearings". As stated in that enclosure, parties intending to present evidence at the hearing must submit a "Notice of Intent to Appear" which **must be received no later than August 28, 1992.**

To facilitate exchange of testimony, exhibits and witness qualifications, the State Water Board will mail out a list of those parties who have indicated an intent to participate in the hearing shortly after September 4, 1992.

Copies of the witnesses proposed testimony, exhibits, list of exhibits, and qualifications must be received by the State Water Board and mailed to each of the parties who have indicated their intent to appear **no later than September 25, 1992.**

PRE-HEARING CONFERENCE

The State Water Board intends to hold a pre-hearing conference in the afternoon of August 27, 1992 to discuss procedures relating to the conduct of the hearing. A separate notice will be sent to interested parties regarding the pre-hearing conference. Following the pre-hearing conference, written instructions will be distributed to all parties that will describe the procedures for the conduct of the hearing.

Table 1
SUMMARY OF WATER RIGHTS

APPLICATION	LICENSE OR PERMIT	USE	DIRECT DIVERSION		STORAGE	
			AMOUNT (CFS)	SEASON	AMOUNT (AF)	SEASON
EAST BAY MUNICIPAL UTILITY DISTRICT						
4228	L-11109	M,R	310	JAN 1 - DEC 31	209,950	JAN 1 - DEC 31
4768	L-1388	P	375	JAN 1 - DEC 31	198,965	JAN 1 - DEC 31
5128	L-6062	P	375	JAN 1 - DEC 31	28,702	JAN 1 - DEC 31
13156	P-10478	M	194	DEC 1 - JUL 31	353,000	DEC 1 - JUL 31
15201	P-10479	P,ID	350	JAN 1 - DEC 31	50,000	JAN 1 - DEC 31
25056	P-17378	P	1200	OCT 1 - JUL 31	353,000	DEC 1 - JUL 31
WOODBRIDGE IRRIGATION DISTRICT						
5807	L-5945	I	300	FEB 1 - OCT 31	--	--
10240	L-8214	I,S,ID	114.4	NOV 1 - JAN 31	--	--
12648	L-8215	I	18.25	JAN 1 - DEC 31	--	--
NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT						
12842	P-10477	I,ID,M,R,IN	80	DEC 1 - JUL 1	20,000	DEC 1 - JUL 1

Notes: P=Power, I=Irrigation, M=Municipal, R=Recreation, ID=Indirect Domestic, IN=Industrial, S=Stockwater
Woodbridge I.D. and North San Joaquin W.C.D. also divert under claim of pre-1914 water rights

PARKING AND ACCESSIBILITY

The enclosed map shows the location of the Paul R. Bonderson building in Sacramento and public parking sites as follows: the State Garages on 10th Street between O and P Streets, and 11th Street between O & P Streets, public garage on 7th Street between L Street and Capitol Mall, and limited metered parking spaces on local streets. The Paul R. Bonderson Building first floor hearing room is accessible to persons with disabilities.

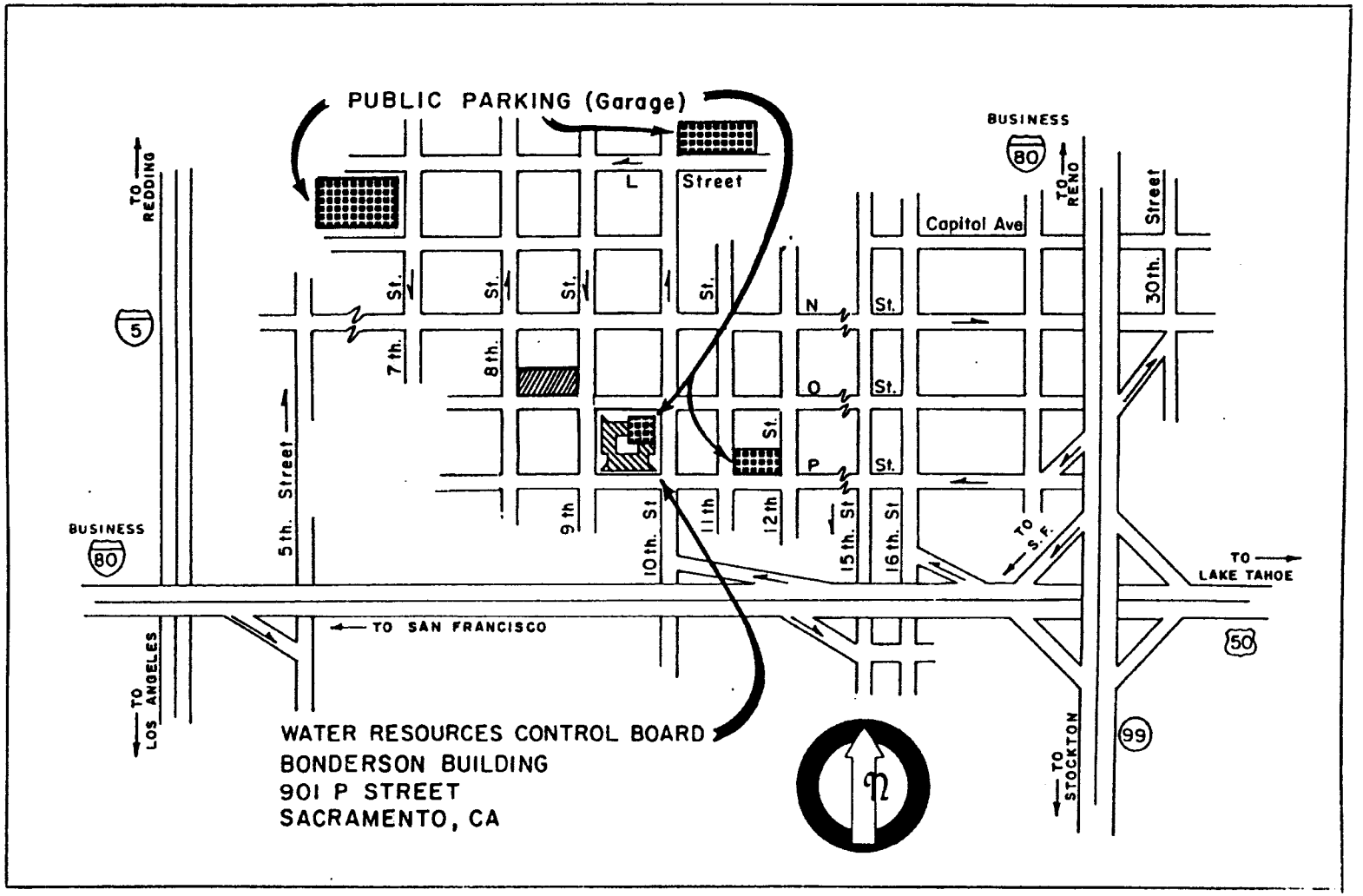
IF YOU HAVE QUESTIONS:

Questions concerning this notice may be directed to Lewis Moeller at (916) 657-2050 or Ed Dito at (916) 657-2048.

Maureen Marché
Administrative Assistant to the State Water Board

Enclosures

Date: August 6, 1992


PUBLIC PARKING (Garage)
BUSINESS
80
TO RENO
TO REDDING
5
L
Street
Capitol Ave
Street
30th.
St.
St.
St.
St.
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7th.
8th.
O
St.
St.
P
St.
5th. Street
9th
10th. St
11th
12th
15th. St
16th. St
BUSINESS
80
TO S.F.
TO LAKE TAHOE
TO SAN FRANCISCO
50
TO LOS ANGELES
99
TO STOCKTON
WATER RESOURCES CONTROL BOARD
BONDERSON BUILDING
901 P STREET
SACRAMENTO, CA

NOTICE OF INTENT TO APPEAR

I plan to attend the water right hearing scheduled for:

November 9th at 9:00 am and continued if necessary
November 10th, 12th, 13th and 16th through 18th, 1992

regarding Diversions from Mokelumne River in Amador, Calaveras, and San Joaquin Counties

I plan to call the following witnesses to testify at the hearing:

NAME	SUBJECT OF PROPOSED TESTIMONY	ESTIMATED LENGTH OF DIRECT TESTIMONY	EXPERT WITNESS (yes\no)

(If more space is required, please add additional pages.)

Dated: _____

_____
(signature)

final/Mokenhrg/7/29/92
LMOELLER:knox

INFORMATION CONCERNING APPEARANCE AT WATER RIGHT HEARINGS

Please take note that the following procedural requirements will apply and will be strictly enforced for purposes of the above-mentioned hearing.

1. NOTICE OF INTENT TO APPEAR: Before **August 28, 1992**, each party intending to participate in the hearing must submit to the State Board in writing, the name of each witness who will testify on such party's behalf, together with a description of the subject of the proposed testimony and the estimated time required by the witness to present his/her direct testimony. This information should be submitted on the enclosed forms and **must be received no later than August 28, 1992**. Immediately following this date, the State Board will mail out a list of all the parties intending to participate in the hearing to each of the parties who have indicated an intent to participate in the hearing. Not later than 10 days thereafter, each party shall submit a copy of his/her Notice of Intent to Appear to each of the participating parties identified on the above mentioned list.

2. DIRECT TESTIMONY and STATEMENT OF QUALIFICATIONS: On or before **September 25, 1992**, each party proposing to present testimony shall submit five (5) copies of their witnesses' written testimony along with five (5) copies of the witnesses' statement of qualifications to the State Board. One (1) copy of the testimony and the witnesses' qualifications shall be submitted to each of the other parties who have filed a "Notice of Intent to Appear". This information must be received by the State Water Resources Control Board and mailed to other parties **no later than September 25, 1992**.

   At the time of the hearing, witnesses will be sworn and required to identify their written testimony as their own. Witnesses will be given a **brief** period to summarize or emphasize their written testimony on direct examination. Cross examination will be permitted on the written submittals and any oral testimony.

3. EXHIBITS: On or before **September 25, 1992**, each party wishing to present exhibits shall submit five (5) copies of their exhibits with a completed exhibit list to the State Board and one (1) copy to each of the other parties who have indicated an intention to appear. Each party shall complete and submit the attached exhibit identification index along with his/her exhibits. Please identify your written testimony with an exhibit number. The Status of Evidence column will be completed during the course of the hearing. These exhibits must be received by the State Board and mailed to the other parties **no later than September 25, 1992**.

   a. Information based on technical studies or models shall be accompanied by sufficient information to clearly define and explain the logic, assumptions, development, and operation of the studies or models.

   b. Bulletins and reports which have been prepared and published by a governmental agency, if otherwise admissible, may be submitted as exhibits by reference provided that the original or copy is in the possession of the State Board.

   c. Exhibits which rely on unpublished technical documents will be excluded unless the unpublished technical documents are admitted as exhibits.

d. If documents are submitted as exhibits by reference, the parties offering such documents shall advise the other parties with whom exhibits must be exchanged of the titles of the documents, the particular portions on which they rely, the nature of the exhibits' contents, and the purpose of which the exhibits will be used when offered as evidence.

4. POLICY STATEMENTS: By **September 25, 1992**, each party intending to present a policy statement must submit to the State Board in writing, the name of the speaker. A policy statement is a nonevidentiary statement. It may include (1) the policy views and position of the speaker, or (2) non-expert analysis of evidence that already has been presented. Persons who wish to make only a policy statement may do so, subject to the following provisions:

   a. Persons making such statements will not be sworn or asked to affirm the truth of their statements.

   b. Such persons must not attempt to use their statements to present evidence of facts, either orally or by introduction of written exhibits.

   c. At the discretion of the hearing officer, questions may be addressed to persons making only policy statements for the purpose of clarifying their statements. However, such persons shall not be subject to cross-examination.

   d. Such statements are not subject to the prehearing requirements noted above for testimony or exhibits. All persons intending to appear, however, are requested to submit a notice of intent to appear on the enclosed form.

5. Absent extenuating circumstances, proposed testimony or proposed exhibits which do not comply with the above requirements will not be admitted.

6. Except as provided herein, the proceedings will be conducted as closely as practicable to the procedures applicable to water right proceedings as set forth in California Code of Regulations, Title 23, Article 11, Section 761-765 and Article 12.5, Sections 768-770 (copy attached).

Failure to submit witness information and exhibits in a timely manner may be interpreted by the State Board as intent not to appear. Such failure may result in cancellation of the hearing and such further action as the State Board may consider appropriate.

If the hearing is canceled or rescheduled, only those parties who have indicated an intent to attend will be informed of the change.

Materials submitted to the State Board should be addressed as follows:

State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000
Attn: Lewis J. Moeller
Phone: (916) 657-2050
FAX: (916) 657-2388

Staff Exhibits to be Offered into Evidence

The following items will be offered, by reference, as staff exhibits at the November 1991 water rights hearing:

1. All water right files related to:

   a. Complaint by California Sportfishing Protection Alliance against EBMUD. [File No. 262.0(39-06-02)]

   b. EBMUD's Applications 4228, 4768, 5128, 13156, 15201, 25056.

   c. Applications 5807, 10240, 12648 of Woodbridge Irrigation District.

   d. Application 12842 of North San Joaquin Water Conservation District.

2. Topographic Maps published by the United States Geological Survey covering the area under consideration.

3. United States Geological Survey, "Water Resource Data, California" for the period of published record.

4. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, "Climatological Data of California" for the period of published record.

5. DWR Bulletin No. 230, "Index to Sources of Hydrologic Data" and all pertinent data available from the Water Data Information System and all predecessor publications (Bulletins Nos. 130 and 23).

6. "Water Quality Control Plan Reports" for the Sacramento-San Joaquin Delta Basin (5B), and all appendices, revisions and amendments thereto.

NSJ-43

State Water Resources Control Board

Winston H. Hickox
Secretary for Environmental Protection

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-1359
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.waterrights.ca.gov

Gray Davis
Governor

ATTACHMENT 13

OCT 16 2000

To: Enclosed Mailing List

FINAL ACTION REGARDING THE LOWER MOKELUME RIVER HEARING - EAST BAY MUNICIPAL UTILITY DISTRICT'S WATER RIGHT APPLICATIONS 4228, 4768, 5128, 13156, 15201 AND 25056

In November of 1992 the State Water Resources Control Board (SWRCB) held a hearing to determine what measures were needed to protect public trust resources in the lower Mokelumne River. The hearing focused primarily on water rights held by East Bay Municipal Utility District (EBMUD), and to a lesser extent, on water rights held by the Woodbridge Irrigation District (WID) and North San Joaquin Water District (NSJ). The hearing was initiated after: (1) the California Department of Fish and Game (DFG) requested a revision to the existing water rights based on a new fisheries management plan developed pursuant to Section 10003 of the Public Resources Code, and (2) complaints were filed by The Committee to Save the Mokelumne River and the California Sportfishing Protection Alliance (CSPA) requesting increased streamflow in the Lower Mokelumne River.

The primary purpose of that hearing was to determine what action should be taken by the SWRCB to protect the fishery resources of the lower Mokelumne River. DFG, CSPA and EBMUD were the major participants in the hearing; however, the U.S. Fish and Wildlife Service (USFWS) and several other parties also participated in the hearing.

The DFG and CSPA also filed complaints with the Federal Energy Regulatory Commission (FERC), requesting that they modify EBMUD's federal power license in order to provide higher instream flows. In response, the FERC reviewed EBMUD's federal power license to determine if additional measures were necessary to protect the fishery resources. The scope of the FERC review was very similar to the scope of the water right hearing. In addition, most of the parties to the water right hearing are also parties to the FERC proceeding. In order to avoid a duplication of efforts, the SWRCB held its hearing in abeyance until after the FERC process was completed.

FERC proposed to modify the EBMUD's power license and released a final Environmental Impact Statement (EIS) in November 1993 which proposed instream flows that were midway between the flows recommended by DFG and those recommended by EBMUD. EBMUD strongly objected and, subsequently, made a formal "offer of settlement" to FERC. That offer included the original EBMUD instream flows, but also included an offer to fund approximately $20 million for other non-flow measures to improve the fishery, such as placement of spawning gravel and upgrades to the lower Mokelumne Fish Hatchery to improve the fishery resources. Discussions between EBMUD, DFG, and USFWS eventually resulted in a Joint Settlement Agreement (JSA), which was approved with minor modifications by FERC in an Order issued November 27, 1998. (See Enclosed Agreement.)

SURNAME DWR 540				
	MM 9/13/00	WJH 9/19/00	VAW 9/14/00	10/13/2000

As a result of the recent Bay/Delta Water Right Hearings, the SWRCB adopted Water Right Decision 1641, which addressed water quality objectives for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. In Decision 1641, the SWRCB amended EBMUD's License 11109 and Permit 10478 (Applications 4228 and 13156) and Woodbridge Irrigation District's Licenses 5945, 8214, and 8215 (Applications 5807, 10240, and 12648) to include the streamflow conditions described in the JSA. The amended water rights do not include the JSA's nonflow-related activities directed toward the improvement of fish passage and habitat; however, these measures are included in the FERC Licenses. Although FERC did not issue its order until November 27, 1998, substantial provisions of the JSA were implemented in the mid-1990's and the results to date suggest that fall-run Chinook salmon populations have increased. (See Enclosed Table)

The SWRCB believes that the issues considered by the SWRCB during the Lower Mokelumne River Hearing have been resolved. The SWRCB does not intend to take any further action on these issues unless the parties identify issues considered during the hearing that are not resolved.

If you believe that an issue considered during the Mokelumne River Hearing remains unresolved, please notify me by October 15, 2000. You should also identify whether any new evidence exists related to the unresolved issue that will assist the SWRCB in making a determination on the matter. We will notify all parties to the hearing if the SWRCB moves to close this issue.

If you have any questions regarding this matter, please contact Mike Meinz of my staff at (916) 657-2048.

Sincerely,

ORIGINAL SIGNED BY.

Harry M. Schueller, Chief
Division of Water Rights

Enclosures:
1. Joint Settlement Agreement w/cover letter
2. Table – Salmon Escapement Data
3. Mailing List

bcc: HMS, VAW, LJM, Tom Howard, Barbara Leideigh, Dan Frink

MMEINZ:lvalin 09/13/2000
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NSJ-44

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State Water Resources Control Board

Executive Office
1001 I Street • Sacramento, California 95814 • (916) 341-5615
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
FAX (916) 341-5621 • Web Site Address: http://www.swrcb.ca.gov

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at http://www.swrcb.ca.gov.

APR 2 6 2001

To: Enclosed Mailing List

PENDING ACTION REGARDING THE LOWER MOKELUMNE RIVER HEARING

In September of 2000, the Chief of the Division of Water Rights sent a letter to participants of the 1992 Lower Mokelumne River Hearing stating that no further action would be taken unless parties identified issues from the hearing that remained unresolved. Responses to the letter were received from East Bay Municipal Utility District (EBMUD), Woodbridge Irrigation District (WID), San Joaquin County (SJC), North San Joaquin Water Conservation District (NSJ), California Sportfishing Protection Alliance (CSPA), and Central Delta Water Agency (CDWA).

In their responses, the parties identify three primary issues as being unresolved. These issues fall into three main categories: protection of public trust resources, water supply problems in San Joaquin County, and a procedural question regarding evidence taken in the 1992 hearing.

The U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) reviewed the fisheries habitat restoration and enhancement measures proposed by EBMUD and WID. Both agencies determined that these non-flow measures, along with the flows specified in the Joint Settlement Agreement, are adequate to protect the public trust resources. In addition the U.S. Bureau of Reclamation has undertaken significant fisheries enhancement measures at the WID diversion dam. I believe that the actions currently being taken to protect the public trust resources are appropriate and that no further action need be taken at this time.

Water rights and water supply in San Joaquin County were identified as components of a key issue in the original 1992 hearing notice. However, the purpose of the State Water Resources Control Board (SWRCB) exploring the water rights on the Mokelumne River was not to find additional water for use by San Joaquin County water right holders, but to ascertain the amount of water available for public trust uses. Contrary to the opinions expressed by the respondents, groundwater is not entitled to protections under the public trust doctrine. Furthermore, issues regarding the relative priorities of competing water rights to the Mokelumne River were addressed long ago and the statute of limitations regarding past decisions is long past. This hearing is not the appropriate forum in which to revisit concerns regarding water supplies for San Joaquin County.

Some parties claimed that the SWRCB must hold a hearing to take additional evidence prior to determining what action to take following the 1992 Lower Mokelumne River hearing. The SWRCB is not required to take any additional evidence in this matter.

The Chief of the Division of Water Rights has been delegated authority to dismiss a complaint when he believes the problem that forms the basis of the complaint has been remedied. All issues raised in the original complaints have been remedied through means other than the 1992 hearing. Further action on the Lower Mokelumne hearing is not required. The Chief of the Division of Water Rights has dismissed the complaints that initiated the hearing.

Any questions regarding this letter can be directed to Andrew Fecko of my staff at (916) 341-5393.

Sincerely,

Harry M. Schueller, Chief
Division of Water Rights

MAILING LIST

LOWER MOKELUME RIVER

Wayne S. White
JS Fish and Wildlife Service
:800 Cottage Way
Sacramento, CA 95825

Larry Week
CA Department of Fish & Game
Native Anadromous Fish
and Watershed Branch
1807 13th Street, Suite 104
Sacramento, CA 95814

Banky Curtis
CA Department of Fish & Game
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

im Crenshaw, President
Calif. Sportfishing Protection Alliance
248 East Oak Ave.
Woodland, CA 95695

Bill Jennings
Committee to Save the Mokelumne
3536 Rainer Ave.
Stockton, CA 95204

Walker Cook, ESQ
Mokelumne River Alliance
42 Northwood Commons
Chico, CA 95973-7214

Dan Gallery, ESQ.
Woodbridge Irrigation District
926 J Street, Suite 505
Sacramento, CA 95814

Dante John Nomellini, ESQ.
Central Delta Water Agency
P.O. Box CA 1461
Stockton, CA 95201

Simon Granville
Calaveras County Water Agency
P.O. Box 846
San Andreas, CA 95249

Stewart C. Adams, Jr. ESQ.
North San Joaquin Water
Conservation District
Adams, Edwards and Welch
15 North School
Lodi, CA 95240

Karna Harrigfeld, ESQ.
Herum, Crabtree, Brown, Dyer,
Zolezzi & Terpstra
North San Joaquin Water
Conservation District
2291 W. March Lane Suite B100
Stockton, CA 95207

Jeanne M. Zolezzi, ESQ.
Herum, Crabtree, Brown, Dyer,
Zolezzi & Terpstra
Stockton East Water District
2291 W. March Lane Suite B100
Stockton, CA 95207

ohn Lampe
Director of Water Planning
East Bay Municipal Utility District
75 11th Street
Oakland, CA 94607-4240

John Stovall, ESQ.
County of San Joaquin
Neumiller & Beardslee
P.O. Box 20
Stockton, CA 95201-3020

Roderick Schuler
Amador County Public Works
500 Argonaut Lane
Jackson, CA 95642

Henry Willy
ackson Valley Irrigation District
755 Lake Amador Drive
on, CA 95640

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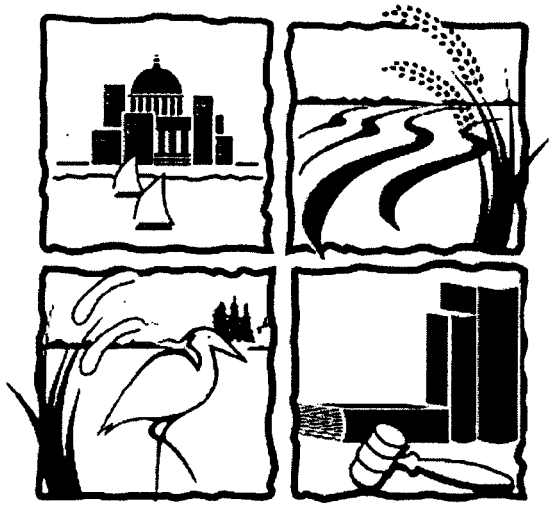
NSJ-45



REVISED
Water Right Decision 1641

In the Matter of:

Implementation of Water Quality Objectives for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary;

A Petition to Change Points of Diversion of the Central Valley Project and the State Water Project in the Southern Delta; and

A Petition to Change Places of Use and Purposes of Use of the Central Valley Project

December 29, 1999

Revised in Accordance with Order WR 2000-02

March 15, 2000

STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

under which WID diverts 60 taf under its water right licenses and additional water when available under its pre-1914 water rights. When inflow to Pardee Reservoir is less than 375 taf, WID's diversion is reduced to 39 taf. WID has passed a resolution stating that it will not divert the expected flows below Woodbridge, which are identified in the JSA, if the SWRCB finds that the JSA flows are an adequate contribution to the Delta for the Mokelumne basin as a whole. (WID 9; R.T. p. 2951.)

8.1.3 SWRCB Findings Regarding the Mokelumne Agreement

The flows under the JSA differ from the flows under Flow Alternatives 3 and 5. As USFWS argued, Alternative 5 might provide more benefit for Delta fish than the other alternatives, but it could result in more frequent consumptive use water shortages and more instances of elevated water temperatures affecting fish. The SWRCB finds that the fish should be protected, but consumptive uses nevertheless should be allowed to continue at a reasonable level. Excessive releases for fish at some times could result in releases of water that is too warm for fish at other times. The SWRCB finds that it would not be in the public interest to require more water from the Mokelumne River system than will be provided under the JSA. Additional releases could exacerbate the shortages experienced by NSJWCD. Further, any requirements imposed by the SWRCB could be added to the JSA flows when the JSA flows are lower, but flows may not be subtracted from the JSA when such flows are higher than the SWRCB alternatives. This could result in greater releases than either the JSA or the SWRCB alternatives would require alone. Accordingly, this decision establishes EBMUD's responsibility to help meet the Bay-Delta flow dependent objectives consistently with the JSA provisions. Additionally, consistent with WID's resolution, this decision establishes WID's responsibility by amending WID's water right licenses to require that WID bypass the expected flows below Woodbridge, as defined in the JSA. Unless it gives further notice, the SWRCB will not revisit the water rights on the Mokelumne River in future phases of the Bay-Delta Water Rights Hearing.

The DWR has agreed to backstop a part of any incremental responsibility to provide water from the Mokelumne River in excess of the JSA flows. Accordingly, this decision establishes a responsibility for the DWR to backstop a share of any additional Mokelumne River responsibility that the SWRCB determines after conducting further proceedings. The USBR declined during the hearing to provide a backstop for Mokelumne River flows. The USBR, however, is responsible for meeting requirements under the federal Endangered Species Act for flows, export limits, and

NSJ-46

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WR 98 - 08

In the Matter of the
Declaration of Fully Appropriated Stream Systems
in California

SOURCES: Various Stream Systems, Statewide

COUNTY: All Counties Except Imperial and San Francisco

ORDER REVISING
DECLARATION OF FULLY APPROPRIATED STREAM SYSTEMS

BY THE BOARD:

1.0 BACKGROUND

Water Code sections 1205 through 1207 establish a procedure for the State Water Resources Control Board (SWRCB) to adopt a declaration designating stream systems which are determined to be fully appropriated either year-round or during specified months. The SWRCB may act on its own motion or on petition of any interested person. On November 16, 1989, the SWRCB adopted the "Order Adopting Declaration of Fully Appropriated Stream Systems and Specifying Conditions for Acceptance of Applications and Registrations." (Order WR 89-25.[1]) The SWRCB adopted an updated and revised order by the same name on August 22, 1991. (Order WR 91-07.) Orders WR 89-25 and WR 91-07 were based upon previous water right decisions or orders which determined that no water remains available for appropriation from the specified sources during particular months. The Declaration of Fully Appropriated Streams (Declaration) adopted by this order includes additions and revisions to the provisions of the Declarations previously adopted in Order WR 89-25 and Order WR 91-07.

[1] In response to a petition to reconsider Order WR 89-25, the SWRCB adopted Order WR 90-2 on February 15, 1990. Order WR 90-2 modified and affirmed Order WR 89-25 as modified.

would be available during that period in many years for diversion and use in a conjunctive use program which is not dependent upon water being available every year. (T 17:8-20:13.) MRWPA has Water Right Applications 29835 and 29855 pending on the Mokelumne River. The surface water proposed to be appropriated under those applications could be diverted when available and used conjunctively with groundwater.

At the start of the hearing, SWRCB staff explained that one alternative would be to update the Declaration as proposed in the Hearing Notice Attachment, but also include a condition to allowing for acceptance of applications for projects on the Mokelumne River that would only need water on an infrequent basis. Counsel for MRWPA and San Joaquin County stated his clients do not believe that Decision 1527 establishes the Mokelumne River is fully appropriated. However, the alternative identified by staff would be acceptable to his clients. (T 16:14-17:1.)

North San Joaquin Water Conservation District (NSJWCD) agrees with the position of the MRWPA. (T 20:15-20:22.) The NSJWCD also submitted a technical report addressing the groundwater overdraft problem in San Joaquin County and difficulties the district has encountered in obtaining adequate water supplies.[3]

Counsel for Amador Water Agency (AWA) agreed with Mr. Hanson's analysis of Decision 1527 and the evidence on which that decision was based. AWA does not support placing the Mokelumne River on the Declaration for the months of March through June, even if a provision were included to allow for acceptance of applications for projects which could utilize water available on an infrequent basis. AWA argues that the term "infrequent" is too vague and inaccurate, and that questions regarding the availability of water for appropriation from the Mokelumne River can best be addressed in proceedings on the individual applications rather than in the fully appropriated streams proceeding. (T 21:13-24:15.)

[3] Although the SWRCB acknowledges NSJWCD's ongoing water supply concerns, we are not able to address those problems in the context of the current proceeding regarding revisions to the Declaration of Fully Appropriated Streams.

NSJ-47

A-96-705

EAST SAN JOAQUIN PARTIES JOINT EXERCISE OF POWERS AGREEMENT EAST SAN JOAQUIN PARTIES WATER AUTHORITY

THIS AGREEMENT is made by and among the San Joaquin County Flood Control and Water Conservation District ("County District"), the City of Stockton ("Stockton"), the City of Lodi ("Lodi"), Stockton East Water District, ("SEWD"), Central San Joaquin Water Conservation District ("Central"), Woodbridge Irrigation District ("Woodbridge"), and North San Joaquin Water Conservation District ("NSJWC"), collectively called the "Members". The Members hereby agree as follows:

ARTICLE I
GENERAL PROVISIONS

Section 1.01. Creation of Authority. Pursuant to Government Code Section 6500 et seq. there is hereby created a public entity to be known as the "East San Joaquin Parties Water Authority" which shall be a public entity separate and apart from the Members, and shall administer this Agreement.

Section 1.02. Purpose. The purpose of this Agreement is to plan, alone or in conjunction with East Bay Municipal Utility District, and/or Sacramento County public entities, and/or other public entities, a project, or projects, to meet the water deficiencies of Eastern San Joaquin County. It is contemplated that implementation of any project will be through development of another agreement by the parties.

ARTICLE II
POWERS

Section 2.01. Powers. The Authority is hereby authorized, in its own name, to do all acts necessary for the exercise of the foregoing powers including, but not limited to the making and entering into contracts, except as to employment and consultant contracts.

Section 2.02. Restrictions on Exercise of Powers. The powers of the Authority shall be exercised in the manner provided in Government Code Section 6509 and to the restrictions upon the manner of exercising such powers that are imposed upon the County District in the exercise of similar powers.

ARTICLE III
GOVERNING BODY

Section 3.01. Governing Board. The Authority shall be administered by a Board of Directors ("Board"), one appointed by each of the Member entities with a designation of an alternative Director to serve as a replacement for the appointed Director as needed, to serve at the pleasure of their appointive governing body. The Board shall be called the "East San Joaquin Parties Water Authority Board". All voting power of the Authority shall reside in the Board.

Section 3.02. Meetings of the Board. The Board shall provide for calling and conducting its regular meetings and special meetings, in accordance with Government Code Section 54950 et seq.

Section 3.03. Minutes. The Secretary shall cause to be kept minutes of the meetings of the Board and shall, as soon as possible after each meeting, cause a copy of the minutes to be forwarded to each Director and to each of the Members.

Section 3.04. Voting. Each Director shall have one vote.

Section 3.05. Quorum; Required Votes; Approval. A quorum of the Board for the convening of any meeting shall consist of a majority of all Directors, or designated alternative Director. The unanimous vote of all Directors shall be required for any action of the Board of Directors regarding the adoption of any plan, or portion thereof, for a project.

Section 3.06. Bylaws. The Board may adopt, from time to time, such bylaws and regulations for the conduct of its meetings as are necessary for the purposes hereof.

ARTICLE IV
OFFICERS AND EMPLOYEES

Section 4.01. Chair, Vice-Chair, and Executive Director/Secretary. The Board shall elect a Chair and Vice-chair from among the Directors, and shall appoint an Executive Director/Secretary, who may, but need not, be a Director. The officers shall serve at the pleasure of the Board, shall perform the duties normal to said offices, and

A. The chair shall sign all contracts authorized by the Board and shall perform such other duties as may be imposed by said Board;

B. The vice-chair shall act, sign contracts and perform all of the chair's duties in the absence of the chair; and

C. The Executive Director/Secretary shall countersign all contracts signed by the chair or vice-chair on behalf of the Authority, perform such other duties as may be imposed by the Board.

Section 4.02. Treasurer and Auditor.

A. The County Treasurer shall be the depositary, shall have custody of all the money of the Authority from whatever source, and shall have the duties and obligations of the Treasurer as set forth in Government Code Sections 6505 and 6505.5. The County Treasurer shall be responsible for receiving quarterly reports from the Secretary and verifying the balance of this report with respect to the balance as maintained by the records of the County Auditor.

successor organization, by vote of the Board.

ARTICLE VI
ASSOCIATE MEMBERSHIP

Section 6.01 California Water Service Company CalWater is an associate member of the Authority with one position on the Board of Directors of the Authority. CalWater shall be entitled to participate in the meetings and discussions of the Board but it shall not have the power to vote on any action to be taken by the Authority or to become an officer or Director of the Authority.

ARTICLE VII
TERM; WITHDRAWAL; TERMINATION

Section 7.01. Term. This Agreement shall become effective as of the date hereto and shall continue in full force and effect until completion of the planning of a project or until June 30, 2000, whichever occurs first.

Section 7.02. Withdrawal of Member. A Member may terminate its Membership in the Authority at any time upon giving written notice of the withdrawal to the Authority.

Section 7.02. Disposition of Assets. Upon termination of this Agreement, all remaining net assets of the Authority, both real and personal, shall be transferred to the County District.

ARTICLE VIII
MISCELLANEOUS PROVISIONS

Section 8.01. Amendments. This Agreement may be amended by unanimous consent at any time, or from time to time.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed on the day and year set opposite the name of the parties.

SAN JOAQUIN COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

By _____
ROBERT J. CABRAL
Board of Supervisors

ATTEST: LOIS M. SAHYOUN
Clerk of the Board of Supervisors of the San Joaquin Flood Control and Water Conservation District

By _____ (SEAL)
Deputy Clerk

RECOMMENDED FOR APPROVAL BY:

HENRY HIRATA
Director of Public Works

APPROVED AS TO FORM
R. THOMAS HARRIS
CITY ATTORNEY
BY
Deputy City Attorney

ATTEST:

City Clerk

ATTEST:

City Clerk

Approved as to form
City Attorney

ATTEST:

Secretary

ATTEST:

ATTEST:

APPROVED AS TO FORM;
TERRENCE R. DERMODY
County Counsel

By
REBECCA DAVIS
Deputy County Counsel

CITY OF STOCKTON, a municipal corporation

By

Title City Manager

CITY OF LODI, a municipal corporation

By

Title City Manager

STOCKTON EAST WATER DISTRICT

By

Title President

CENTRAL SAN JOAQUIN WATER CONSERVATION DISTRICT

By

Title President

WOODBRIDGE IRRIGATION DISTRICT

By

Title

ATTEST:

Attorney

NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT

By Fred Weybret

Title President

ATTEST:

CALIFORNIA WATER SERVICE COMPANY

By _____

Title _____

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To Tom Shepherd

Co./Dept.

Phone #

Fax # 948-4910

Date 4/30/99 # of pages ▶ 6

From Teresa Ocampo

Co.

Phone # 468-2064

Fax #

NSJ-48

Water Supply Evaluation for the General Plan Update Preferred Alternative

Completed for City of Stockton Municipal Utilities Department and California Water Service Company

December 30, 2005
Amended May 12, 2006

Table of Contents

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Exhibits

List of Acronyms

AF – Acre-feet

AF/ac/year – Acre-feet per acre per year

Cal-Water – California Water Service Company

CEQA – California Environmental Quality Act

COS – City of Stockton

COSMUD – City of Stockton Municipal Utilities Department

COSMA – City of Stockton Metropolitan Area

CVP – Central Valley Project

DHS – California Department of Health Services

DWR – California State Department of Water Resources

DWSP – Delta Water Supply Project

ESA – Endangered Species Act

GP Update – General Plan Update

GIS – Geographic Information System

IGSM – Integrated Groundwater Surface Water Model

M&I – Municipal and Industrial Uses

mgd – million gallons per day

msl – mean sea level

NEPA – National Environmental Policy Act

OID – Oakdale Irrigation District

SEWD – Stockton East Water District

SOI – General Plan Sphere of Influence

SSJID – South San Joaquin Irrigation District

SWP – State Water Project

TAF – Thousands of Acre-feet

TAF/year – Thousands of Acre-feet per Year

USBR – United States Bureau of Reclamation

UWMP – Urban Water Management Plan

WSE – Water Supply Evaluation

WSA – Water Supply Assessment (as defined by SB610)

WTP – Water Treatment Plant

Introduction

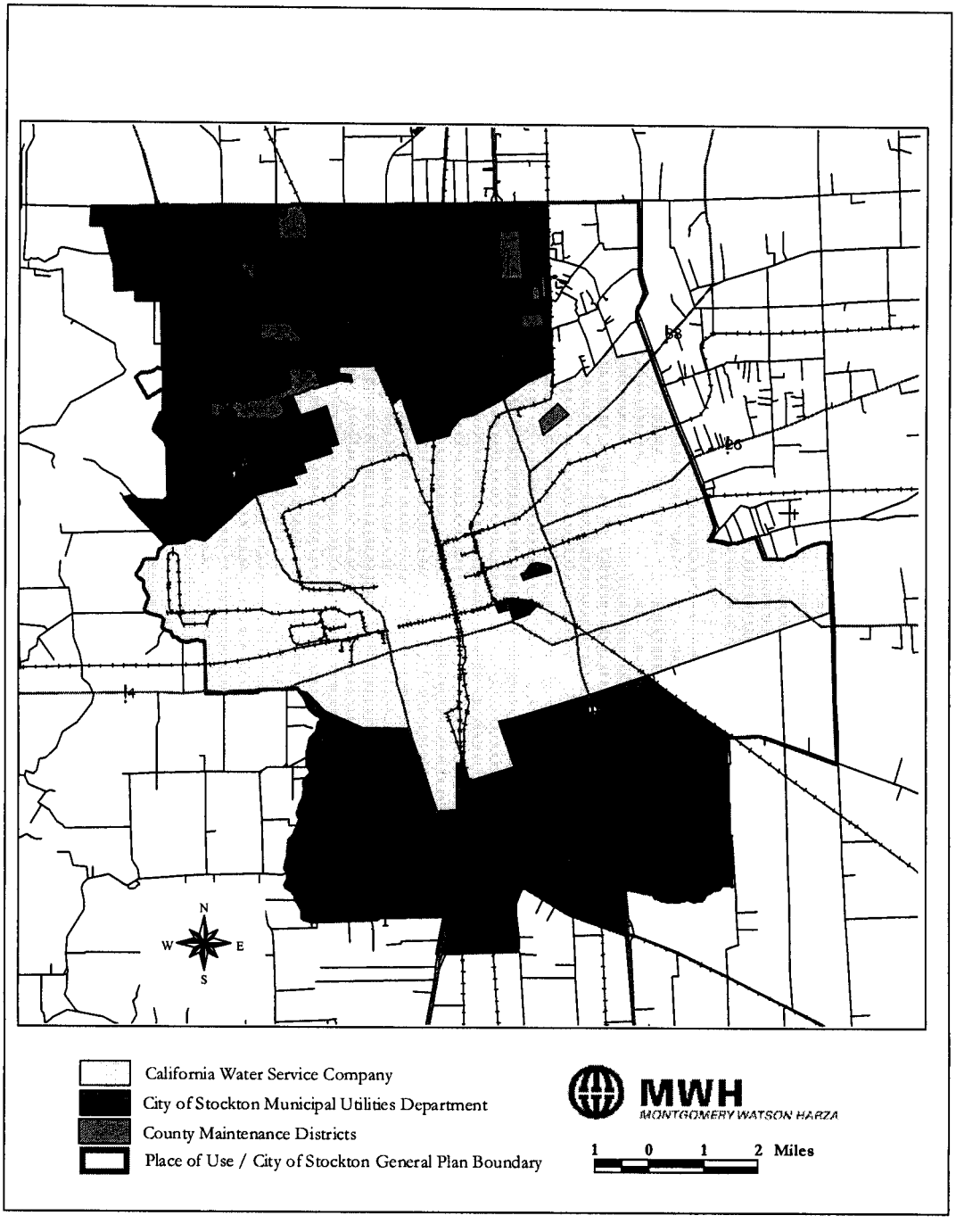
The City of Stockton (COS)[1] is currently in the process of updating its General Plan (GP Update) as required by state law in the preparation and maintenance of all planning documents that serve as blueprints for a community's land use and resource conservation decisions. As part of this process, the City of Stockton Planning Department has requested a study to determine the adequacy of water supply resources to serve the preferred land use plan that will supersede the current adopted 1990 General Plan.

To initiate the evaluation of the adequacy of water supplies, the City of Stockton Planning Department formally requested the City of Stockton Municipal Utilities Department (COSMUD) and the California Water Service Company (Cal Water) to prepare assessments of the extent to which existing and anticipated future water supplies will suffice to serve levels of growth contemplated under the proposed updated General Plan. This request reflected the fact that the retail purveyors' respective service areas lie entirely or partially within the GP Update boundaries. San Joaquin County has service areas within the planning boundary but was not formally notified by the Planning Department of this request because County service areas within the COS are developed to their maximum build-out and will not be affected by changes in land use proposed under the GP Update. However, supply and demands for the County service areas will be accounted for in the evaluation. **Figure 1** shows the current boundaries of the service areas relative to the current General Plan boundaries.

As municipal water purveyors that provide retail water service to the COS, the notification of the need for a determination of water supply sufficiency invokes a response from each agency. This response is intended to provide the kind of information required of a formal "water supply assessment" required by Water Code section 10910 et seq. (commonly known as SB 610), even though the purveyors do not believe that SB 610 actually applies to a comprehensive general plan update. Rather, SB 610 applies to categories of "projects" subsidiary to city-wide general plan updates (e.g., specific plans or general plan amendments contemplating the construction of more than 500 dwelling units). The limited application of these Water Code requirements was very clear in the predecessor to SB 610, known as SB 901 (see former Water Code sections 10910, subd (a) and 10913.) When SB 901 was in effect (1996 through 2001), it was clearly intended to complement the requirements of Government Code sections 65352, subdivision (b)(7), and 65352.5, which remain in effect and require cities and counties, in updating their general plans, to consult with "public water agencies" and to receive from them detailed information regarding water supply availability.

[1] COS is used in when referring to the political entity of the City of Stockton; whereas, the City of Stockton Metropolitan Area (COSMA) is used to refer to the geographic area that is or will be the service areas of the urban water retailers.

Figure 1. City of Stockton Water Retail Purveyors



Even though the purveyors believe that SB 610 was not intended to change the approach that was in effect during the lifetime of SB 901, the purveyors, in the spirit of cooperation, have nevertheless undertaken preparation of this document with the intent of having it function as a de facto water supply assessment, despite the general nature of the project at issue and the inevitably of the somewhat general nature of discussion included herein. It is important to acknowledge that this document is not a substitute for the formal consultation required by Government Code sections 65352 and 65352.5. See **Exhibit "A"** for response memo from COSMUD to the City of Stockton Community Development Department regarding the purpose of this WSE and the manner in which this WSE fulfills their request for a water supply assessment.

Background

The water supply resources serving the City of Stockton Metropolitan Area (COSMA), as it is defined by the GP Update, and the manner in which the water supply resources are conveyed, treated, and distributed to various customer sectors currently and into the future require some knowledge of the agreements and programs that are currently moving forward with a high level of certainty and those that are needed and being planned for on the path to full build-out of the GP Update.

The intent of the California Water Code 10910 - 10915 (inclusive) is to provide a means for coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing and anticipated demands.

Water Code Sections 10910 - 10915 (inclusive) require land use lead agencies: 1) to identify the responsible public water purveyor for a proposed development project, and 2) to request from the responsible purveyor, a "Water Supply Assessment" (WSA). The purpose of the WSA is to demonstrate the sufficiency of the purveyors' water supplies to satisfy the water demands of the proposed development project, while still meeting the current and projected water demands of existing customers. Although, as explained in the Introduction, the purveyors do not believe that a formal water supply assessment is required for a general plan update, this document has nevertheless been prepared with the intent of including all of the contents required of a formal WSA. This is so despite the title of the document being a Water Supply Evaluation (WSE) rather than a WSA.

Project Description

The City of Stockton is located near the center of San Joaquin County immediately south of the community of Lodi and north of the community of Manteca. The City serves as the County seat and is located 83 miles east of the San Francisco Bay area and 40 miles south of the City of Sacramento. Interstate

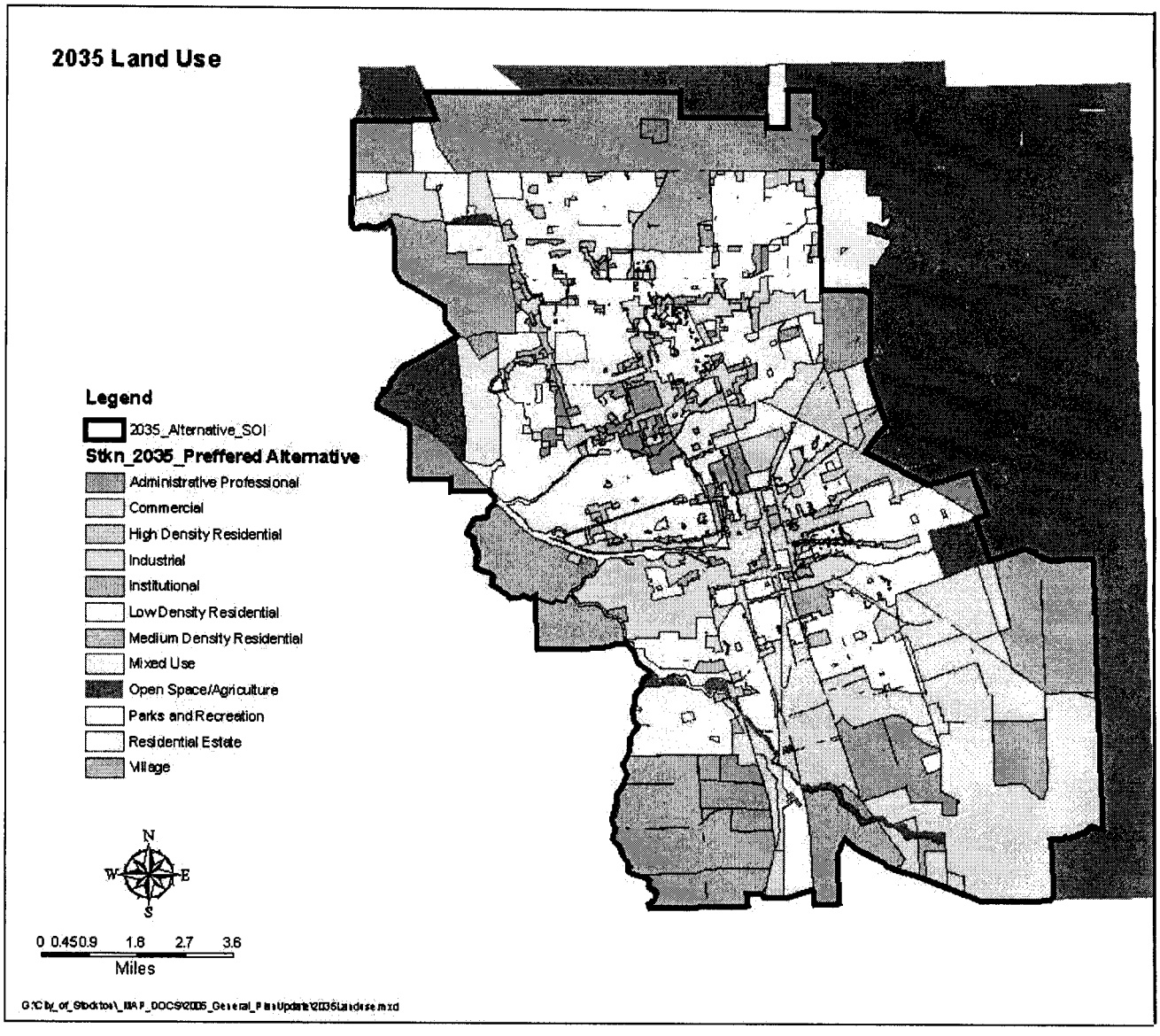
5 runs north-south near the western border of the City and State Route 99 runs north-south near the eastern border of the City. The primary zone of the Delta is located to the west of the City. Much of the City is located within the primary and secondary zone of the Delta.

The preferred land use alternative or GP Update encompasses all of the area inside the City Limits, the existing SOI Area, and additional unincorporated land areas that may influence future planning efforts. See **Figure 2** for location and extent of GP Update (based on GIS shape files) and **Exhibit "B"** for latest preferred land use diagram submitted by planning with the WSE request. These current boundaries extend to Armstrong Road and Live Oak Road on the north; portions of State Route 99 and the Stockton Diverting Canal, and Jack Tone Road to the east; and Roth Road on the south. The western boundary is formed by several features including a portion of the San Joaquin River, State Route 4, Burns Cutoff and Bishop Cut.

Current Water Supply Condition

Like many northern California communities, the City of Stockton Metropolitan Area (COSMA, see footnote 1) is experiencing substantial population growth and increasing water demands. At the same time, regulatory pressures, increased water usage in neighboring areas, and saline intrusion affecting groundwater supplies are straining the City's already limited water supplies. As a result, the COS has focused attention on the availability of existing surface water supplies from Stockton East Water District (SEWD), obtaining new surface water supplies from a new Delta diversion, demand management through water conservation practices, and the need to manage groundwater resources at a sustainable yield. The objective is to achieve a long-term reliable water supply for existing and future customers.

Figure 2. Preferred General Plan Update Alternative Land Use Diagram (May 2005 Version)



A product of the effort in obtaining new surface water supplies from the Delta is a water right application[2] to the State Water Resources Control Board (SWRCB) on January 6, 1996, that requested an increasing amount of surface water from approximately 20,000 acre-feet per year (AF/year) initially, up to 125,900 AF/year in 2050. To divert and deliver this surface water supply, COSMUD (on behalf of the City, Cal-Water, and San Joaquin County) is pursuing the Delta Water Supply Project (DWSP) which will achieve the following three objectives:

- To replace declining and unreliable surface water supplies.
- To protect and restore groundwater resources.
- To provide adequate water supplies to accommodate planned growth.

The DWSP is a multi-phased surface water project that is viewed as having two distinct phases. Phase 1 is the critical phase of the DWSP that has undergone CEQA evaluation and is depicted in all studies at the project level. Phase 1 achieves the following: 1) meets existing water demands that are threatened by reductions in existing surface water and groundwater supplies, 2) meets flexible and consistent groundwater management of the groundwater basin underlying the COS, and 3) meets growing water demands from new development in the COS from present to build-out of the 1990 General Plan. Phase 2 is viewed as the next increment of DWSP capacity when it is needed based on water demands and supplies beyond the 1990 General Plan and has been evaluated in the planning documents at the programmatic level only. The City will prepare a new and complete CEQA environmental review prior to seeking additional water rights from the SWRCB for water in addition to that provided pursuant to Water Code Section 1485.

On April 22, 2003, Stockton's City Council approved the DWSP Feasibility Report and directed the Municipal Utilities Department (COSMUD) staff to complete the necessary environmental studies to comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). An environmental impact report ("EIR") was prepared to satisfy CEQA with respect to the DWSP. On November 8, 2005, the Stockton City Council certified the EIR and also authorized the City staff to proceed with the project. The certified document was included as part of the water rights application package submitted to SWRCB, which issued a permit for a Delta diversion for Phase 1 in the amount of 33,600 AF/year on March 8, 2006 (See Exhibit "C").

With certification of the EIR and SWRCB issuance of the water right permit, the City will proceed with design and construction of Phase 1 of the DWSP. Upon start up of the Phase 1 DWSP, the urban water retailers will have a third source of supply in addition to the existing treated surface water supply from the SEWD

[2] The application claims two separate, cumulative water rights: a right pursuant to California Water Code Section 1485, and a right pursuant to the "watershed of origin" provisions of California Water Code Section 11460 and the Delta Protection Act, California Water Code Section 12200 et seq. These water rights are discussed in-depth starting on **Page 41** under the Section titled, "Necessary DWSP Water Right Permits"

treatment plant and existing groundwater supply from wells located throughout the COSMA service area. The reliability of water supply resources for the COSMA will be greatly enhanced for the next 20 years while plans and agreements are secured for increased water supplies for the long-term build-out of the COS GP Update. Phase 2 DWSP will be pursued only when water demands and supplies require the additional supply capacity. As mentioned above, a separate approval process for Phase 2 will take place at that time.

Overview of COSMA's Future Water Demands

Determination of Water Demand for the GP Update

The water demands associated with new growth in the COSMA have been evaluated as part of the DWSP Feasibility Report. The findings of the DWSP report have been incorporated into the City of Stockton's 2005 Urban Water Management Plan (UWMP)[3]. The DWSP report evaluated current water demands and developed a land-use based water demand projection for build-out of the current City General Plan and then developed a population based demand for expected growth beyond General Plan build-out which was projected to be 2015.

Population and land use based water demand forecasting are two widely accepted methods of calculating water demands. Population methods use per capita water demand factors. Estimated per capita demands are generated through use of total water production records and census population data for the service area. One weakness of population-based projection methods is that the water demands are uniformly distributed over the service area, not accounting for land uses that have wide variations in demands. Another disadvantage is that it does not accurately reflect changes in the mix of residential and non-residential water demands over time. Using a water demand growth rate based on historic population growth rates is most appropriate for addressing water demands that extend beyond the planning horizon of the General Plan.

Because it reflects land uses planned for by a community and it better accounts for spatial demand variations, land-use based projections are typically preferred. Land-use based projections can be used when land uses and water demand data are available for specific land-use categories. Estimating a water demand factor for a land use category requires meter data specific to the category and a sample population of significant size. Land use based water demand factors are developed on an acre-feet per acre per year (AF/ac/year) basis.

Compliance with SB 610 is simplified greatly by utilizing the land use based methodology. In requesting assurance of a reliable water supply, development projects can be tracked by the General Plan land use map to determine if the lands were included in the water supply analysis and at what levels of assumed

[3] The information from the December 2005 UWMP must be included in the Conservation Element of the General Plan. See Government Code Section 65302(d).

water demand. For purposes of the DWSP Feasibility Report, land use based water demand factors were determined and applied to the current 1990 General Plan. This application of land-based unit demand factors totaled approximately 85,330 AF/year of water demand by 2015. The COSMA is currently producing 68,000 AF/year. The same factors are applied to the GP Update to consider the build-out water demand as shown in **Table 1** showing a build-out water demand of 156,083 AF/year in 2035.

The next level of analysis of water demand is the temporal buildup of demand. Both the water right application and the DWSP report assumed a constant population growth to 2050. The rate of growth increases slightly from both of these studies due to the expanded Sphere of Influence (SOI) of the GP Update. For consistency with these two documents, the same assumption will be made in this WSE. **Figure 3** provides both the population growth and water demand over the period from 1990 to 2000 (latest census data), and then to 2035 (build-out of the GP Update). Population is on the left y-axis and water demand is on right y-axis.

Based on **Figure 3**, water demands within the COSMA are projected to increase from the present 68,000 AF/year in 2004, to 85,330 AF/year in 2015 (build-out of 1990 General Plan) to156,083 AF/year by build-out of the GP Update. **Figure 3** is used to determine, describe, and evaluate the needed water supply resources to meet growth from 2005 to 2035. This figure indicates a total population at 2035 of 592,000 people assuming an average 2.4% growth rate, roughly equating to 235 gallons of water per day per capita.

The DWSP Feasibility Report used a 1.9 percent growth rate at an average of 241 gallons per capita per day. The growth rate and projected per capita water demand can be adjusted as General Plan information becomes available through customer usage and production data and information compiled as part of future updates to the UWMP. Regardless of either of the population growth or the per capita water usage, the water demand land use factors are the determining numbers used for calculating the water demand at build-out of the GP Update and will be used for this WSE.

Table 1. GP Update Build-out Water Demand Determination

Designated Land Use	Planning Area Acreage (acres)	Unit Water Demand Factor (AF/ac/year)	Water Demand AF/year
Residential Estate	2,460	1.5	3,690
Low Density Residential	26,220	1.5	39,330
Medium Density Residential	1,970	1.5	2,955
High Density Residential	1,150	3.0	3,450
Village	18,430	3.0	55,290
Administrative Professional	1,050	1.5	1,575
Commercial	4,780	1.5	7,170
Mixed Use	1,420	1.9	2,698
Industrial	17,070	1.5	25,605
Institutional	7,160	1.5	10,740
Parks and Recreation	1,790	2.0	3,580
Open Space/Agriculture	38,560	-	-
Total	**122,060**		**156,083**

Source: NOP of Draft EIR, May 2005 Table 2. Designated Land Uses...

Figure 3. Population and Water Demand Increase Over Time

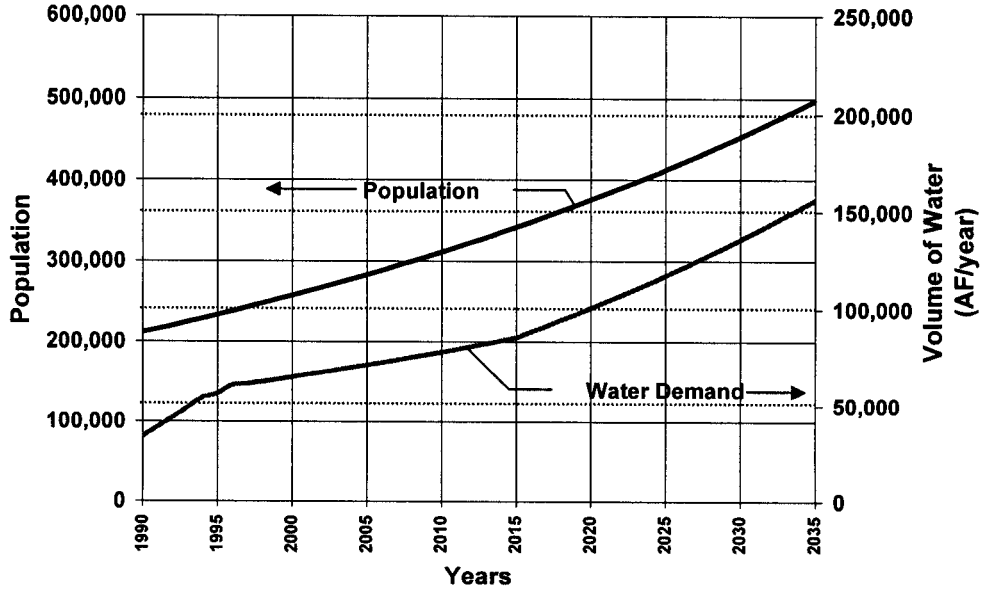
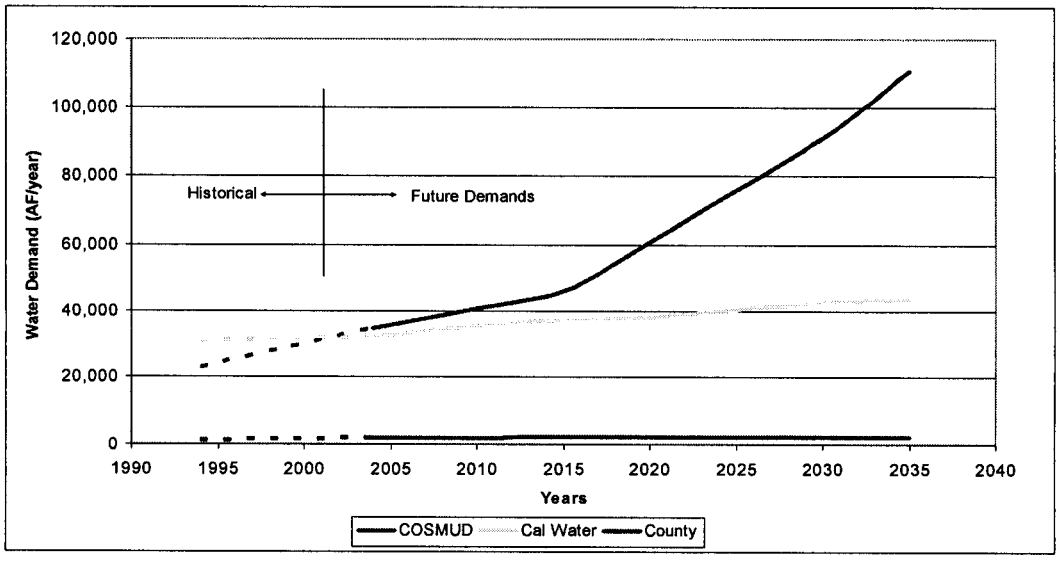


Table 2 and **Figure 4** show the past, current, and estimated projected demand to 2035 within the expanded Sphere of Influence (SOI) of the GP Update for each of the water retailers: COSMUD, Cal Water and San Joaquin County. The COSMUD is expected to experience the greatest increase in demand since most development will occur in its designated service areas. Cal Water's demand increase is projected to grow at a lower rate because much of its service area is developed. New development will either occur as infill or in areas east of Cal Water's existing service area which is not growing as rapidly as the areas in the northern and southern portions of COSMA (i.e., COSMUD service areas). Build-out of Cal-Water is assumed to occur by 2030. The County's demand is expected to be relatively static since the areas it serves are fully developed. Increases in demand would likely be due to redevelopment.

Table 2. Past, Current, and Projected Water Demands by Retail Service Provider

Year	Total Demand (AF/year)	COSMUD		Cal Water		County	
		Demand (AF/year)	Percent of Total Demand	Demand (AF/year)	Percent of Total Demand	Demand (AF/year)	Percent of Total Demand
1994	**54,204**	22,619	41.70%	30,345	55.90%	1,296	2.40%
2004	**68,714**	34,550	50.30%	32,070	46.70%	2,094	3.00%
2010	**81,250**	42,170	51.90%	36,940	45.50%	2,140	2.60%
2015	**85,330**	46,078	54.00%	37,076	43.45%	2,176	2.55%
2020	**106,250**	64,030	60.30%	40,000	37.60%	2,220	2.10%
2030	**137,500**	92,200	67.00%	43,000	31.30%	2,300	1.70%
2035	**156,083**	110,663	70.90%	43,079	27.60%	2,341	1.50%

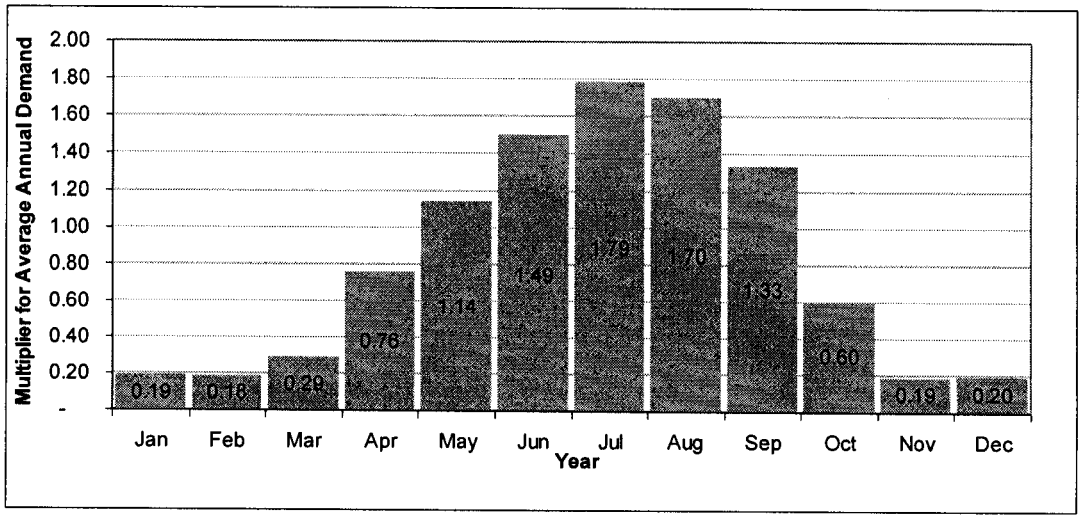
Figure 4. Demand Growth by Retail Service Provider



The above water demand projections are all based on an annual average volume of water expressed in AF/year. The use of an annual average is needed for the planning of water supply sources (e.g., surface water contracts, groundwater extraction yields, etc.) but does not address the facility side of whether the water supply facility capacity is available to convey raw surface water, extract groundwater, and treat water supplies, if necessary.

To arrive at the monthly variation in water demand, a multiplier is determined based on historical use of water in the region. For the Stockton area **Figure 5** presents the monthly multipliers that, when applied to the average annual water demand, results in the corresponding monthly water demand and needed water supply facility capacity. The month of July represents the highest water demand with a 1.79 multiplier. In million gallons per day (mgd), this results in a minimum total system capacity of 250 mgd at build-out of the GP Update. In addition, since surface water serves as the base supply, the peaking factor for surface water facilities is slightly different than for groundwater facilities. For instance, the surface water facility multiplier is 1.25 and the groundwater 1.43. When these two are multiplied together the 1.79 total system multiplier is obtained. Peak hour water facility capacity (highest water use) is met through in-system storage and is not evaluated in this WSE. Average annual sufficiency of supplies and maximum month sufficiency in water facility capacity are both evaluated in this WSE. In addition, since the COSMA is served through a conjunctive use system, there is some redundancy in system capacity to account for the dry years when surface water capacity may not be fully utilized due to supply constraints.

Figure 5. Monthly Multipliers for Annual Average Water Demand



Elements of a WSA

As mentioned in the introduction, it is the intent of this WSE to use Water Code Sections 10910 – 10915 as a template to address the elements of water supply that are of the utmost concern. This WSE is structured according to the same requirements of a WSA.

Determine if Project is Subject To CEQA [Section 10910(a)]

The City of Stockton Planning Department has made a determination that the Project is subject to CEQA.

Identify Responsible Public Water System [Section 10910(b)]

The City of Stockton Planning Department has identified COSMUD and Cal-Water as the responsible public water system purveyors for the GP Update. The Planning Department possesses information regarding existing development and other approved development applications within the GP Update SOI which should be considered in the preparation of this WSE.

Determine if UWMP Includes Water Demands [Section 10910(c)]

Projected annual water demands beyond the year 2020 are not specifically included in COSMUD's current UWMP. In Cal Water's UWMP, water demand forecasts based on population growth, not land use, are made to 2030. Although not specifically identified as such, the water demand factors adopted by the COS for water supply planning in the DWSP Feasibility Report are shown in **Table 1** in the column titled "Unit Water Demand Factor".

Identify Existing Water Supplies for the GP Update [Section 10910(d)]

Section 10910(d)(1)

Section 10910(d)(1) requires identification of existing water supply entitlements, water rights, or water service contracts and quantification of water obtained by the water purveyors pursuant to those water supply entitlements, water rights, or water service contracts in previous years.

Existing Surface Water Supplies

Stockton East Water District (SEWD) was organized as a public agency on June 7, 1948, under the provisions of the California Water Conservation District Act of 1931. Since 1978, SEWD has been treating and supplying treated surface water up to 45 mgd to the region's urban areas through its three urban contractors (water retailer providers or urban contractors): COSMUD, Cal-Water, and San Joaquin County. The historical water demands from 1994 to 2005 from each of the urban contractors are illustrated in **Figure 6, Figure 7** and **Figure 8**. The 2004 conditions are used as a baseline in this WSE because the hydrology and water use for 2004 are said to depict normal year conditions.

Figure 6. Historical COSMA Water Supply from Groundwater and Surface Water

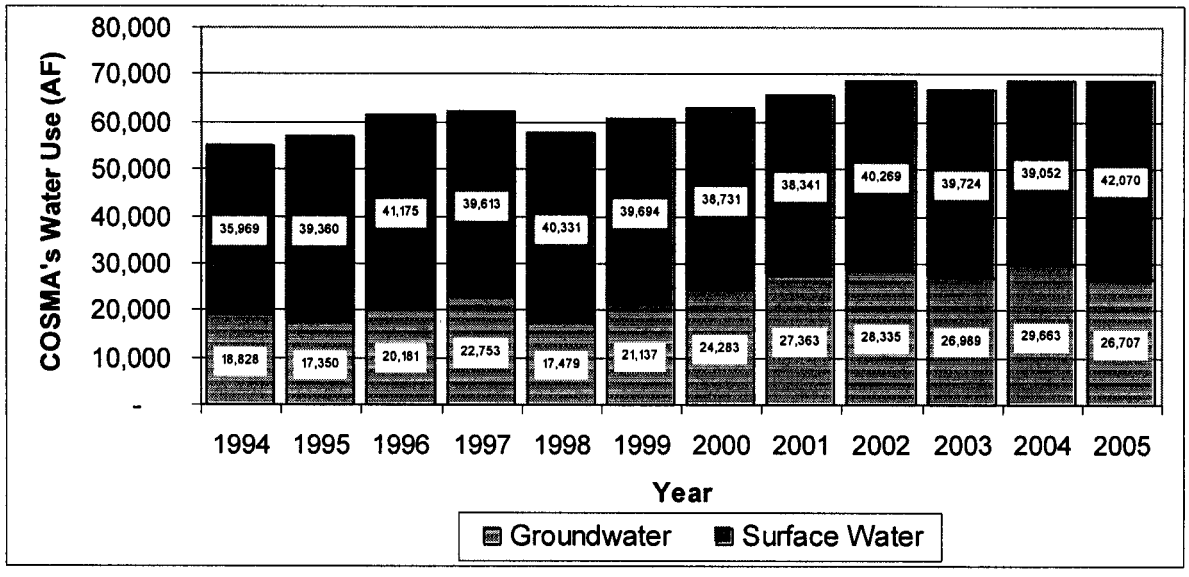


Figure 7. Historical Use of Water Supplies by Water Retailer

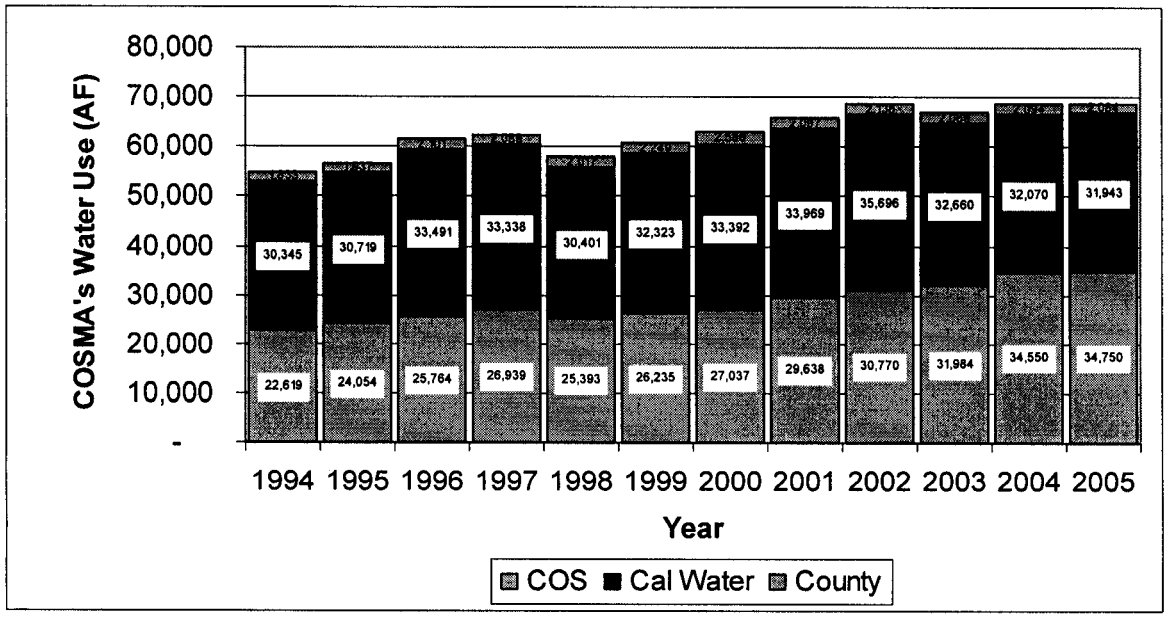
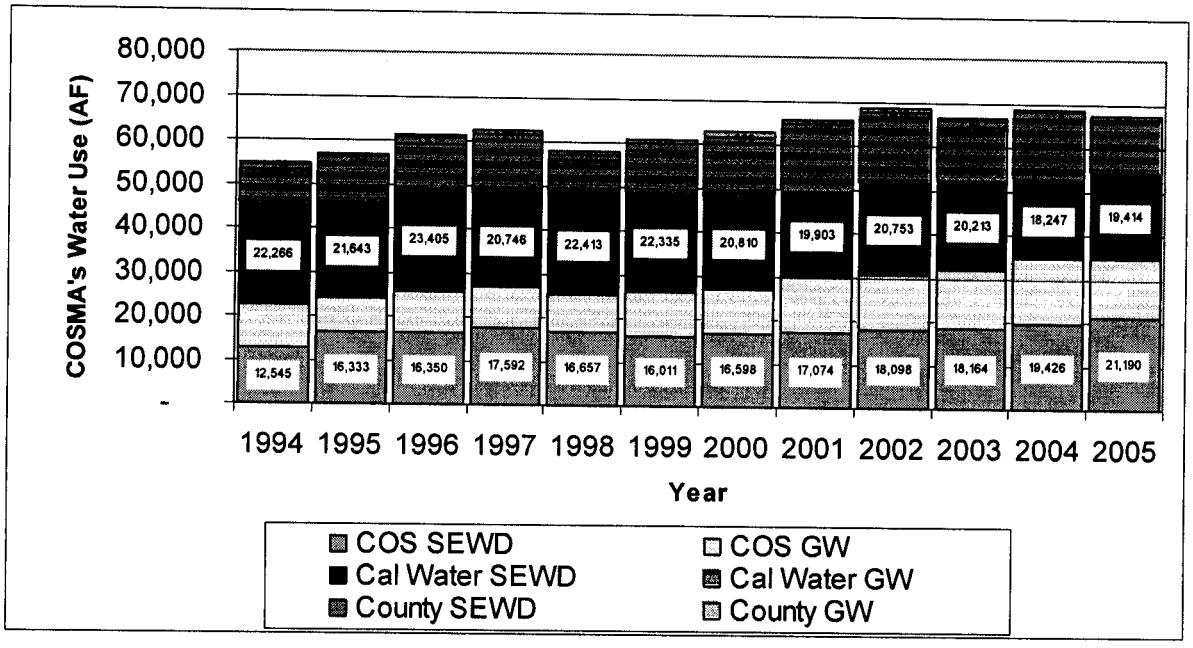


Figure 8. Historical Use of SEWD and Groundwater Supplies by Water Retailer



The existing (2004) water demand is approximately 68,714 AF/year. Both local groundwater in the urban contractors' service area and treated surface water from SEWD have met the urban contractors' water demands during this period.

The use of water by water retail provider is shown in **Figure 7** and the split between the two supplies (SEWD and groundwater) for each water retailer is illustrated in **Figure 8**. SEWD also provides surface water for agricultural irrigation to farmers within its District. This water is not considered in this WSE. Construction of improvements to the SEWD water treatment plant (WTP) are currently being made to increase plant flow capacity by 5 mgd for a rated WTP capacity of 50 mgd.

Groundwater extraction capacity within the General Plan Boundary has been designed to meet maximum day demands for COS, Cal Water and the County in the event that little or no treated surface water is available from SEWD in dry and critical years. Prior to construction of the DWSP (first phase assumed to be completed in 2010), water demands will exceed available surface water treatment capacity necessitating the construction of additional interim groundwater facilities until additional treated surface water capacity (SEWD expansion and DWSP construction) is brought on-line.

SEWD Surface Water Contract Entitlements

The COSMA currently receives surface water supplies (via SEWD) from five sources as shown in **Table 3**. Surface water supplies can come from many sources in the eastern Sierra Nevada foothills as shown in **Figure 9**. Total existing firm supplies for municipal and industrial (M&I) uses are approximated to

yield 104.1 thousand AF/year (TAF/year) under wet and above average hydrologic conditions. Their full entitlements including interim and future supply sources could yield 180 TAF/year. Currently, SEWD's ability to use its full water right amount is constrained by one or more of the following in any given year: 1) the hydrologic year type (i.e., dry year curtailment provisions in surface water contracts and reductions in surface water contracted from other agencies), 2) the COSMA M&I water demand, 3) the raw water delivery system to the SEWD WTP, 4) the rated SEWD WTP capacity, and 5) the treated water conveyance capacity from the WTP.

Existing firm surface water contracts held by SEWD include a Bureau of Reclamation (Reclamation) contract (New Hogan Reservoir) and a Calaveras County Water District (CACWD) contract on the Calaveras River based on appropriative water rights held by CACWD, and a Reclamation Central Valley Project (CVP) contract on the Stanislaus River (New Melones Reservoir). Contract documents, agreements, and applications for these surface water supplies are available for review in **Exhibit "D"**. A full description of each contract is provided below.

Table 3. Current and Future SEWD Water Sources and Critical Year Availability

Source	Annual Contract Amount Thousand Acre-feet (TAF)	Projected "Critical Year" Annual Availability (AF/year)			
		Planning Year			
		2000	2010	2020	2035
Current and Future "Firm" Sources of Supply					
Reclamation – New Hogan Water Supplies, CACWD and SEWD	Total Yield 84.1 TAF [1] SEWD Entitled to M&I or Ag **40.171 TAF**	20,000	12,000	12,000	12,000
CACWD Appropriative Water Rights	Unused CACWD Rights[2] (Currently at Approximately M&I **24 TAF** initially to **10 TAF** at build-out)	20,000	10,000	10,000	10,000
Reclamation – New Melones Interim Water Contract and Section 215 "Spill" Water	Total Contract 75 TAF (M&I **40 TAF**) (Ag & Recharge 20 TAF) (Losses 15 TAF)	Not Available in Dry Years			
SSJID Transfer - Stanislaus River	(Interim M&I **15 TAF**)	4,000	4,000	0	0
OID Transfer - Stanislaus River (includes contract renewal to 2025)	(Interim M&I **15 TAF**)	4,000	4,000	4,000	0
Future Appropriative Water Rights on the Calaveras River	(Not Yet Determined, Assumed to be M&I **50 TAF** in Wet and Above Normal years Only)	Not Available in Dry Years			
Total	**(Firm M&I 104.1 TAF initially to 94.1 TAF at build-out)** **(Approximate Max Future M&I 180 TAF)**	**48,000**	**30,000**	**26,000**	**22,000**

Notes:
1. SEWD has a right to 56.5 percent of the yield, and CACWD has rights to the remaining 43.5 percent. CACWD currently uses approximately 3,500 ac-ft of its allocation, and use of their appropriative water rights is 13,000 ac-ft.
2. Based on an agreement between CACWD and SEWD, SEWD currently has use of the unused portion of CACWD's appropriative water rights that yields approximately 24TAF.

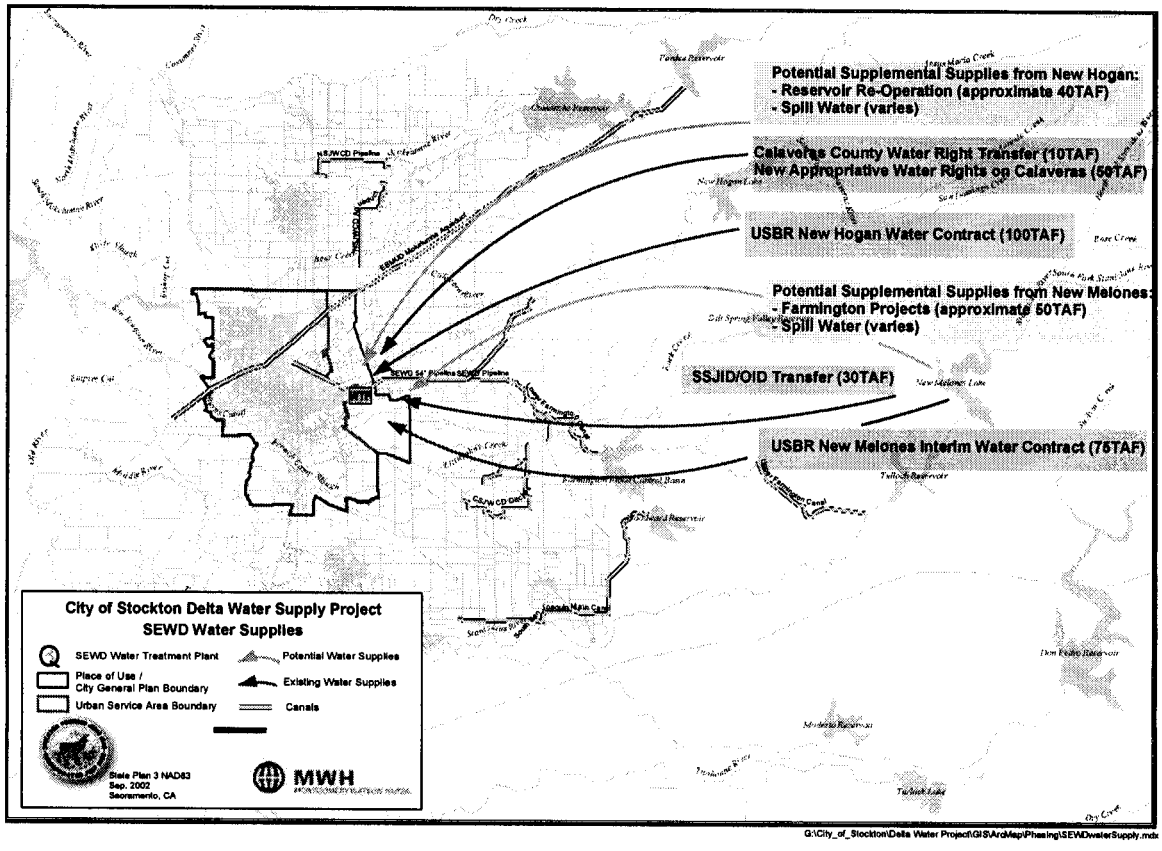
Calaveras River Contracts

The Reclamation contract for water stored in New Hogan Reservoir is a settlement contract that provides a firm supply of water in all hydrologic year types. The maximum amount available for M&I is approximately 40.171 TAF. The CACWD contract is also firm due to the contract being senior to most other water contracts on the river. However, as development continues in Calaveras County, less of the CACWD water will be available to SEWD and its customers. This contract currently yields 24 TAF and will ultimately be decreased to 10 TAF at build-out.

Stanislaus River Contracts

In 1983, SEWD contracted with the USBR for 75,000 acre-feet of surface water supply from the New Melones Project on the Stanislaus River to be delivered at Goodwin Dam. In 1987, SEWD agreed to provide a minimum of 20,000 acre-feet of treated water per year to the COS Place of Use in accordance with the contract entitled, "Second Amended Contract Among the Stockton East Water

Figure 9. SEWD Existing, Future, and Potential Surface Water Right



District, The California Water Service Company, The City of Stockton, The Lincoln Village Maintenance District, and The Colonial Heights Maintenance

District Providing For The Sale of Treated Water." For the coming year, this agreement allocates the quantity of treated surface water from the SEWD WTP that each urban water contractor (COS, Cal Water and the County) is to receive based on its percentage of total water used in the Stockton Metropolitan area during the previous year. In 2004-2005, SEWD WTP production was allocated as follows: COS – 49.75%, Cal Water – 46.72% and County – 3.53%. Because of COS' much more rapid growth in population and hence water demand during the past five years, its percentage of SEWD WTP output has increased by 6.9% from 2000 – 2001 while Cal Water's has declined by 7.0 % during the same period. The County's share has increased slightly from 3.41% to 3.53% during the same five-year period.

In 1994, SEWD completed construction of the Farmington Canal Project, connecting Goodwin Dam to SEWD's WTP expanding its raw water capacity. This provided access to SEWD's New Melones CVP Project Supply. However, in the mid 1990's implementation of the Central Valley Project Improvement Act (CVPIA) (P.L. 102-575) and other regulatory actions substantially reduced the volumes of water SEWD could expect to be delivered under its New Melones Project contract, especially in dry years.

Also included on the Stanislaus River are two interim contracts one from OID and the other from SSJID. SEWD and the urban water retailers have arrangements for interim water transfers from Oakdale Irrigation District (OID) and South San Joaquin Irrigation District (SSJID), which hold senior water rights on the Stanislaus River. The OID/SSJID water transfer contract includes an option to renew for a minimum of a ten-year period upon expiration in 2009, subject to mutually agreeable conditions. The OID/SSJID contract is currently for up to 30,000 AF/year, 15,000 AF/yr from each district. For the purposes of this WSE, it is assumed that mutually agreeable conditions will result in only one of the irrigation districts renewing to 2025. The projected variability of supply available to SEWD under the OID/SSJID contract is shown in **Table 4**.

Table 4. Availability of Water Under the OID/SSJID Interim Water Contract

Percentage of Years	Volume Available Annually (AF/year)	
	Prior to 2009	After 2009
85%	30,000	15,000
9%	12,500	6,250
6%	8,000	4,000

Existing Groundwater Supplies

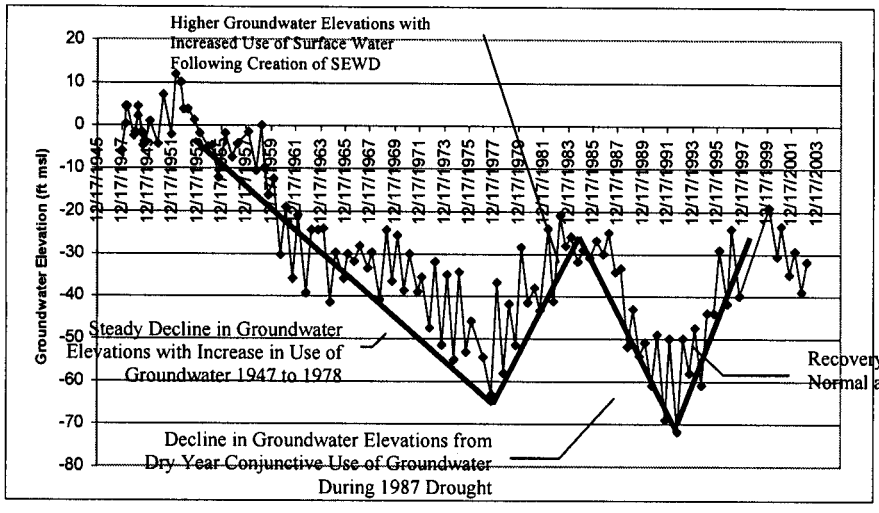
The urban water retailers currently exercise (and will continue to exercise) their rights as overlying groundwater appropriators to extract groundwater from the groundwater basin underlying COSMA for delivery to its customers. Groundwater is an extremely important resource for the urban water retailers and can be managed for long term sustainability and use through conjunctive use with the surface water supplies described above.

Conjunctive use implies that groundwater will be preserved as the last source of supply that is used if surface water supplies are insufficient to meet demands. Careful planning and study has taken place to insure that groundwater extraction yields, on average, do not pose any risk of salinity intrusion or undue risk to private domestic or agricultural wells in the City of Stockton area. In wet years, when surface water is more plentiful, the groundwater basin is allowed to recover through in-lieu recharge (i.e., allowing natural recharge to occur from streams and rivers and not pumping), and in the dry years, groundwater is extracted to meet the shortfall of surface water supplies in meeting M&I water demands. This WSE recognizes the need to protect this resource that is already threatened by salinity intrusion, and to provide a plan to protect the groundwater resources indefinitely. Groundwater use within the broader San Joaquin County region has resulted in a decline of groundwater elevations over the period from 1947 to 2004 as indicated by the three hydrographs shown in **Figure 10.** The figure illustrates groundwater elevations at wells located within and adjacent to the City (see **Figure 11** for well locations and recent groundwater elevations). The short duration fluctuations in **Figure 10** result from the seasonal wet and dry months and irrigation usage within each year. An overall decline in groundwater elevations from 1947 to 1978 is the result of agriculture and urban areas relying entirely on groundwater supplies.

Figure 10. Groundwater Elevation Hydrographs for Areas Near the City of Stockton

(See Figure 11 for Hydrograph locations)

a) Well 1 (State Well ID No. 02N06E26H001M) Hydrograph from 1947 to 2003

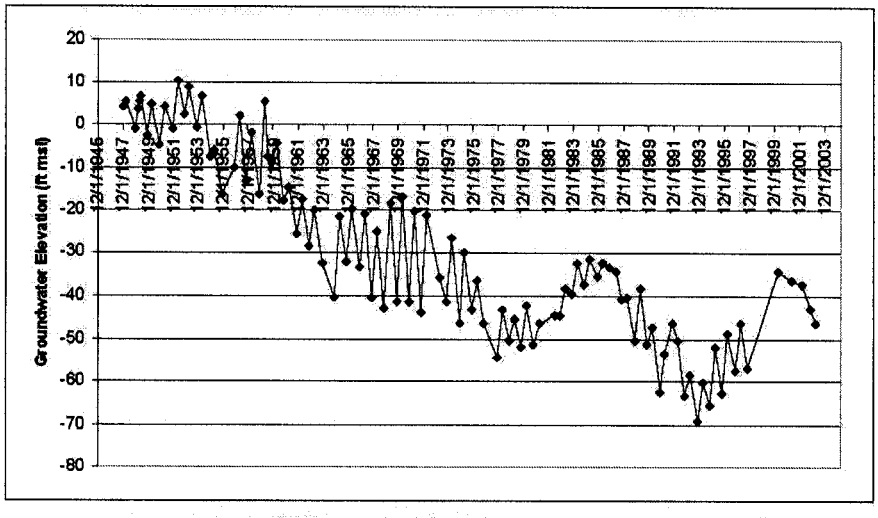


Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

In the late 1970's, SEWD began to provide supplemental supplies of surface water to the Stockton urban water retailers. The use of surface water in the COSMA resulted in an increase in groundwater elevations as shown in the hydrographs in **Figure 10**. Increases in the elevation continued until the drought of the late 1980's and early 1990s. The behavior of the groundwater basin during the drought and subsequent normal year hydrology of the late 1990's indicate that the basin is recovering and is stabilized and operating within a manageable range. The recent stabilization and improvement in groundwater elevations is the result of wet hydrology, active recharge projects, and increased surface water deliveries in areas historically served by groundwater.

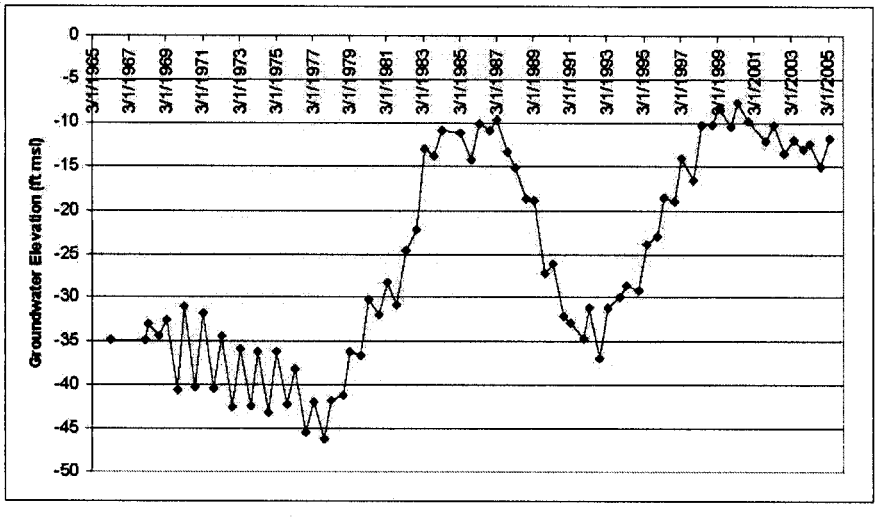
Over the period from 1947 to present, the change in slope of the groundwater surface in western San Joaquin County has created a condition that has allowed saline water to migrate east-northeast into a portion of the COSMA, degrading water quality and rendering it unsuitable for municipal or agricultural use in some areas.

b) Well 2 (State Well ID No. 02N07E15C001M) Hydrograph from 1947 to 2003



Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

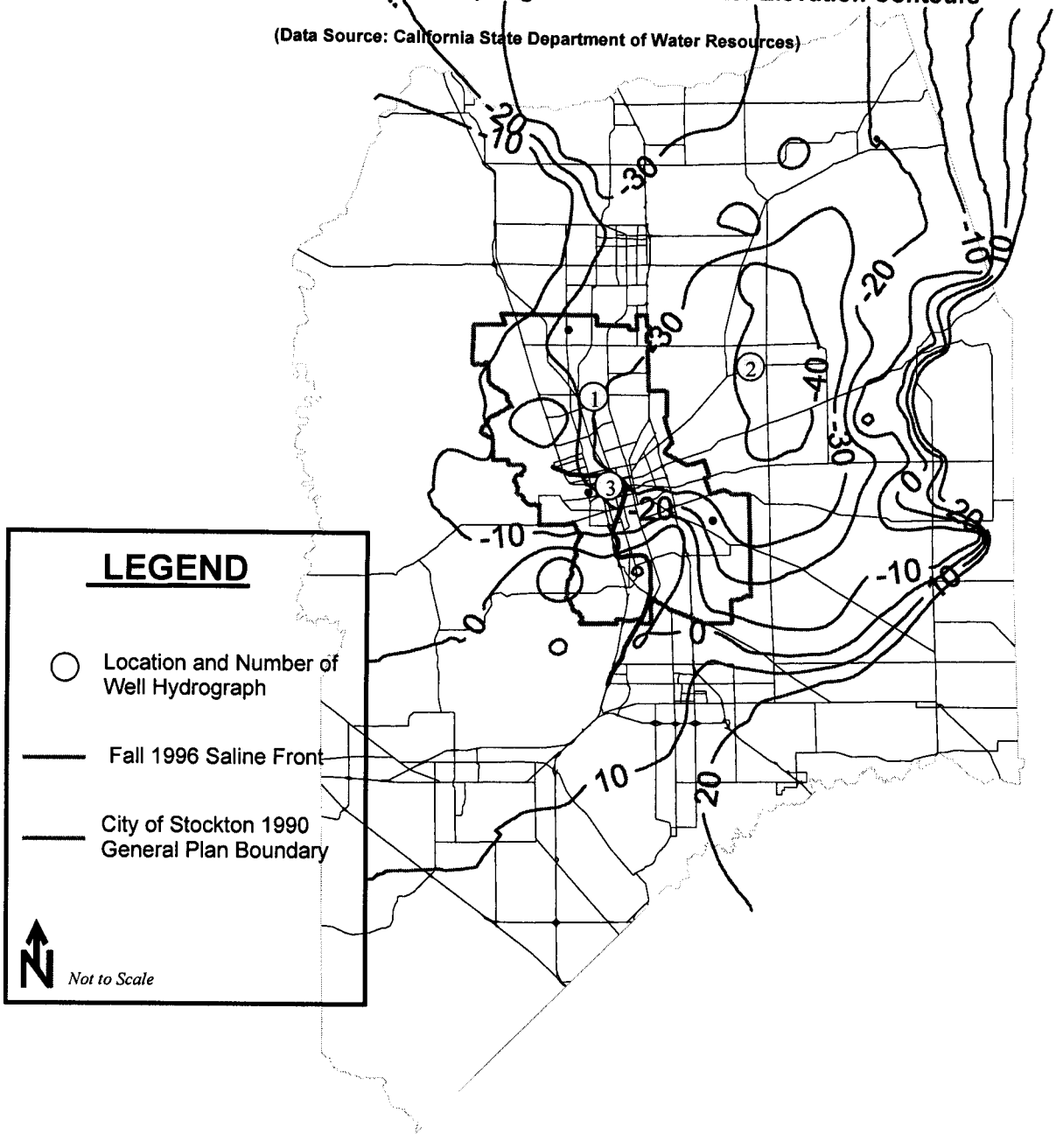
c) Well 3 (State Well ID No. 01N06E03K001M) Hydrograph from 1947 to 2005



Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

Figure 11. COSMA Spring 2004 Groundwater Elevation Contours

(Data Source: California State Department of Water Resources)



The sustainable yield of the groundwater basin is based on changes in the rate of movement of the salinity front. Over the years, there have been various estimates of the sustainable long-term yield from the groundwater aquifer. The February 1992 Supplemental Report for Water Supply prepared for the COS Special Planning Area Study states:

" *about 40,000 acres and an average withdrawal of 0.75 AF/ac/year. ...groundwater can provide from 0.75 to 1.0 AF/ac/year on a long term basis.*"

Other references to sustainable groundwater yield are included in the COS 1995 Urban Water Management Plan Update, which uses a long term firm yield of 1.0 AF/ac/year, and from the North Stockton Master Plan in which 0.75 AF/ac/year is used. A principal objective of the COSMA urban water retailers is to reduce groundwater overdraft and protect the groundwater basin from further saltwater intrusion and water quality degradation. Thus, it is appropriate to use a reasonable but conservative assumption for groundwater extraction in the urban water retailer's long term water supply planning to insure that the long-term program is protective of the groundwater resources.

Existing Water Supply System Capacity

As shown in **Figure 1**, the City is separated into three distinct service areas. These service areas or water systems are described below and are based on 2004 conditions.

California Water Service Company System. The Cal Water service area is comprised of the older downtown portions of the City and makes up the middle one-third of the Planning Area. The existing distribution network is reflective of a groundwater-only system where multiple well sources have reduced the need for large transmission facilities. A single backbone transmission main originating from the east side of the Cal Water service area is used to convey treated surface water from the SEWD WTP. Cal Water currently has a maximum day demand of 64 mgd served by 58 wells, and 26.4 mgd of SEWD surface water capacity.

COSMUD North System. The COSMUD north system is bounded by Eight Mile Road on the North, the City Boundary on the east and west, and the large shipping channel and Cal Water Boundary on the south. Like Cal Water, the existing network is reflective of a groundwater-only system that has been upgraded with a series of backbone transmission mains to convey surface water from the SEWD WTP. The COSMUD north system currently has a maximum day demand of 39.8 mgd served by 23 wells, and 18.6 mgd of SEWD surface water capacity.

COSMUD South System. The COSMUD south system comprises the southern one-third of the Planning Area bounded by Cal Water on the north and the Urban Service Area Boundary on the east, west, and south. As of November 2005, the COSMUD south system had a maximum day demand of 9.5 mgd served by 6 wells. A pipeline project called the South Stockton Aqueduct was constructed in 2005 bringing treated surface water from the SEWD WTP to the COSMUD south system providing surface water capacity that could accommodate full build-out water demands of the service area. Currently and until operational experience is gained throughout the coming years, the amount of SEWD WTP capacity available to the system is uncertain and would likely require that less SEWD surface water be used by the COSMUD north system.

In addition to the three water systems above, there are small pockets within the COSMUD north system that are operated and maintained by San Joaquin County through the Lincoln and Colonial Hills Maintenance Districts. These service areas receive groundwater through wells located in both the maintenance districts and from the COSMUD north system. These areas also receive some surface water from SEWD conveyed through the COSMUD north system. The three water systems and their respective capacities of groundwater and surface water are provided in **Table 5** below. The total system capacity as of 2004 is approximately 160 mgd.

Table 5. Water System Capacity for Existing and Foreseeable Water Demands by Retail Water Service Provider

	Water System Capacity as of 2004 (mgd)			
	SEWD WTP	DWSP WTP	Groundwater	Total Supply
COSMUD North System	19		40	58
COSMUD South System	-		10	10
Cal-Water	26		64	90
County	-		2	2
Total	**45**	**-**	**115**	**160**

Notes:
1.) County service areas do receive surface water and groundwater wholesaled and wheeled by either COSMUD or Cal-Water. The amount of groundwater capacity shown is what is believed to exist within their service area. This number has not been confirmed with the County.

The total existing 2004 water demand is approximately 93 mgd (68,714 AF/year of existing demand converted to maximum day demand in mgd). The apparent oversizing of water facility capacity is due to much of the COS depending on groundwater prior to the SEWD WTP and more currently the need to operate the water system based on a conjunctive management program that accounts for dry year curtailments in surface water supplies treated at the SEWD WTP.

On-going Conjunctive Management Program

This section describes how the water supply sources in the COSMA are currently being operated in conjunction with each other to meet its demands. This

analysis includes modeling a complete conjunctive management program using all of the existing COSMA water supplies and applying those supplies against existing and reasonably foreseeable water demands.

For purposes of this WSE, reasonably foreseeable is defined as existing water demands plus all new development demands that have either been approved or have a completed Water Supply Assessment on file. The total existing water demand is calculated to be **77,965** AF/year as shown in **Table 6**. This table includes existing development, development under construction, approved tentative maps, and planning applications with completed WSAs on file with COSMUD. The analysis addresses the question of whether existing supplies can meet existing demands over the next 30 years. Especially, it addresses the concern if groundwater can sustain existing demands if curtailments in surface water occur in the dry years. Under existing conditions, groundwater extractions are targeted to not go above the long-term operational yield of the basin (0.75 acre-ft/acre/year).

Table 6. Existing, Approved Development and Proposed Projects Acreages and Water Demands

	Development	Existing, Approved Development and Proposed Projects Acreage	Water Demand (AF/year)
Existing	Existing Development[1]	46,300	68,810
Approved	Approved Development	1,613	2,581
Proposed Projects	Cannery Park	450	720
	Paradise Villages	683	1,093
	Origone Ranch	394	630
	North Stockton Phase III	237	379
	Bear Creek West	1,149	1,838
	Bear Creek East	318.17	509
	Tidewater Crossing	877.82	1,405
	Subtotal for Existing, Approved Development, and Proposed Projects	**5,722**	**9,155**
	Total COSMA	**52,022**	**77,965**

Notes: 1. Existing demands vary slightly from other references based on the value being normalized to hydrologic conditions considered for modeling purposes.

SEWD supplies and other groundwater facility supplies will meet average annual and maximum day municipal water demands. For this analysis, it is assumed that SEWD will maintain the current 50 mgd[4] surface WTP capacity until 2010. For modeling purposes, it is assumed that SEWD WTP capacity is expanded to

[4] The rated WTP capacity is based on the reliable output of the WTP under wet weather conditions with higher turbidity in the raw water supply. SEWD representatives have stated that the WTP can provide 64 mgd of maximum day output during the summer months if water supplies are available. For modeling purposes, the 50 mgd output is used.

60 mgd in 2016. CEQA environmental documentation will be needed for the SEWD WTP efficiency and upgrade work; however, it will most likely result in a negative declaration or a mitigated negative declaration due to all activities likely taking place within the existing WTP site. The financing of these improvements will be coordinated in a similar manner as the initial and on-going construction of SEWD capital facilities through state and federal grants, and contributions by COS rate payers.

The operation of the conjunctive use model assumes that water demand is met first by SEWD and lastly by groundwater. Additional enhancements to the design and operations of the SEWD WTP are assumed to minimize the impact of scheduled maintenance, and account for the impact of higher turbidity in the raw water supply especially in the wet months of the wet years.

Groundwater extraction capacity within the existing service area boundary is conservatively sized for a certain level of redundancy for service in critical years, to meet maximum day demands, and to meet fire flow requirements. In the event that surface water is curtailed by contract, especially in dry and critical years, groundwater will be a more significant portion of the urban water retailers' water supply. Under these conditions water demands will exceed available surface water treatment capacity output necessitating the on-going use of groundwater until normal levels of SEWD WTP production are restored.

The timing and amount of water assumed available from each SEWD source is based on conservative estimates of the reliable yield of each source and the probability of the various contracts being renewed (See **Figure 12** for 35 year projection of average surface water supplies and their sources).

The OID and SSJID are both renewable contracts. Negotiations for renewal can take place as late as 2009. It should be noted that in the DWSP EIR, the assumption for these contracts used 2009 as a conservative termination date for one of the two contracts and 2019 for the expiration date of the remaining contract. The change in this WSE to only one contract to 2025 is based on updated information and that one district, OID, in their draft Water Resources Plan, calls for long term transfer agreements (water sales) as a means to fund needed infrastructure improvements in their water delivery system.

After expiration of the OID contract water in 2025, it is assumed that additional and higher use of other SEWD supplies takes place because of a need for supply replacement and available capacity in the SEWD WTP. The supplies would come from the higher utilization of the New Hogan and New Melones CVP contracts. The New Hogan contract is assumed to be subject to CVP deficiencies which include shortages of up to 40 percent in critical years as well as provisions that make the New Melones CVP contract water available only in the wet years. Appropriative water rights on the Calaveras River are not assumed to be available in the existing scenario because the water right has not been obtained.

To simulate the variability of water supplies for differing hydrologic conditions, a 70 year historic model of hydrology was used to determine the adequacy of the sum total of water supplies in any given hydrologic year type. For instance, in dry years, surface water curtailments are considered, so groundwater and rationing are used to make up the difference. The objective is that over the 70 years, the groundwater use does not exceed the predefined sustainable yield of 0.75 AF/acre/year as described above. **Figure 13** shows the results at 2035 on how water demands are met from the above mentioned sources. This figure shows that, in even the driest historical hydrologic periods (say 1976 to 1978 or 1987 to 1992) there is sufficient water supply to meet existing water demands with 2035 surface water supply availability and use of groundwater.

Figure 14 shows the build-up of water demand as the top line, the safe sustainable yield as the dashed line and the modeled average yield as the bottom line. From this figure, it shows that during no time does the groundwater yield approach the safe sustainable yield of based on the 0.75 AF/ac/year.

Existing Water Supply Assessment

Given the reliability in surface water and the estimate of firm groundwater yield, the adequacy of water supplies can be evaluated for the existing condition and foreseeable projects. **Table 7** presents a comparison of normal, dry, and consecutive dry year supplies and demands based on a baseline year of 2004 for existing supplies and 2015 for foreseeable projects into the future. Water supplies and their availability are based on the forecasted conditions in 2035.

The average groundwater extraction yield over 70 years of historic hydrology at 2035 conditions is 30,394 AF/year. In dry years, slightly more groundwater is available to replace deficiencies in surface water as part of the existing conjunctive use program. The sustainable yield of groundwater is based on the amount of urban developed acreage. This developed area of 51,203 acres of existing and foreseeable acreage results in a maximum long-term average groundwater extraction rate of 40,609 AF/year based on the 0.75 AF/ac/year factor.

Table 7 presents the various water supply sources, the retail water providers and the two levels of water demand, existing and foreseeable. The table indicates that, over the 70-year period, average water supplies in 2035 meet existing water demands without exceeding the sustainable groundwater yield.

Figure 12. Projected Average Surface Water Contract Use from 2000 to 2035 Based on Existing Supplies and Water Demands

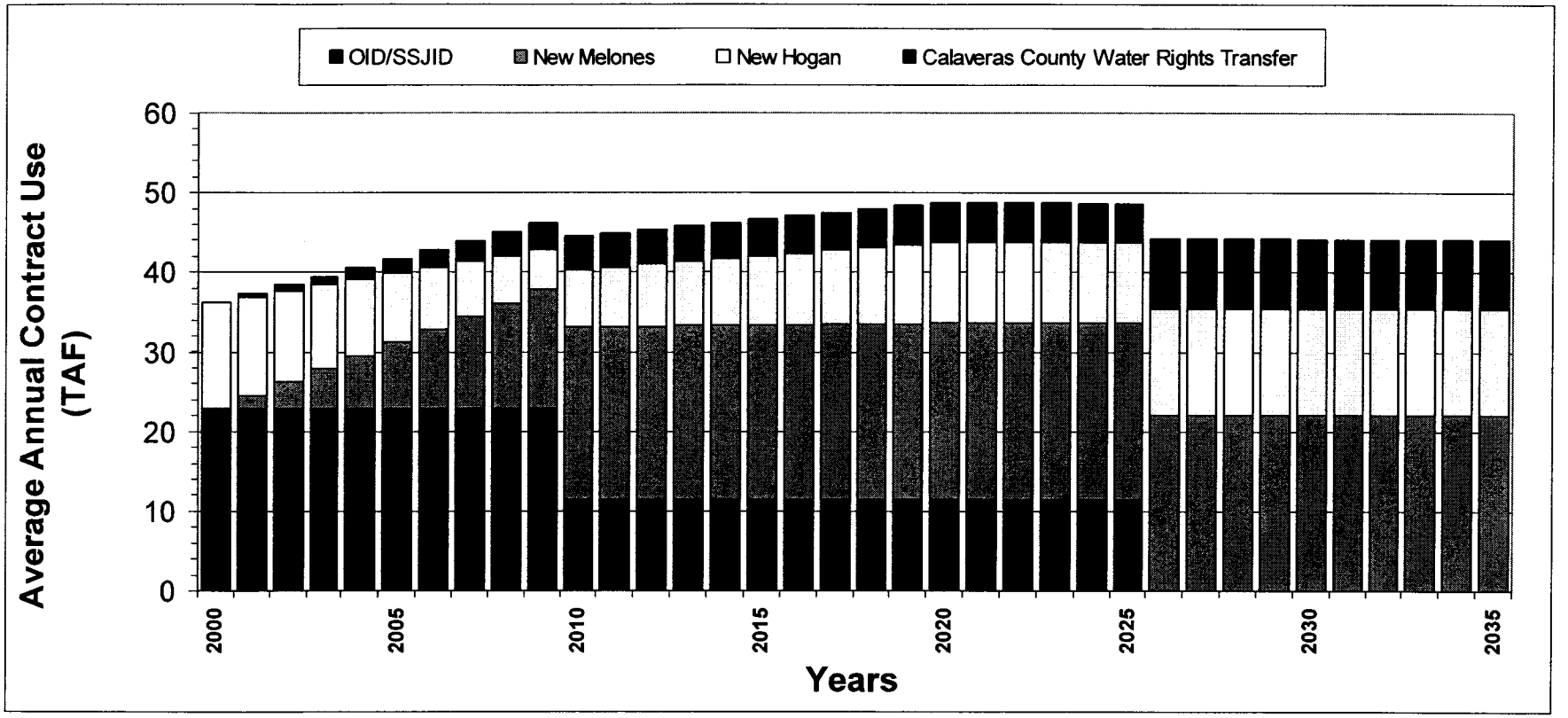


Figure 13. 70-year Historic Hydrologic Period Using Existing and Foreseeable Water Demands and Existing Water Supply Conditions

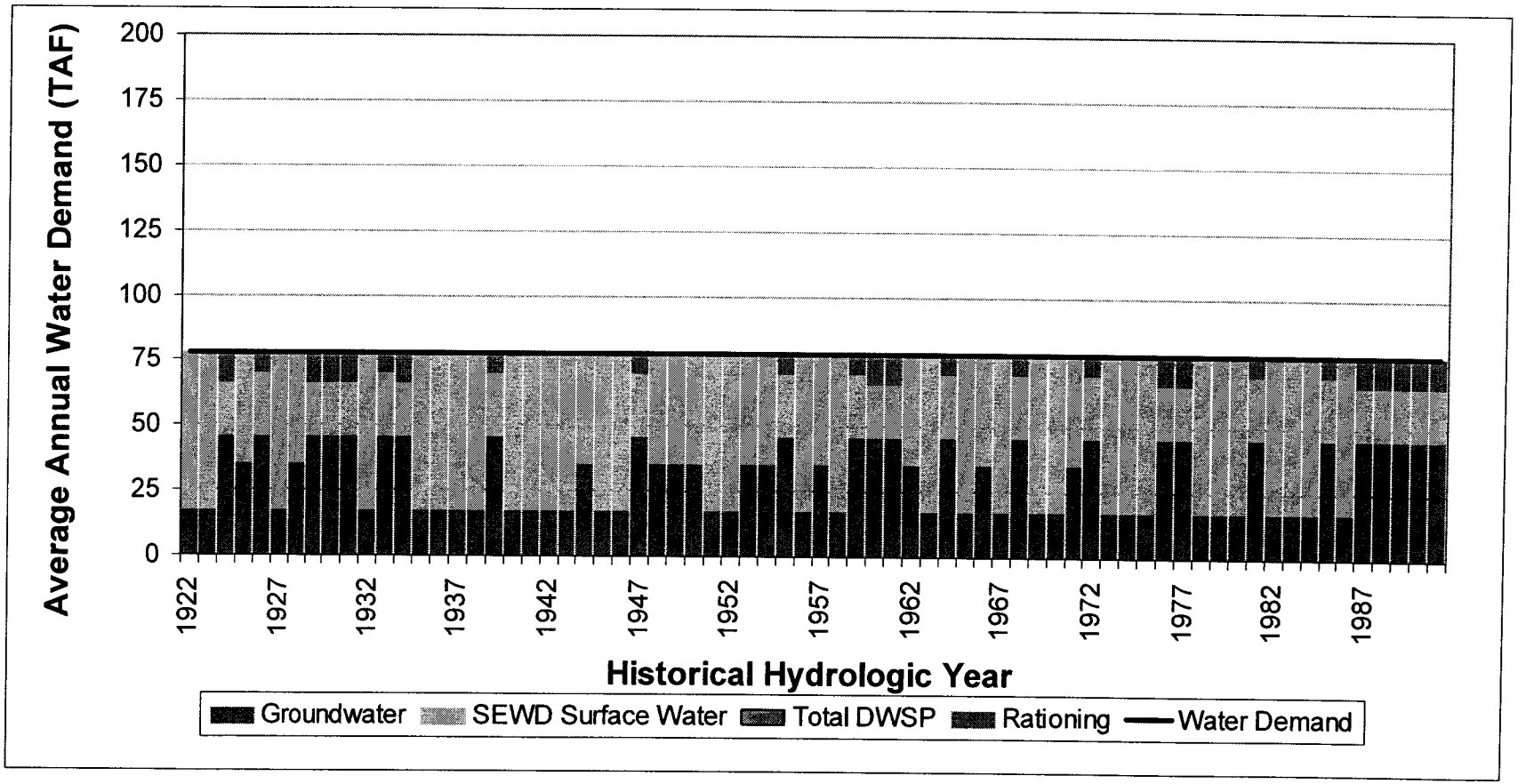


Figure 14. Average Groundwater Use vs. Existing Demand From 2000 to 2035 Using Average 0.75 AF/ac/year Groundwater Sustainable Yield

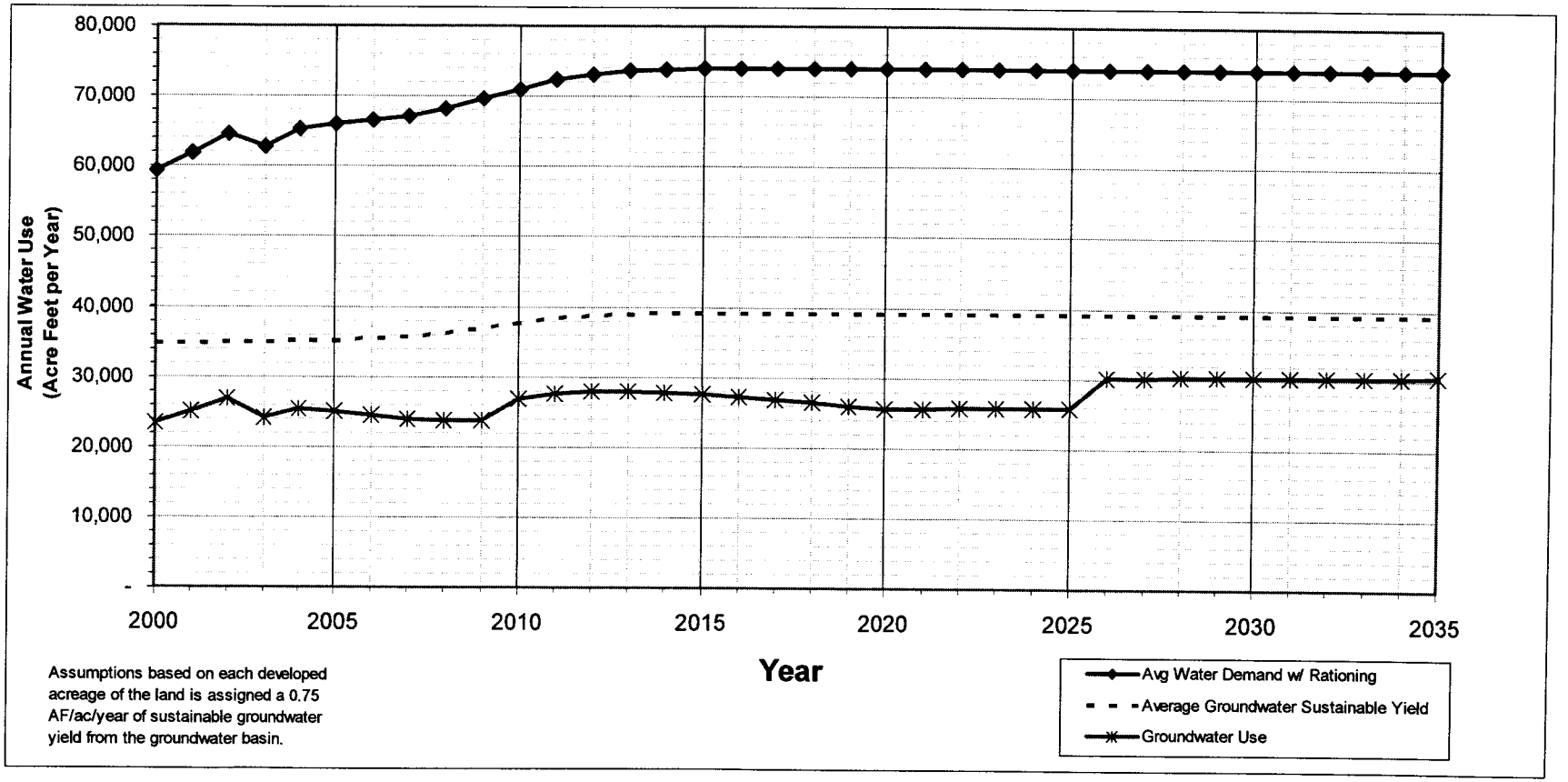


Table 7. Existing (2004) and Foreseeable Water Supplies and Demands for the COSMA by Retail Service Provider

Year Type		Demand Reduction	Existing (2004) (See Note 1)			Foreseeable (See Table 6 and Note 4, 5)			Total Existing (2004) and Foreseeable			Existing (2004) and Foreseeable Demands
			Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	(AF/year)
Normal (See Note 3)	COSMUD	0%	19,426	15,124	34,550	19,952	(11,488)	8,464	39,378	3,636	43,014	43,014
	Cal-Water		18,247	13,823	32,070	1,853	(1,067)	786	20,101	12,756	32,856	32,856
	County		1,378	716	2,094	-	-	-	1,378	716	2,094	2,094
	Total		**39,052**	**29,663**	**68,715**	**21,805**	**(12,555)**	**9,250**	**60,857**	**17,108**	**77,965**	**77,965**
Single Dry (See Note 4)	COSMUD	15%	16,512	12,855	29,368	(11,474)	18,668	7,194	5,038	31,524	36,562	36,562
	Cal-Water		15,510	11,749	27,260	(1,066)	1,734	668	14,444	13,484	27,928	27,928
	County		1,171	609	1,780	-	-	-	1,171	609	1,780	1,780
	Total		**33,194**	**25,213**	**58,407**	**(12,540)**	**20,403**	**7,863**	**20,654**	**45,616**	**66,270**	**66,270**
Multiple Dry (Hypothetical 3-year Drought Period into the Future(using 1977 to 1980 Drought Sequence))	COSMUD	0% (1st Year)	19,426	15,124	34,550	19,952	(11,488)	8,464	39,378	3,636	43,014	43,014
	Cal-Water		18,247	13,823	32,070	1,853	(1,067)	786	20,101	12,756	32,856	32,856
	County		1,378	716	2,094	-	-	-	1,378	716	2,094	2,094
	Total		**39,052**	**29,663**	**68,715**	**21,805**	**(12,555)**	**9,250**	**60,857**	**17,108**	**77,965**	**77,965**
	COSMUD	10% (2nd Year)	17,484	13,612	31,095	(13,261)	17,311	4,051	4,223	30,923	35,146	35,146
	Cal-Water		16,423	12,441	28,863	(1,232)	1,608	376	15,191	14,049	29,239	29,239
	County		1,240	644	1,885	-	-	-	1,240	644	1,885	1,885
	Total		**35,146**	**26,697**	**61,843**	**(14,493)**	**18,919**	**4,427**	**20,654**	**45,616**	**66,270**	**66,270**
	COSMUD	10% (3rd Year)	17,484	13,612	31,095	(13,261)	17,311	4,051	4,223	30,923	35,146	35,146
	Cal-Water		16,423	12,441	28,863	(1,232)	1,608	376	15,191	14,049	29,239	29,239
	County		1,240	644	1,885	-	-	-	1,240	644	1,885	1,885
	Total		**35,146**	**26,697**	**61,843**	**(14,493)**	**18,919**	**4,427**	**20,654**	**45,616**	**66,270**	**66,270**
Average over 70-Years	COSMUD	5%	19,426	15,124	34,550	4,534	669	5,203	23,960	15,793	39,753	39,753
	Cal-Water		18,247	13,823	32,070	421	62	483	18,668	13,885	32,553	32,553
	County		1,378	716	2,094	-	-	-	1,378	716	2,094	2,094
	Total		**39,052**	**29,663**	**68,715**	**4,955**	**731**	**5,686**	**44,007**	**30,394**	**74,400**	**74,400**

Reference: City of Stockton Urban Water Management Plan 2000 Update, December 2000

Notes:
1.) Existing is actual 2004 calendar year usage of surface water and groundwater. The assumption is that 2004 depicts a normal year hydrologic and water supply availability condition.
2.) Dry year surface water amounts assume SEWD's New Hogan Central Valley Project water with deficiencies, and Oakdale Irrigation District and South San Joaquin Irrigation District deficiencies as stipulated in the contract for these water supplies.
3.) Normal year surface water deliveries are restricted to the projected availability of SEWD conveyance and treatment plant capacity (not to exceed 60 mgd).
4.) Foreseeable includes all projects that have been approved or have a WSA as of the date of this WSE.
5.) Negative values imply a decrease in the amount of surface water or groundwater based on the use of both supplies in 2004.

Table 7 presents the average annual quantities of surface water and groundwater to make a positive determination of water supply availability. The facility capacity verification is needed to compare water supplies with their respective water facilities (e.g., can SEWD WTP deliver the volume of SEWD surface water and can it meet maximum month demand conditions in conjunction with groundwater?). This check is made based on maximum month demands or a multiplier of 1.51 times the average annual water demand. This verification is made in **Table 8.** The "Needed Capacity" is based on the maximum volume of surface water or groundwater converted to an equivalent maximum month demand shown in the given scenarios of hydrologic conditions shown in **Table 7**. This table shows insufficient SEWD water facility capacity for COSMUD but excess groundwater capacity makes up the difference so actual capacity exceeds needed capacity. Cal-Water and the County both have sufficient supply capacity to provide for existing and foreseeable water demands.

Table 8. Verification of Maximum Month Water Facility Capacity by Water Retail Service Provider

	SEWD WTP (mgd)		DWSP WTP (mgd)		Total Surface Water (mgd)		Groundwater (mgd)		Total Water Facility Capacity (mgd)	
	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity
COSMUD	26.7	16.2	-	-	26.7	16.2	22.7	49.3	**49.4**	**65.5**
Cal-Water	26.9	26.9	-	-	26.9	26.9	15.2	64.0	**42.0**	**90.9**
County	1.9	1.9	-	-	1.9	1.9	1.9	2.0	**3.8**	**3.9**
Total	55.5	45.0	-	-	55.5	45.0	39.8	115.3	**95.3**	**160.3**

Notes:
1.) The actual capacities shown are based on 2004 conditions.
2.) SEWD WTP capacity assumes that surface water is used first and continuously throughout the year and has a maximum month peaking factor of 1.27; whereas groundwater is used for primarily for peaking and has a maximum month peaking factor of 1.43. The combined maximum month peaking factor is 1.80.

Section 10910(d)(2)(B)

This subsection requires a copy of the capital outlay program for financing the delivery of the identified water supply to the GP Update area. The financial program for development of surface and groundwater supplies in the COSMA has been done at a planning level with the DWSP Feasibility Report. This work included both existing and future capital outlays including the DWSP.

Currently, the three COSMA urban water retailers finance their respective capital costs for new and replacement facilities. Groundwater is provided by each water retailer to its respective service area. Surface water is purchased by COSMUD,

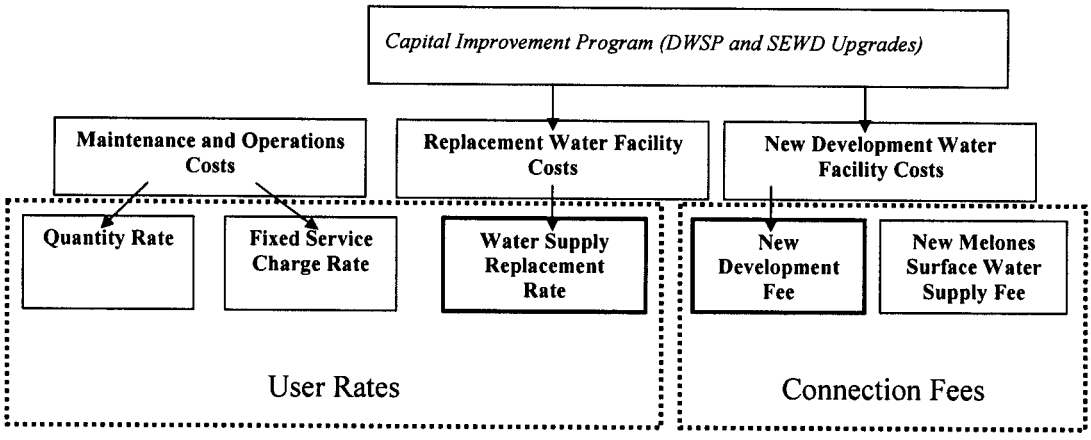
Cal Water and the County from SEWD. User fees and connection fees pay for each purveyor's water facilities and for each urban contractor's portion of SEWD facilities, water supply and services.

Cal Water and COSMUD rates are similar with both at approximately $29 per month based on two-thirds of an acre foot per year for a single family home. This analysis assumes that a uniform rate and connection fee are applied over the entire service area to provide for the needed capital improvements.

The current rate structure for COSMUD (see **Figure 15**) assumes that maintenance and operations costs are recovered from revenues generated from quantity and fixed service charge rates. Since replacement water supplies benefit existing customers, an additional fixed water supply replacement rate component is added to pay for facilities needed to replace lost supplies. Since new growth customers will also be paying this component, they will share in the replacement water supply costs. Costs of capacity constructed for new development is borne entirely by new growth through a development fee.

Rate studies completed for the DWSP indicate that the construction of the Phase 1 portion of the DWSP will be achieved through debt financing using a combination of user rates and development fees for debt recovery. The COS is also pursuing various federal and state grants to assist in offsetting the cost to existing rate payers. The financial program is not dependent on obtaining those grants.

Figure 15. Conceptual Rate Design of Water Retailers (COSMUD Model)



Section 10910(d)(2)(C)

This subsection requires identification of any federal, state, and local permits required for construction of the facilities identified for delivering the water supply to the project.

Any new wells for the GP Update will be added to each of the water purveyor's California Department of Health Services (DHS) permit to serve potable water supplies. The design of those facilities will require coordination with DHS. No other regulatory approvals are anticipated for meeting existing demands.

Section 10910(d)(2)(D)

This subsection requires identification of any regulatory approvals required for delivery of the water supply to the project.

The groundwater and surface water facilities to serve the areas of the GP Update not currently developed will be added to the DHS permit to serve potable water supplies in each of the urban water retailers' service areas. The design of those facilities will require coordination with DHS. No other regulatory approvals are anticipated.

Section 10910(e) states:

"If no water has been received in prior years by the public water system,..., under the existing water supply entitlements, water rights, or water service contracts [identified to serve the proposed project], the public water system, ... , shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, ... , has identified as a source of water supply within its water supply assessments."

The intent of this section is to identify any potential conflicts that may arise from the exercise of an existing water supply entitlement, water right, or water service contract to serve a proposed project if such water supply entitlement, water right, or water service contract has not been previously exercised.

Use of Groundwater:
The water demands of the COSMA will be met in part with groundwater. The COSMA urban water retail purveyors have previously exercised their rights as groundwater appropriators to serve the water demands of their customers and will continue to exercise those rights to provide treated water supplies.

Use of Surface Water:
The surface water supplies associated with the conjunctive use program fall into three categories: 1) water supplies derived from the CVP, 2) interim water supply contracts, 3) surplus supplies available on an intermittent basis.

The parties that could most directly be affected by exercise of these water rights are CVP contractors, State Water Project (SWP) contractors, water rights holders subject to Term 91 conditions, and riparian diverters downstream of the points of diversion for each contract.

Section 10910(f)
The water demands of the project will be met partially with groundwater. Consequently, Section 10910(f) requires specific additional information.

Section 10910(f)(1)
Section 10910(f)(1) requires a review of groundwater data contained in the UWMP.

The COSMUD December 2005 UWMP does identify past volumes of groundwater extracted by the COSMA urban water retailers. A graph of historical surface water and groundwater supplies from 1994 to 2005 is provided in Figure 6. The Cal Water September 2003 UWMP provides data on groundwater use from 1980 to 2002.

Section 10910(f)(2)
Section 10910(f)(2) requires a description of the groundwater basin and the efforts being taken to prevent long-term overdraft.

The groundwater basin underlying San Joaquin County is part of the contiguous Central Valley aquifer system, which supplies groundwater to agricultural, domestic, and industrial water users from Redding to Bakersfield. The basin consists of Pre-Tertiary igneous and metamorphic rocks of the Sierra Nevada that continue west beneath the valley floor. Marine sediments, thousands of feet thick, overlie the basement rocks. Continental deposits overlie the marine rocks and act as the primary freshwater aquifer in the study area. In local areas, fresh

water may be present in both marine and continental deposits, and saline water may be found in continental deposits.

DWR Bulletin 146 identifies the usable aquifer in the eastern portion of San Joaquin County as the continental deposits of Miocene and younger age. The usable aquifer is present within the boundaries of the county in distinct geologic formations that include the Mehrten Formation, the Laguna Formation, the Victor Formation, flood basin deposits, and alluvial fan and stream channel deposits. The thickness of the usable aquifer ranges from less than 100 feet in the eastern edge of the county to over 3,000 feet in the southwestern edge, and is approximately 1000 feet beneath Stockton.

Groundwater in the San Joaquin County area moves from sources of recharge to areas of discharge. Most recharge to the aquifer system occurs from the Delta and along active stream channels where extensive sand and gravel deposits exist. Consequently, the highest groundwater elevations typically occur near the Delta, the Stanislaus River, and the San Joaquin River. Other sources of recharge within the project area include subsurface recharge from fractured geologic formations to the east, as well as deep percolation from applied surface water and precipitation.

Municipal and agricultural uses of groundwater within San Joaquin County contribute to an overall average yield of groundwater estimated to be 867,000 AF/Y. Historically, groundwater elevations have declined from 40 to 60 feet. As a result, a regional cone of depression has formed in Eastern San Joaquin County creating a gradient that allows saline water underlying the Delta region to migrate northeast within the southern portions of the City. Groundwater underlying the City generally flows to the east due to the regional cone of depression.

In the past, the groundwater basin underlying San Joaquin County has been classified by DWR as being in overdraft, especially in the northeastern portion of the County. The COSMA, however, has been instrumental through its voluntary participation in funding the existing conjunctive use program for the portion of the basin underlying the COSMA that groundwater elevations have stabilized and no significant declines have been recorded since the late 1980's.

In addition to its historical contributions, the COSMA's long-term plan for preventing overdraft of the groundwater basin are embedded in the objectives of the proposed future DWSP to insure systematic, incremental implementation of the on-going conjunctive use program to provide a benefit to the groundwater basin. This benefit extends beyond the political boundaries of the COS.

Section 10910(f)(3)

Section 10910(f)(3) requires a description of the volume and geographic distribution of groundwater extractions from the basin for the last five years.

Data for municipal and industrial groundwater usage have been collected and are shown in **Figure 6, Figure 7** and **Figure 8**. The distribution of groundwater pumping is shown in **Figure 16** where existing well locations are shown. Historical groundwater demands and location of agriculture and private wells have not been identified, measured, and collated.

Section 10910(f)(4)

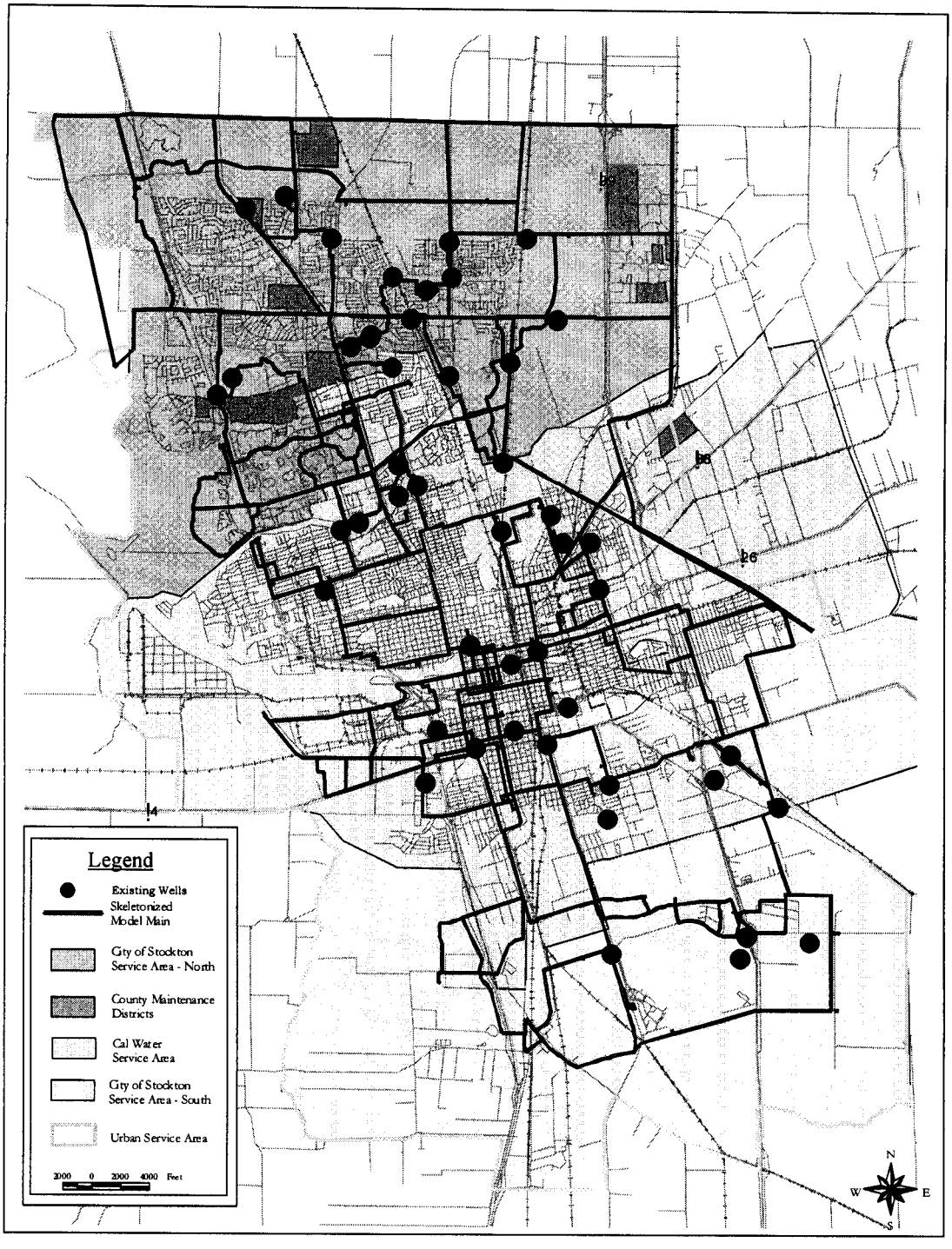
Section 10910(f)(4) requires a description of the projected volume and geographic distribution of groundwater extractions from the basin. For the existing supplies, this is presented in Section **10910(d)(1)** above and volume and location of groundwater wells are represented in **Figure 6** and **Figure 16**, respectively.

Section 10910(f)(5)

Section 10910(f)(5) requires an analysis of the sufficiency of the groundwater basin to meet the demands associated with the project.

This is presented in Section **10910(d)(1)** above and starting on **Page 18** under the heading of "Existing Groundwater Supplies".

Figure 16. Existing COSMA Well Locations



If Existing Water Supplies are Insufficient to Meet Project Demands [Section 10911(a)]

Section 10911(a)

Section 10911(a) requires that if existing water supplies are insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies. In describing the plans, Section 10911(a) states

"*...the public water system shall provide to the city or county its plans for acquiring additional water supplies setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:*

(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.

(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.

(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional water supplies.

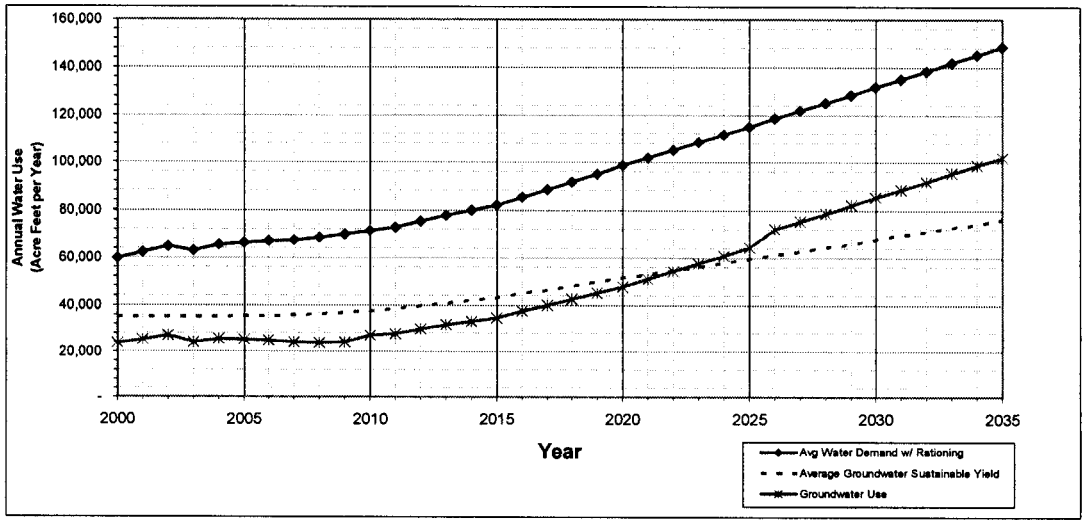
(b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.

(c) The city or county may include in any environmental document an evaluation of any information included in that environmental document provided pursuant to subdivision (b). The city or county shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If the city or county determines that water supplies will not be sufficient, the city or county shall include that determination in its findings for the project.

How Will GP Update Demands be Met?

When the GP Update demands are added to the existing water supply condition model, it becomes obvious as shown in **Figure 17** that existing supplies are inadequate to meet the expected water demand from the GP Update of **156,083** AF/year (equates to an average of **146,945** AF/year with mandatory rationing as explained in Summary of Conjunctive Use Model Findings Section on **Page 51**) at build-out without exceeding the sustainable groundwater yield. The increase in sustainable yield shown in **Figure 17** is a result of the increase in developed acreage; however, starting in year 2025, the need for groundwater exceeds sustainable yield. This finding makes it necessary to show some future supply source other than groundwater becoming available prior to 2025. The planned future water supply sources and future conjunctive use program is described in detail below. The significant underlying assumption is that under this WSE both the SEWD WTP and the DWSP WTP will be available for treatment of the various surface water entitlements by 2010.

Figure 17. Average Groundwater Use vs. GP Update Demand From 2000 to 2035 Using 0.75 AF/ac/year Groundwater Sustainable Yield and Existing Water Supplies



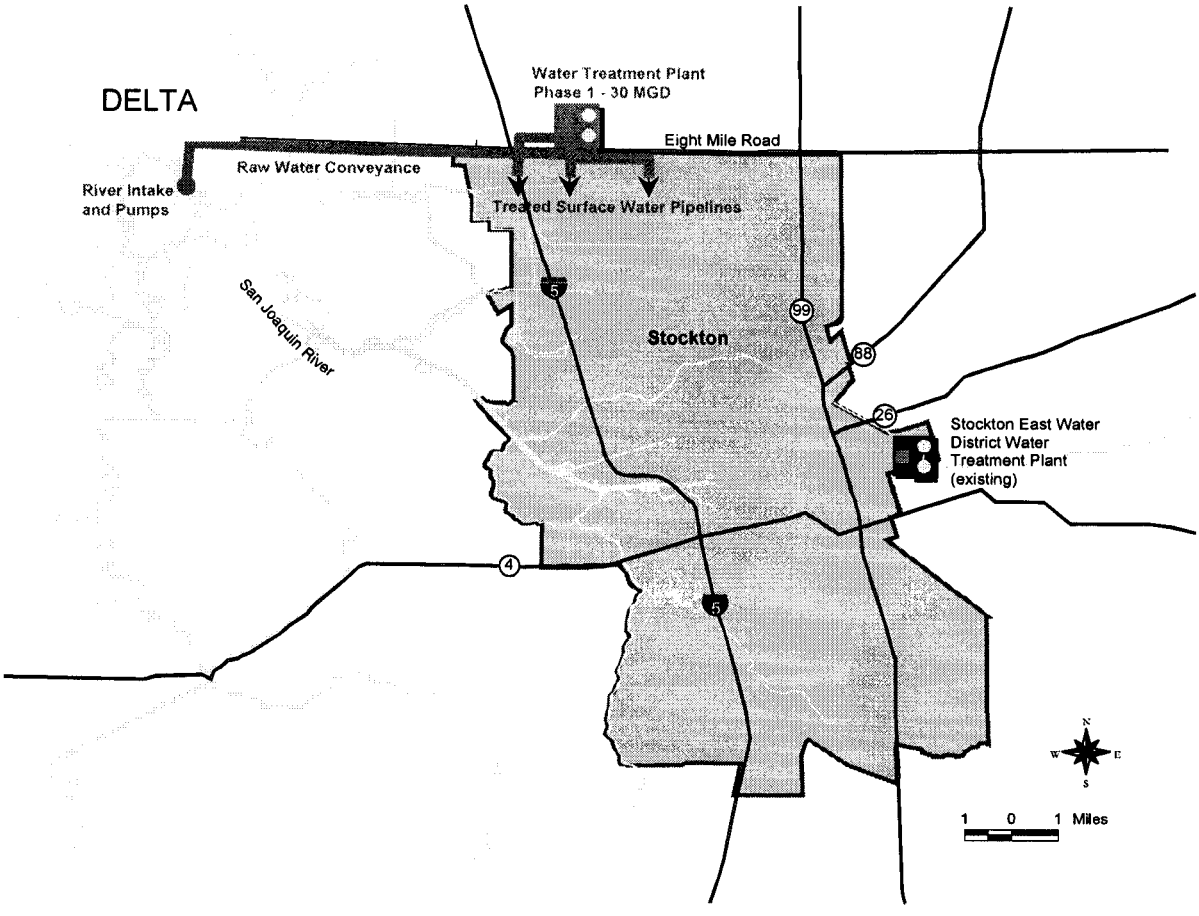
Implementation of the DWSP

Implementation of the DWSP will require a large diversion structure in the Delta and large raw and treated water conveyance facilities (surface water pipelines) to

convey water to the DWSP WTP and then to the distribution systems of the urban water retailers and ultimately to the retail customer. The size and location of the large surface water pipelines are based on serving the area defined by the Urban Service Area of the 1990 General Plan and beyond in terms of water demand. The size and location of the DWSP surface water pipelines are based on the ability to use as much of the existing treated water conveyance capacity as possible.

Figure 18 depicts the approximate location of the preferred DWSP site with the pipelines needed for the first 30 mgd phase and the existing location of the SEWD WTP. In order to achieve the required level of service, additional connections between the Cal Water and COSMUD north and south water systems will be made to move surface water from both SEWD and the DWSP WTPs among the three retail service areas.

Figure 18. COSMA DWSP and SEWD WTPs



Because portions of the COSMA fall within the legally-defined Delta and the area of origin, the City has rights to Delta water. To access water for the DWSP, the City has filed an application for the appropriation of surplus water in the Delta, plus water the City is entitled to pursuant to Water Code Sections 1485 and 11460-11465. Only Section 1485 water is required for the Phase 1 DWSP; whereas, both "Area of Origin" and Section 1485 water rights are necessary beyond Phase 1 DWSP.

Necessary DWSP Water Right Permits

Section 1485 Water Rights

California Water Code Section 1485 can be summarized as follows: any municipality disposing of treated wastewater into the San Joaquin River may seek a water right to divert a like amount of water, less losses, from the river or Delta downstream of the point of wastewater discharge.

Water losses associated with these discharges once they enter the river system can result from seepage, evaporation, or transpiration between the Regional Wastewater Control Facility and the diversion. The San Joaquin River (River) and associated Delta channels are in balance with the connected groundwater systems, therefore, seepage losses can be estimated at zero. Also, the incremental flow added at the Regional Wastewater Control Facility has no measurable effect on the top width of the River; therefore evaporation from the River surface is not increased. Similarly, transpiration is not measurably affected by the incremental flow since the top width of the water surface is not increased. Therefore, it is assumed that the volume of water loss between the wastewater plant and any diversion point downstream is negligible.

Area of Origin Water Rights

The California Water Code contains a number of sections addressing certain benefits and obligations of areas in which water originates. The "Area of Origin" provisions have not yet been thoroughly interpreted by the courts, so their operation and effect remain unclear.

For purposes of planning for a Delta surface supply, it is assumed that the ability to divert water under the California Water Code Sections 11460 et seq. may be limited by conditions similar to those contained in Water Right Standard Permit Term 91. California Water Code Section 11460 et seq. allows a water user within a watershed or other area of origin to appropriate water that otherwise would be exported and receive a priority senior to the rights of the federal Central Valley Project (CVP) and the State Water Project (SWP). Permits for the diversion of water from the Delta under the area of origin statute may be conditioned by the SWRCB to include standard permit Term 91 which prohibits diversions at times when the SWP and/or CVP are required to release stored water from their reservoirs in excess of export diversions, project carriage water,

and project in-basin deliveries[5]. Under these conditions, the City would be allowed to divert water only at times when Delta outflow is greater than regulatory minimum requirements, or when the CVP and/or SWP are exporting water that has no previously been stored in CVP-SWP reservoirs or imported to the basin by the CVP-SWP.

Financing of DWSP

The cost of the Phase 1 portion of the DWSP as is estimated to be $172 Million. This cost is apportioned based on benefits to existing customers and to new development. The financing of the project will be done through customer user rates, development fees, and federal and state grants as described in **Section 10910(d)(2)(B)** starting **Page 31**.

Regulatory Permitting for DWSP

Refer to section titled, "Current Water Supply Condition" on **Page 4** regarding the steps taken to date for implementing Phase 1 of the DWSP. Other regulatory approvals beyond the authorization of the water rights by the SWRCB, are the need for a Section 404 Clean Water Act and Section 10 River & Harbor permits from the Army Corps of Engineers, Section 1601 Streambed Alteration Agreement from the State Department of Fish and Game, and a California Department of Health Services Drinking Water Treatment Plant permit for including the DWSP in the COSMUD potable water system. The Army Corps of Engineers has been consulted on the Phase 1 project especially as it pertains to work in and around the levee and the Delta.

Necessary SEWD Water Right Permits/Contracts

SEWD is pursuing its own appropriative water rights on the Calaveras River that will likely yield some wet and normal year water but no dry or critical year supply is expected. To date, there is no known contract water right amount, so, for purposes of the WSE, up to 50 TAF/year is assumed in the wet and above normal hydrologic years, 15 TAF/year in below normal and dry years, and zero in critical year types. This is reflected in **Table 4** on **Page 17**.

Other supplies are anticipated through future appropriative water right permits on the Stanislaus River and Littlejohn's Creek. Both of these potential supplies are not accounted for in this WSE or reflected in **Table 3** on **Page 15**. Other potential water supplies shown in **Figure 9** on **Page 16** are also not accounted for in this WSE.

Summary of Surface Water Utilization for the GP Update

The COSMA has and will continue to meet annual demands during differing hydrologic periods with surface water, groundwater, water conservation, and other potential water supplies such as non-potable supplies from local communities, raw surface water from local irrigation districts, and water from

[5] The application of Term 91 to diversions under the area of origin statute has not yet been thoroughly interpreted by the courts, so the operation and effect of Term 91 and how it impacts area of origin diversions remains unclear.

active groundwater storage projects. Currently, the COS is pursuing raw surface water transfer agreements with local irrigation districts and municipalities and possible use of tertiary treated recycled water from the City of Lodi for use as a non-potable source for irrigation of public landscape areas. Potable surface water transfer supplies would be diverted for treatment at the SEWD WTP or the DWSP WTP. Water transfers would require mutually agreeable contract terms between the City and another entity transferring water and would require the approval of the Department of Water Resources. Water purchases, treatment facilities and conveyance infrastructure would be funded locally through a combination of rates and fees. Timing of water transfers would coincide with water demands that outpace current supplies through SEWD or the City's water right.

Water Facility Phasing

An important element of the DWSP Feasibility Report was looking beyond the current General Plan to begin to understand how water entitlements will be granted or be diminished over time to meet growing water demands. The certified EIR referenced the work completed in the Feasibility Report and provided a firm definition of the DWSP Phase 1 project and defined the programmatic nature of the Phase 2 project and its timing being associated with the build-up of demand as a result of new development.

In the DWSP Feasibility Report, population was used to assume growth and water demand beyond 2015 (build-out of the current 1990 General Plan) and assumptions for water supply entitlements were made in order to forecast the ultimate size of the DWSP project and needed upgrades to the SEWD WTP over time. As a result of this report, a scheduled phasing of the DWSP project, SEWD WTP upgrades, and groundwater facilities was made as shown in **Table 9** below.

In the sizing of the different water facilities, the modeling of operations of the DWSP and SEWD WTPs is assumed to occur simultaneously, and, if water supply is available, the water demand is met first by SEWD and then by the DWSP. This set of assumptions is used for modeling purposes to best reflect the operational goals of the City's current and future conjunctive use program. The timing of expansion of the two surface water WTPs is based on **Table 9** with the exception that the DWSP Phase 1 project is assumed to remain at 30 mgd until water demand can no longer be met with the available supplies.

Table 9. Phasing of COSMA Water Supply Facilities Based on 1990 General Plan[6]

Phasing	Year	SEWD WTP (mgd)	DWSP Diversion and WTP (mgd)	Groundwater (mgd)
Immediate Phase	**2003**	45	0	65
	2009	50	0	83
1-Build-out of General Plan	**2010**	50	30	83
	2015	50	30	83
2-Interim Milestone	**2016**	60	30	83
	2020	60	60	90
	2030	60	90	110
3- Build-out of 1990 General Plan Boundary/ POU	**2031**	60	90	110
	2040	60	135	140
	2050	60	135	140

As demands continue to increase out to 2035 or build-out of the GP Update, COSMUD will continuously evaluate the need for expanding the Phase 1 project. For purposes of the WSE, a separate analysis was performed based on the water supplies described for SEWD and groundwater to evaluate when an expansion may be needed. This is done primarily to rely upon the existing environmental documentation for the Phase 1 project to support the growth contemplated in the GP Update. Capacity above Phase 1 has been reviewed only at the programmatic level and will require additional study when those increases are necessary. Additional improvements in facilities and operations of the SEWD WTP are required to increase its reliable base load capacity to 50 and 60 mgd, respectively.

To protect larval delta smelt during April through June, when early life history stages of delta smelt and the eggs and larvae of other fish are likely to be in the project area, the potential of the fish screen and diversions to impact these life stages of fish would be reduced operationally (by reducing diversions and thus reducing approach velocities and diversion volume). This would also reduce the potential for juvenile fish of all sizes to be affected by the diversion and fish screen during the spring (April through June). Monitoring will be required from April through June to detect the presence of larval delta smelt in the vicinity of the project area and trigger the implementation of impact avoidance and minimization measures. Measures taken to protect delta smelt would also protect Chinook salmon and other fish and macroinvertebrates. In the modeling of the DWSP, curtailments occur in the month of May of each year.

[6] SEWD efficiency improvements accelerated the increase in rated WTP capacity from 45 mgd in 2009 to 50 mgd in 2005.

Groundwater Supplies

DWSP planning assumes a maximum long term operational yield objective of the basin underlying the Urban Services Area of the 1990 General Plan reflecting a conservative 0.60 AF/ac/year groundwater extraction rate. This is a 20 percent reduction in the amount of groundwater that the COSMA is currently using based on the 0.75 AF/ac/year extraction rate. The purpose of this reduction is to fulfill the COS's objective of managing the underlying groundwater basin for the protection of groundwater resources indefinitely.

A deviation from the lower extraction rate can occur if lands within the General Plan Planning Area Boundary are converted from agricultural uses irrigated with groundwater to urban uses. To account for the prior groundwater pumping, an agricultural credit is assumed based on not exceeding a 1.0 AF/ac/year maximum. This acknowledges that the groundwater basin was being used for agriculture prior to urbanization. The determination of how the agricultural credit concept is summarized below and a detailed technical memorandum is included as **Exhibit "F"** to this WSE.

Agricultural Groundwater Use Conversion

The approach taken to determine the validity of assuming agricultural credits is based on a proven theoretical approach of determining the agricultural water supply requirement and use of the integrated groundwater surface water model (IGSM) for San Joaquin County. The IGSM calculates agricultural supply requirements given the various parameters of agricultural crop types, their irrigation efficiencies, soil conditions, field capacities, root zones, etc. The IGSM is run first applying the agriculture to establish the baseline condition. The second run removes the agriculture to see how the basin rebounds as a result of no agricultural pumping in the urban services boundary. Urban land use and water demand (groundwater and surface water) are then applied and the impacts are evaluated as follows:

Constrained Impacts to the Groundwater

Impacts to the groundwater elevations can occur in three ways:

1. the gradient (or slope) of the groundwater piezometric surface (groundwater table) would not increase in the area of the salinity front (See **Figure 8** on **Page 19** for approximate location of salinity front),

2. groundwater elevations would not drop more than a foot in the agricultural area where the credit is applied, and

3. the lowest elevation of the regional cone of depression would not be impacted by the application of urban groundwater extractions in the agricultural areas.

Each IGSM scenario that includes urban extractions in areas where agricultural extraction are removed is measured against the three impact constraints listed

above. The lesser of the applied groundwater extractions is used as the incremental increase to account for agricultural credits. In no case should groundwater extractions exceed 1.0 AF/ac/year of urban developed area.

Future Conjunctive Management

This section describes how the water supply sources in the COSMA can continue to be operated in conjunction with each other to meet future water demands. This analysis includes modeling a complete conjunctive management program similar to conjunctive use program in-place today including all existing and foreseeable COSMA water supplies and projected demands. The analysis addresses the planning period from 2000 to 2035 to evaluate the adequacy of surface water entitlements and the necessary facility requirements to meet the GP Update water demands.

As mentioned above, groundwater extractions are targeted to not go above the long-term operational yield of the basin of 0.6 acre-ft/acre/year or beyond the 0.75 AF/ac/year maximum in any one given year. The concept of agricultural credits will also be considered, if applicable.

For this analysis, it is assumed that SEWD will maintain its existing 50 mgd surface WTP until 2010. After that, the analysis considers the option of expanding the SEWD WTP capacity to 60 mgd so that the combined capacity of COSMA, SEWD, and other groundwater facilities will meet maximum day municipal demands. For modeling purposes, it is assumed that SEWD WTP capacity is expanded to 60 mgd in 2016 as shown in **Table 9** on **Page 44**. SEWD will likely implement planned efficiency enhancements prior to 2016 to increase its rated WTP capacity sooner, however, for conservative modeling purposes the timeframe is extended to 2016. The funding of the enhancements will be from the water retailers and any grant funds that SEWD receives.

The operation of the DWSP and SEWD WTPs is assumed to occur simultaneously, and, if water supply is available, the water demand is met first by SEWD, then by the DWSP, and lastly by groundwater. Additional enhancements to the design and operations of the SEWD and DWSP WTPs are assumed to minimize the impact of scheduled maintenance, and account for the impact of higher turbidity in the raw water supply especially in the wet months of the wet years.

Groundwater extraction capacity within the General Plan Boundary is conservatively sized for a certain level of redundancy for service in critical years, to meet maximum day demands, and to meet requirements. In the event that surface water is curtailed by contract or by Endangered Species Act (ESA) mitigation requirements, especially in dry and critical years, groundwater becomes a significant portion of the urban water retailers' water supply. Prior to construction of the DWSP (first phase assumed to be completed in 2010), water demands will exceed available surface water treatment capacity necessitating

the on-going use of groundwater facilities within the urban retailers' service areas until the SEWD expansion and/or the DWSP is operational.

The timing and amount of water assumed available from each SEWD source is based on conservative estimates of the reliable yield of each source and the probability of the various contracts being renewed (See **Figure 20** for 35 year projection of average surface water supplies and their sources).

The OID and SSJID transfer contract is assumed to expire in 2025 and not be renewed. Once all of the OID/SSJID contract water is used, the New Hogan and then the New Melones CVP contracts are used. The New Hogan contract is assumed to be subject to CVP deficiencies which include shortages of up to 40 percent in critical years as well as provisions that make the New Melones CVP contract water available only in the wet years. Appropriative water on the Calaveras River is used next. Once the SEWD supplies are used, the model turns to DWSP supplies.

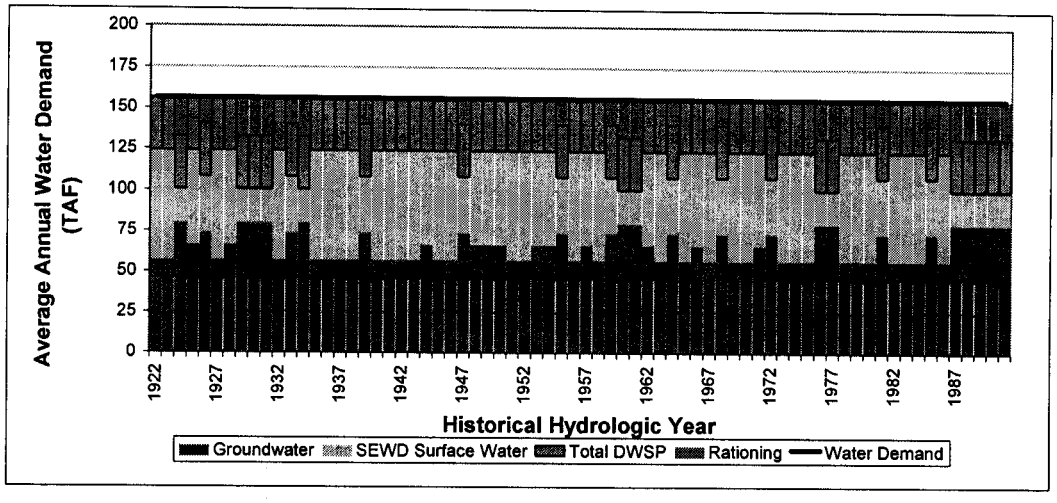
Sources of water supply for the DWSP include Section 1485 water and Area of Origin water, described in sections above. The amount of Section 1485 water depends on the discharge volume from the municipal wastewater treatment plant over time. For the purpose of this study, and to be consistent with the City's water right application, the amount of Section 1485 water available in a given year is assumed to be 41 percent of the total municipal water use within the 1990 General Plan POU. No reductions of Section 1485 water occur in dry years as a result of water rationing because rationing is assumed to affect only the outdoor uses of water that typically do not enter the wastewater system. The need for Area of Origin water is not expected until 2020 or beyond.

To account for the variation in water supplies as a result of annual hydrology, a 70 year historic model of hydrology was used to determine the sum total of water supplies in any given year type. For instance, in dry years, surface water curtailments are considered at both WTPs, so groundwater and rationing are used to make up the difference. The objective is that over the 70 years, the groundwater use does not exceed the predefined sustainable yield of the basin as described below. **Figure 19** below shows the results at 2035 on how water demands are met from the above mentioned sources. This figure shows that, in even the driest historical hydrologic periods (say 1976 to 1978 or 1987 to 1991) there is sufficient water supply to meet 2035 water demands. **Exhibit "E"** provides the tabular and graphic form for each five year increment from 2005 to 2035 to show the adequacy of water supplies throughout the 70 years of historical hydrology.

The operational yield objective of the groundwater basin is based on not allowing the groundwater elevations to drop to a point where impacts could occur as described above or that the annual yield in any given year over the 70-year hydrologic period will not exceed the 0.75 AF/ac/year plus an agricultural credit. The groundwater component is needed to make a final determination of the

adequacy of surface water supplies to be able to compare the allowable yield with the calculated yield from the 70-year hydrologic conjunctive use model.

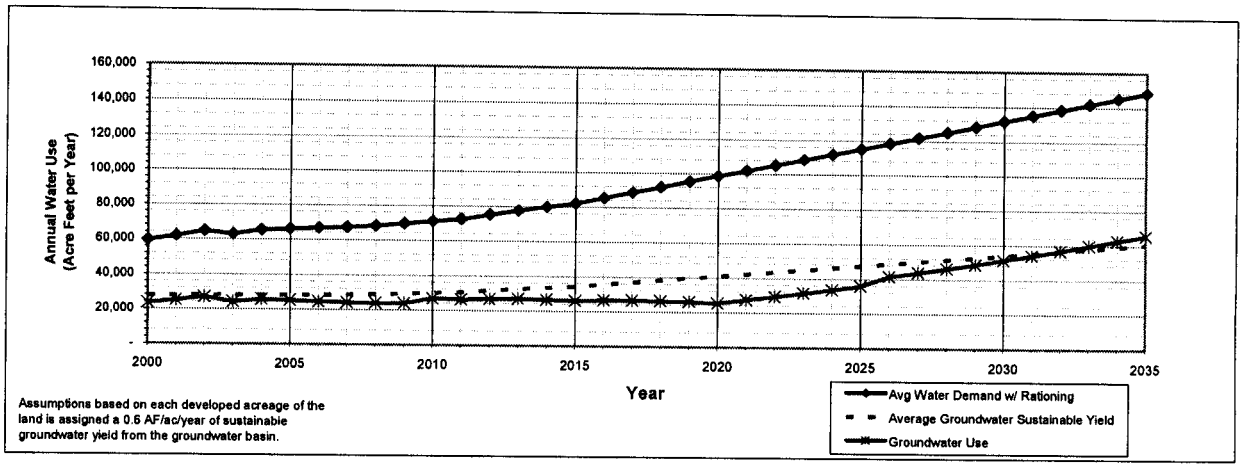
Figure 19. 70-year Historic Hydrologic Period Using 2035 Water Demand and Supply Condition.



Conjunctive Use Model Results

The impacts to the groundwater basin (The groundwater component is the bottom set of bars shown in **Figure 19)** are measured against the three criteria listed in the **Constrained Groundwater Use Impacts** section above and a finding of the maximum sustainable groundwater yield is made for each year of the simulation. The results of this study in five year increments are included in **Exhibit "E"** for reference. The average and maximum groundwater yield at GP Update build out is determined to be approximately 65 TAF/year and 102 TAF/year, respectively. **Figure 20** shows the build-up of water demand as the top line, the safe sustainable yield as the dashed line and the modeled average extraction yield as the bottom line. From this figure, it shows that during no time until 2033 does the groundwater yield approach the targeted goal of 0.60 AF/ac/year. After 2033 groundwater yields are at or slightly above the targeted goal. Any slight exceedence can be corrected by applying agricultural credits after 2015 as per **Exhibit "F"**.

Figure 20. Average Groundwater Use vs. Demand From 2000 to GP Update Build Out Using 0.60 AF/ac/year Groundwater Sustainable Yield

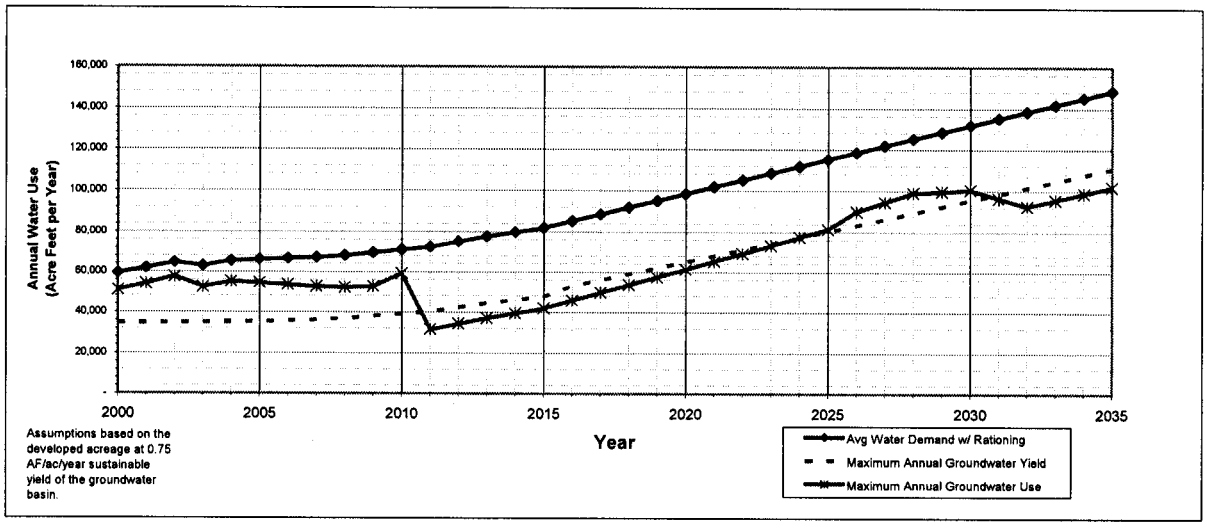


Groundwater Exceedence in Any One Year

The groundwater yield in any given dry year should not exceed the DWSP goal of having a maximum of 0.75 AF/ac/year plus the agricultural credits determined above. For the 70 years of historical hydrology, the maximum groundwater yield is extracted for each year of the GP Update model (i.e., 2010 to 2035, see tables in **Exhibit "E"** for maximum over 70 year period in five year increments). This is then compared to the maximum yield of the basin underlying the COSMA. The results of this analysis are shown in **Figure 21**. This graph is the "worst" case scenario and it is anticipated that beyond 2020 there will be active groundwater recharge programs (e.g., aquifer storage and recovery, recharge basins, in-lieu surface water irrigation to agriculture) to make up for the dry year dependency on groundwater. While these programs are very likely to occur, this WSE conservatively assumes that there will be no contribution to COS water supplies.

The exceedence shown in **Figure 21** of groundwater demand beyond 2010 going beyond the DWSP goal is of concern and can be addressed partially by permitting a higher groundwater yield to account for the agricultural lands that are currently irrigated with groundwater taken off-line and developed. **Exhibit "F"** provides a clear presentation of how an additional increment of urban groundwater use can be yielded from the basin and remain conservative in the approach to meet the ultimate objective or goal of the DWSP to reduce groundwater demands.

Figure 21. Maximum Single Year Groundwater Use vs. Demand From 2000 to GP Update Build Out



Applying the methodology in **Exhibit "F"**, the 0.75 AF/ac/year goal can be increased in the COS up to 0.87 AF/ac/year and maintain a net positive impact to the groundwater basin. Based on this higher amount, assumed to not occur until 2015 when agricultural lands begin to be fallowed and developed, the groundwater use compared to sustainable yield is shown in **Figure 22**.

Figure 22. Maximum Groundwater Use vs. Demand From 2000 to GP Update Build Out Using Ag Credit

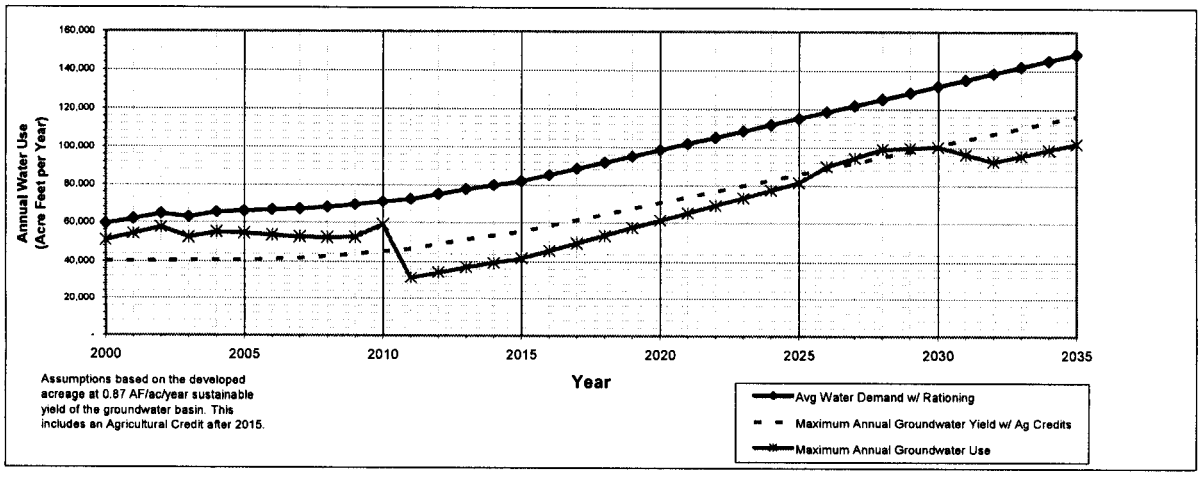


Figure 22 shows groundwater use exceeding the driest year groundwater goal in 2025 for a brief period. This is a result of the OID/SSJID contract termination. Beyond 2025 surface water supplies from SEWD continue to contribute to Section 1485 water in terms of treated wastewater to the Delta. This increase in Section 1485 water provides the additional water needed to reduce reliance on groundwater in the driest of years by build-out in 2035.

Summary of Conjunctive Use Model Findings

Figure 23 illustrates the increase and decrease in surface water supplies "on average" over the period from 2000 to 2035 based on the demands from 2000 to the 2035 of the GP Update and the conjunctive use program described above. Maximum surface water use is constrained by the SEWD or the DWSP conveyance and WTP capacity and by the various contract entitlements described above. For example, the set of bars for each contract for each year considers 70 years of historical hydrology (i.e., rainfall, stream flows, etc) from 1921 to 1991 and the limitations of the SEWD and DWSP WTPs to treat and deliver potable water supplies for that given year. For instance, the OID/SSJID contract is for a maximum of 30,000 AF/year, but results in 22,850 AF/year on average over the 70 years of hydrology and then ends in 2025. The decrease in overall surface water for SEWD throughout the planning period reflects the assumption that the annual volume of the CACWD Appropriative Water Right water will diminish slightly due to new water demands expected in the CACWD service area.

While **Figure 23** does not show the use of the COS's Area of Origin water, it is important to note that the COS will pursue Phase 2 of the DWSP with the completion and certification of the appropriate environmental documentation and approval of the Area-of-Origin water right by the SWRCB by 2025 or based on water demands, whichever occurs sooner. Access to Area-of-Origin water provides additional assurances in the event Appropriative Water Rights on the Calaveras or the Calaveras County Water Rights Transfer water to SEWD differs from the assumptions used in this WSE. In addition, while this WSE recognizes the strong possibility of obtaining additional interim surface water supplies, it does not rely upon those supplies for purposes of this WSE.

A similar table as **Table 7** on **Page 30** is provided for the future 2035 condition to compare the availability of water supplies with forecasted water demands. **Table 7** indicates that in the dry year conditions, there are adequate water supplies while achieving an average sustainable groundwater yield of approximately **65,000 AF/year** (slightly exceeding the average sustainable yield goal of 60,000 AF/year) while not exceeding the maximum groundwater yield in any one hydrologic year type.

Figure 23. Projected Average Surface Water Contract Use from 2000 to 2035

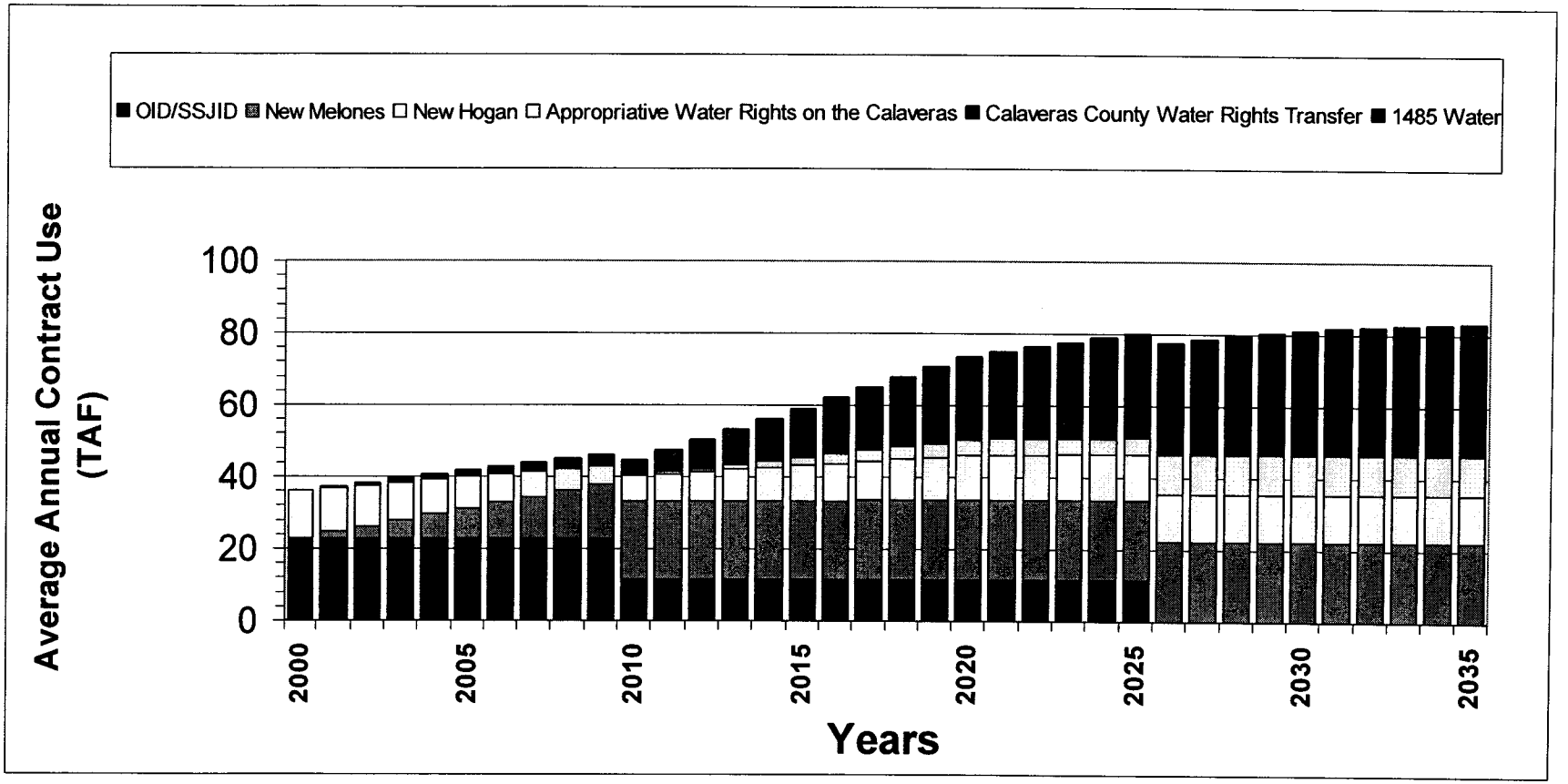


Table 10. Existing (2004), Foreseeable, and General Plan Update Water Supplies and Demands for the COSMA by Retail Water Service Provider

Year Type		Demand Reduction	Existing (2004) and Foreseeable			General Plan Update			Total Existing and Foreseeable and General Plan Update			Year 2004, Foreseeable Demands, and General Plan Update
			Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	(AF/year)
Normal	COSMUD	0%	39,378	3,636	43,014	32,473	35,157	67,630	71,851	38,793	110,644	110,644
	Cal-Water		20,101	12,756	32,856	5,679	4,468	10,147	25,780	17,224	43,003	43,003
	County		1,378	716	2,094	301	136	437	1,679	852	2,531	2,531
	Total		**60,857**	**17,108**	**77,965**	**38,453**	**39,761**	**78,214**	**99,310**	**56,868**	**156,178**	**156,178**
Single Dry	COSMUD	15%	5,038	31,524	36,562	28,500	28,985	57,485	33,538	60,509	94,048	94,048
	Cal-Water		14,444	13,484	27,928	3,512	5,113	8,625	17,956	18,596	36,553	36,553
	County		1,171	609	1,780	98	274	372	1,269	883	2,152	2,152
	Total		**20,654**	**45,616**	**66,270**	**32,110**	**34,372**	**66,482**	**52,764**	**79,988**	**132,752**	**132,752**
Multiple Dry (Hypothetical 3-year Drought Period into the Future(using 1977 to 1980 Drought Sequence))	COSMUD	5% (1st Year)	39,378	3,636	43,014	32,473	35,157	67,630	71,851	38,793	110,644	110,644
	Cal-Water		20,101	12,756	32,856	5,679	4,468	10,147	25,780	17,224	43,003	43,003
	County		1,378	716	2,094	301	136	437	1,679	852	2,531	2,531
	Total		**60,857**	**17,108**	**77,965**	**38,453**	**39,761**	**78,214**	**99,310**	**56,868**	**156,178**	**156,178**
	COSMUD	10% (2nd Year)	4,223	30,923	35,146	28,588	29,052	57,640	32,811	59,975	92,786	92,786
	Cal-Water		15,191	14,049	29,239	3,434	5,053	8,487	18,625	19,102	37,727	37,727
	County		1,240	644	1,885	88	266	355	1,328	911	2,239	2,239
	Total		**20,654**	**45,616**	**66,270**	**32,110**	**34,372**	**66,482**	**52,764**	**79,988**	**132,752**	**132,752**
	COSMUD	10% (3rd Year)	4,223	30,923	35,146	28,588	29,052	57,640	32,811	59,975	92,786	92,786
	Cal-Water		15,191	14,049	29,239	3,434	5,053	8,487	18,625	19,102	37,727	37,727
	County		1,240	644	1,885	88	266	355	1,328	911	2,239	2,239
	Total		**20,654**	**45,616**	**66,270**	**32,110**	**34,372**	**66,482**	**52,764**	**79,988**	**132,752**	**132,752**
Average over 70-Years	COSMUD	5%	23,960	15,793	39,753	33,919	30,761	64,680	57,879	46,554	104,433	104,433
	Cal-Water		18,668	13,885	32,553	5,104	4,454	9,557	23,772	18,339	42,111	42,111
	County		1,378	716	2,094	221	181	402	1,599	897	2,496	2,496
	Total		**44,007**	**30,394**	**74,400**	**39,243**	**35,395**	**74,638**	**83,250**	**65,789**	**149,039**	**149,039**

Reference: City of Stockton Urban Water Management Plan 2000 Update, December 2000

Notes:

1.) Dry year surface water amounts assume SEWD's New Hogan Central Valley Project water with deficiencies, and Oakdale Irrigation District and South San Joaquin Irrigation District deficiencies as stipulated in the contract for these water supplies.

2.) Normal year surface water deliveries are restricted to the projected availability of SEWD conveyance and treatment plant capacity (not to exceed 60 mgd).

Table 10 presents the average annual quantities of surface water and groundwater to make a positive determination of water supply availability. The facility capacity verification below is needed to compare water supplies and their respective facilities with the actual facility capacity. This check is made based on maximum month demands using a multiplier of 1.79 times the average annual water demand. This verification is made in **Table 11** based on the worst case hydrologic scenarios for surface water and groundwater (i.e., worst case for surface water is in normal to wet years and for groundwater in drought years) from **Table 10** and indicates the needed facility capacity in each of the service areas to meet existing and foreseeable water demands. The "Needed Capacity" is based on the maximum volume of surface water or groundwater converted to an equivalent maximum month demand shown in the given scenarios of hydrologic conditions shown in **Table 10**.

Table 11 shows that there is sufficient surface water facility capacity to provide for existing and foreseeable water demands within the COSMA by each of the water retail service providers. The distribution of DWSP WTP capacity is based on the best available data as to the adequacy of conveying potable water from the DWSP WTP to the COSMUD north system and Cal Water. The most significant assumption is that Cal Water will likely depend more on the SEWD WTP simply due to its geographic location. The southern COSMUD system with approximately 14,000 AF/year or 19 mgd of build-out maximum month water facility capacity is also placed into this category with the construction of the South Stockton Aqueduct essentially connecting the system directly to the SEWD WTP.

Table 11. Verification of Maximum Month Water Facility Capacity by Water Retail Service Provider

	SEWD WTP (mgd)		DWSP WTP (mgd)		Total Surface Water (mgd)		Groundwater (mgd)		Total Water Facility Capacity (mgd)	
	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity
COSMUD	29.1	29.1	24.0	24.0	53.1	53.1	122.4	49.3	**175.5**	**102.4**
Cal-Water	29.1	29.1	5.7	5.7	34.8	34.8	34.6	64.0	**69.4**	**98.8**
County	1.8	1.8	0.3	0.3	2.1	2.1	1.9	2.0	**4.0**	**4.1**
Total	60.0	60.0	30.0	30.0	90.0	90.0	158.9	115.3	**249.0**	**205.3**

Table 11 indicates under the groundwater facilities portion of the table that approximately 73 mgd of additional groundwater facilities will be necessary to meet the water demands through the conjunctive use program in the COSMUD service area. This additional groundwater capacity will be constructed as new

growth areas develop and are necessary to fully exercise the basin in the manner described above based on hydrologic conditions. In no case does the additional groundwater capacity put the COSMA beyond its groundwater conjunctive use management goals.

Description of Change in DWSP Phasing

The findings of this WSE clearly deviate with the timing of phased increases in DWSP capacity with the phasing shown in **Table 9** on **Page 44**. **Table 9** depicts the phasing used in the DWSP Feasibility Report and the EIR. As mentioned directly above, the conclusion of this WSE is that the DWSP Phase 1 can continue to supply water to meet the build-out water demands of the GP Update. The COS will likely pursue Phase 2 and begin the environmental review process long before build-out of the GP Update occurs. This affords the COS to be prepared and to allow demands to dictate when Phase 2 becomes necessary. Time will be of the essence to get Phase 2 under construction once this occurs.

Beyond the Phase 2 requirement of preparedness, there are several reasons for differences between the findings of the WSE and the DWSP Feasibility Report and EIR.

Increased Reliability in SEWD Supplies

The underlying assumptions used in the DWSP reports were conservative but were based on the best available data. Since the time when research was undertaken for the DWSP, a significant amount of work has been completed in other venues. One significant change in assumptions is the amount of water available to Municipal and Industrial (M&I) uses through SEWD. According to SEWD (see Exhibit "G"):

"In wet years, the district currently has over 145,000 acre-feet ofwater supplies available, more water than it could deliver to its customers with its present facilities. Quantifying that 30,000 AFA in a dry year or 22,000 AFA in a critical year is inappropriate. In the first year of a dry cycle, the district would likely have over 100,000 acre-feet available. Only in the 2nd or 3rd year of a multi-year dry cycle the district could have less than 30,000 acre-feet. With the completion of Phase 1 of the Farmington Program (Peters Pipeline) in 2005, available supply to the district will increase by over 10,000 AFA. Banked groundwater stored when excess surface water is available will supplement surface water supplies in dry and critical hydrologic years."

Comparing the table excerpted from the Feasibility Report (See **Table 12**) with **Table 3** on **Page 15**, the WSE acknowledges that there is an approximate aggregate difference of 20,000 AF/year. This difference is shown in **Figure 24** over the planning period of the DWSP. DWSP supplies do not change from the original assumptions. Rather, the supplies the City will get from SEWD now appear firmer, more reliable, and more plentiful than when the DWSP Feasibility Study and DWSP EIR were prepared.

Table 12. Feasibility Report Existing SEWD Water Sources and Critical Year Availability

Source	Annual Contract Amount Thousand Acre-Feet (TAF)	Projected "Critical Year" Annual Availability (AF/year)				
		Planning Year				
		2000	2010	2020	2035	2050
Current "Firm" Sources of Supply						
Reclamation – New Hogan Water Supplies	Total Yield 100 TAF [1] (M&I 15 TAF) (Ag & Recharge 75 TAF)	12,000	12,000	12,000	12,000	12,000
Calaveras County Water District Appropriative Water Rights	Unused Calaveras County Water Rights (M&I 10 TAF)	10,000	8,000	6,000	3,000	0
Reclamation – New Melones Interim Water Contract and Section 215 "Spill" Water	Total Contract 75 TAF (M&I 40 TAF) (Ag & Recharge 20 TAF) (Losses 15 TAF)	Not Available in Dry Years				
SSJID Transfer - Stanislaus River[2]	15 TAF	4,000	4,000	0	0	0
OID Transfer - Stanislaus River	15 TAF	4,000	4,000	4,000	0	0
Total	**Total 205 TAF (M&I 95TAF)**	**30,000**	**28,000**	**22,000**	**15,000**	**12,000**
FUTURE "POTENTIAL" SOURCES OF SUPPLY						
New Appropriative Water Rights on Calaveras	50 TAF	Not Available in Dry Years				
Farmington Projects Rights Transfer	50 TAF	Not Available in Dry Years				
Reoperation of New Hogan Reservoir[3]	25 TAF – 40 TAF	Not Available in Dry Years				
Total	**75 TAF – 100 TAF**	**0**	**0**	**0**	**0**	**0**

Source: City of Stockton Delta Water Supply Project Feasibility Report (January 2003, ESA and MWH)

Notes:
1. SEWD has a right to 56.5 percent of the yield, and Calaveras County Water District (CCWD) has rights to the remaining 43.5 percent. CCWD currently uses approximately 3,500 ac-ft of its allocation, and prior water rights demand is 13,000 ac-ft. Based on an agreement between CCWD and SEWD, SEWD currently has use of the unused portion of CCWD's allocation.

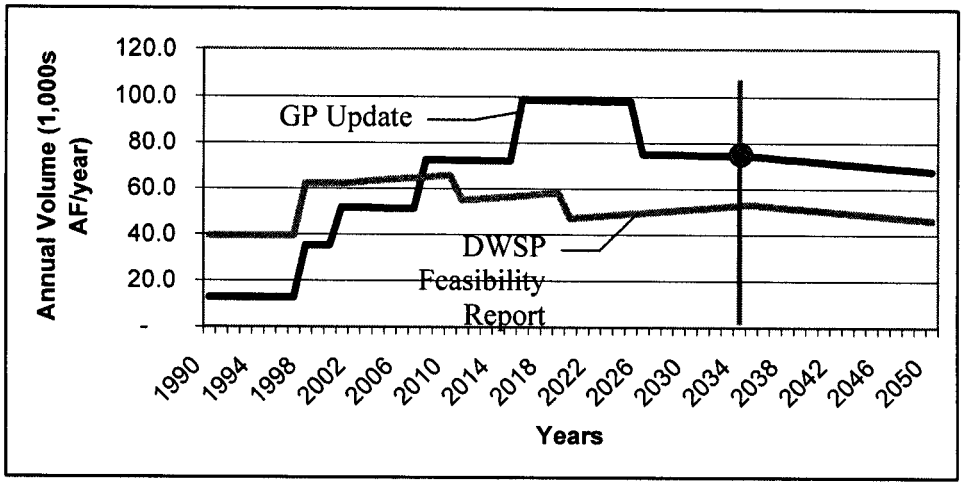
2. For planning purposes, it is assumed that SSJID may not continue its water transfer to SEWD past 2010.

3. Very preliminary analyses suggest that "reoperation"of New Hogan Reservoir, together with some form of conjunctive use water banking, could increase the average annual yield (but not the dry year yield) of New Hogan Reservoir. SEWD is currently not pursuing reoperation water since the water rights that SEWD is applying for on the Calaveras River will capture the same water and store in groundwater bank. The status of the SEWD's Water Right application is uncertain.

From the set of modeling assumptions, the majority of this increase results from the inclusion of more Calaveras County Appropriative Water Rights Transfer water for M&I and having it taper off at a slower rate than assumed in the DWSP Feasibility Report. The other surface water entitlement is the SEWD Appropriative Water Rights on the Calaveras River for which they have submitted an application and will likely receive water in the wet years. No water is assumed in the dry years. **Table 3** also shows that the senior water rights of the Calaveras County Appropriative Water Rights Transfer will yield some "critical" year supply to increase the minimum of 12,000 AF/year used in the DWSP Feasibility Report to 22,000 AF/year (does not include SSJID/OID contracts after 2025).

This difference is shown in **Figure 24** over the planning period of the DWSP. DWSP supplies do not change from the original assumptions. Rather, the supplies the City will get from SEWD now appear firmer, more reliable, and more plentiful than when the DWSP Feasibility Study and DWSP EIR were prepared.

Figure 24. SEWD Water Supplies (Weighted Average of Hydrologic Period)



Additional Area Contemplated in the GP Update

The water demand at 2035 in the DWSP Feasibility Study Report and in this WSE is approximately the same at approximately 156,000 AF/year. The amount of urban developed acreage under the GP Update is 103,000 acres out of the total GP Update area of 122,060 acres. The existing General Plan at 2050 was estimated to have 82,000 acres within the POU with no acreage accounting beyond 2015 or build-out of the General Plan. The increase in developed acreage results in a significant increase in available groundwater yield. This is due to the conservative policy of basing sustainable groundwater yield for the COSMA on the urbanized area of development. Using the goal of 0.60 AF/acre/year identified in the DWSP Feasibility Report applied to the GP Update, approximately 61,800 AF/year of groundwater can be used; whereas, under the

DWSP Feasibility Report, the resulting groundwater yield was only 48,000 AF/year. This adds another 13,800 AF/year of water to the GP Update.

Use of Agricultural Credits

In the WSE, a slightly different approach was taken regarding converting agricultural lands to urban. In the WSE, it was assumed that the groundwater elevations today are a result of groundwater extractions from agriculture and urban uses within the basin. If an agricultural property is extracting greater than the goal of 0.60 AF/acre/year (i.e., agriculture irrigation requirements average anywhere from 3 to 5 AF/acre/year depending on crop type) that some credit should be provided to the City of Stockton if the land is converted to urban uses with only a 0.6 AF/acre/year average groundwater use. A detailed groundwater analysis was performed in support of the GP Update and a conservative increase in the goal of 0.75 for the driest year pumping was increased to 0.87 AF/acre/year. This permitted more pumping in the driest year but not exceeding the self-imposed cap to minimize any concerns from over pumping the basin in the drier years.

Conclusion of Changes

In all, there is approximately 34,000 AF/year (i.e., 20,000 AF from SEWD and 14,000 AF from GW) of more water than what was assumed for the DWSP in year 2035. **Figure 25** is extracted directly from the DWSP Feasibility Report to illustrate the change this amount of water has on the phasing of the DWSP. The surface water requirement governs the need for either more SEWD capacity or more DWSP capacity. Based on the phasing in the Feasibility Report at 2035 the surface water requirement is approximately 90,000 AF/year as shown in **Figure 23**. This figure is based on the information known at the time of writing the DWSP Feasibility Report. A 90,000 AF/yr DWSP requirement equates to approximately the Phase 2 capacity of 90 mgd for DWSP WTP. If the more current SEWD surface water amounts and higher groundwater use is added, the resulting phase, if applied in the same manner as Figure 23, the end of Phase 1 or the 30 MGD capacity of the DWSP is at approximately 2035 as shown in **Figure 26**. Under the original set of conditions Phase 3 would be needed by 2030. With the change in conditions, Phase 1 can extend beyond the 2015 to a time when Phase 2 is needed based on demand. This may be at 2035 build-out of the GP Update or sooner.

Figure 25. DWSP Feasibility Report Phasing Diagram

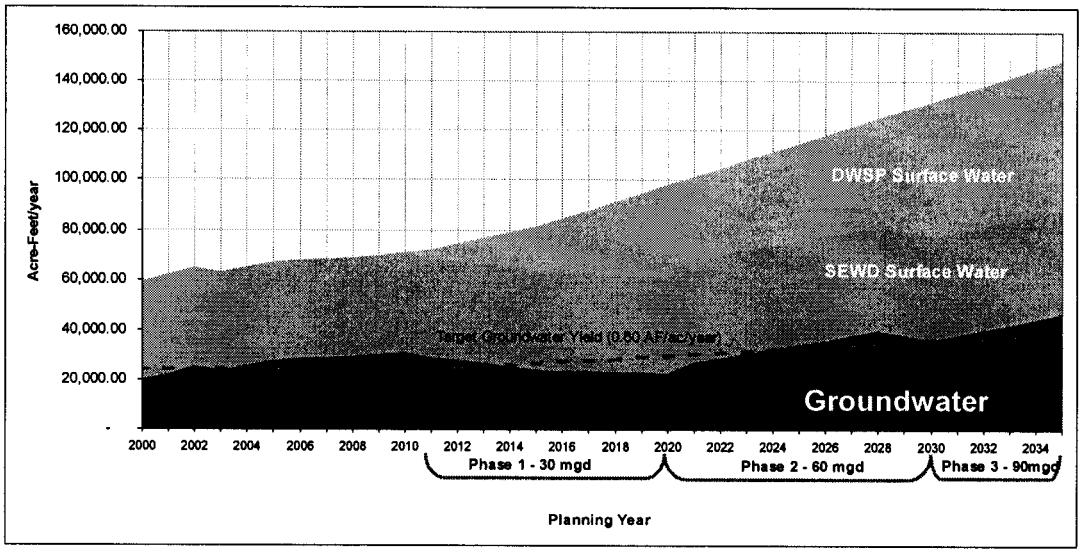
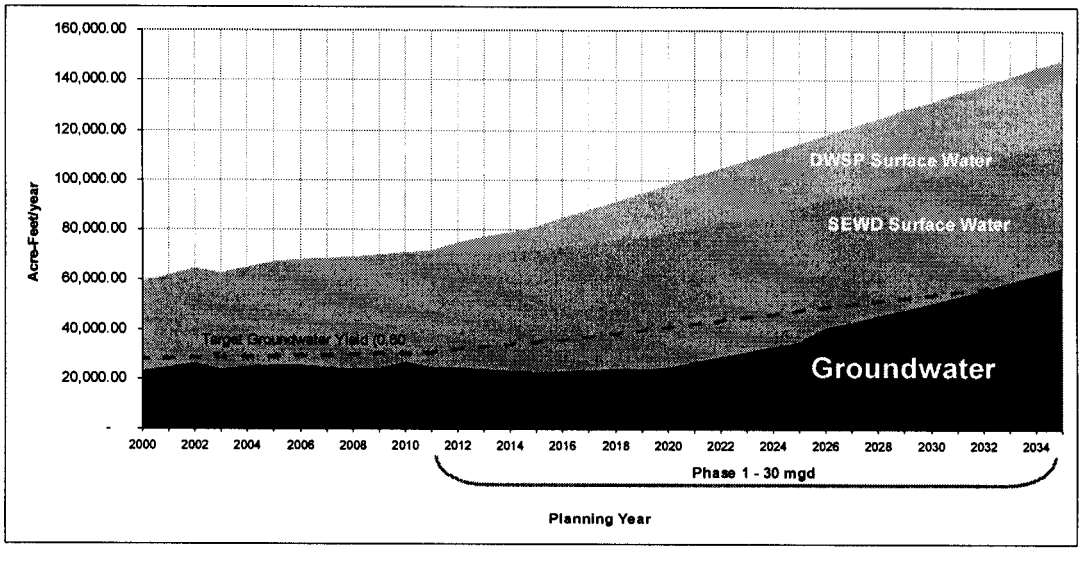


Figure 26. GP Update WSE Phasing Diagram



DETERMINATION OF SUFFICIENCY

This WSE determines that the COSMA urban water retailers currently cannot support the GP Update without the DWSP Phase 1 project and associated water supplies and continuation of the on-going groundwater use and management program with self-imposed goals becoming effective when the DWSP becomes operational. In consideration of the significant steps in the environmental review, permitting, and financing of the DWSP, the construction and operation of the DWSP by 2010 is considered to be a viable water supply for meeting the GP Update's build-out water demand and meets the goals of the DWSP as stated in the Current Water Supply Condition section starting on **Page 4**.

The urban retail water purveyors make this determination based on the information provided in this WSE and on the following specific facts:

- The existing near-term and long-term reliable supplies of SEWD surface water supplies, non-potable water supplies, and indigenous groundwater supplies can deliver a sustainable reliable water supply without impacting environmental values and/or impacting the current stabilization of the groundwater basin underlying the COSMA.
- The existing and future conjunctive use program of using surface water and each of the urban water retailer's groundwater supplies has been extensively analyzed as part of the DWSP Feasibility Report and EIR and as part of this WSE. All studies show that sufficient water rights and available groundwater supplies will exist for the level of water demand contemplated under the GP Update.
- The GP Update area will be served by water supplies made available through the existing and planned future conjunctive use program within the COSMA urban water retailer's service areas.
- The diversion structure, raw water pipeline, treatment plant and treated water pipeline elements of the DWSP are necessary water supply elements in meeting the GP Update water demands.
- New groundwater facilities are necessary to fully implement the conjunctive use program that is currently in effect and contemplated with operation of the DWSP. The use of new wells will take place only in the dry and critical years when SEWD surface water supplies are curtailed, and in no case do groundwater extractions impact the long term sustainability of the groundwater basin and existing wells.

Exhibit "A"
Memo from COSMUD to City of Stockton Community Development Department Director

Exhibit "B"
Preferred General Plan Update Map
Dated September 2005

Exhibit "C"

City of Stockton Water Rights Permit for Delta Diversion

Exhibit "D"

Existing Firm and Interim Surface Water Contracts and SEWD Wheeling Contracts for the Urban Water Retailers

Exhibit "E"

Results of 70 Year Historical Hydrology Model Runs from 2005 to 2035 in Five Year Increments

Exhibit "F"

Groundwater Studies Supporting Agricultural Credits