



Elk Grove Water Service

9257 Elk Grove Boulevard • Elk Grove, California • 95624
Tel: (916) 685-3556 • Fax: (916) 685-5376

December 23, 2005

Division of Land Planning and Local Assistance
Department of Water Resources
Attn: Kim Rosmaier
3251 S Street
Sacramento, CA 95816

Subject: Urban Water Management Plan, 2005 Update for the Florin Resource Conservation District / Elk Grove Water Service

Dear Kim Rosmaier,

Please find the enclosed Urban Water Management Plan, 2005 Update for the Florin Resource Conservation District / Elk Grove Water Service as required by the Water Code. You will find the following items necessary for a complete submittal:

- Cover Letter
- Updated UWMP
- Proof of advertising for public hearing regarding the UWMP
- Agenda that includes Board action item to adopt UWMP
- Board resolution adopting UWMP.

This report was heard at a public hearing during a regularly scheduled Board meeting of the FRCD/EGWS Board held on December 21, 2005. Should you have any questions or comments, or require additional information, please contact me at (916) 869-4957 or via e-mail at scott@theh2ogroup.com.

Sincerely,

Scott Myers
District Engineer

Attachments: (UWMP, 2005 Update)

cc: John Ornellas, FRCD/EGWS



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California State Library
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Subject: Urban Water Management Plan, 2005 Update for the Florin Resource Conservation District / Elk Grove Water Service

Please find the enclosed Urban Water Management Plan, 2005 Update for the Florin Resource Conservation District / Elk Grove Water Service to be filed with the California State Library as required by the Water Code. You will find the following items necessary for a complete submittal:

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- Updated UWMP
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cc: Kim Rosmaier, DWR
John Ornellas, FRCD/EGWS



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Water Utility Contact Information

Agency Information

Utility Name	Florin Resource Conservation District/ Elk Grove Water Service
Address	9257 Elk Grove Boulevard
City	Elk Grove
State	CA
Zip Code	95624

Contact Information

Salutation	First Name	Last Name
Mr.	John	Ornellas
Title	Operations Manager	
Area Code	Phone Number	Extension
916	685-3556	
Electronic Mail Address	jornellas@egws.org	





Introduction

Requirement for an UWMP

Urban water suppliers are required by the Urban Water Management Planning (UWMP) Act to update their UWMP and submit a complete plan to the Department of Water Resources (DWR) every five years. As defined by Water Code Section 10617, an “urban water supplier” means a supplier, either publicly or privately owned, who provides water to more than 3,000 customers or supplies more than 3,000 acre-feet of water annually on a wholesale or retail basis.

An UWMP is required in order for a water supplier to be eligible for DWR administered State grants and loans and drought assistance. An UWMP is considered to be a source of information for Water Supply Assessments (Senate Bill 610) Water Code Section 10613 et seq. (Added by Stats. 2001, c. 643), and Written Verifications of Water Supply (Senate Bill 221) Water Code Section 66473.7 (Added by Stats. 2001, c. 642).

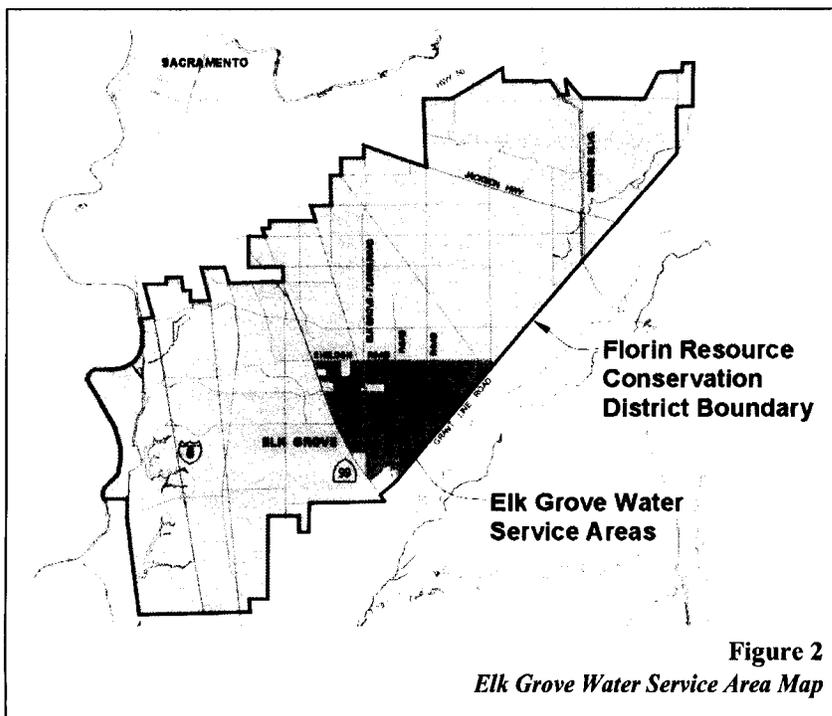
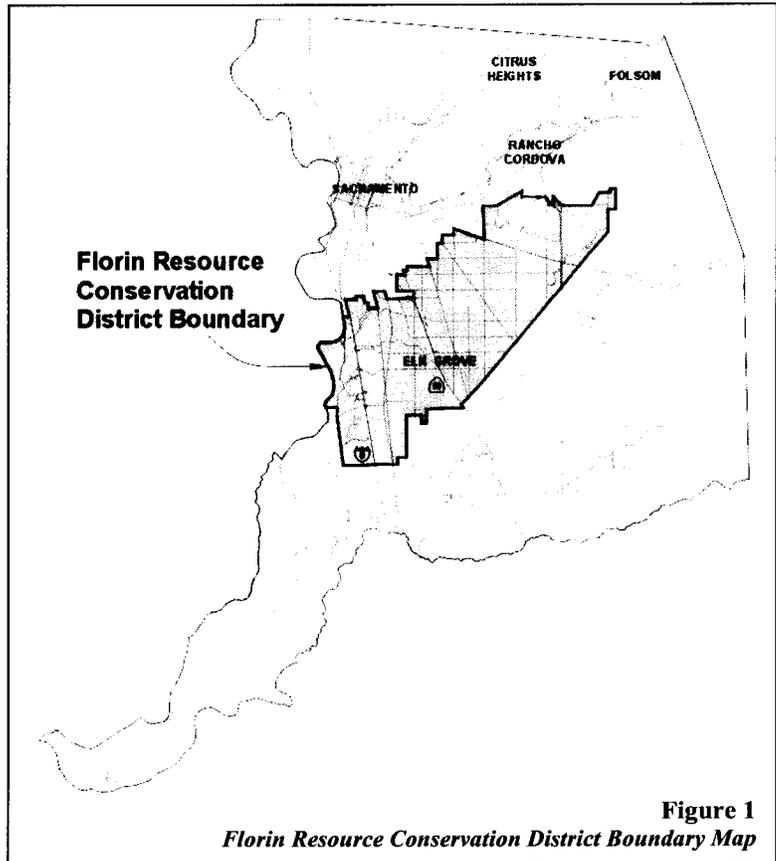
This UWMP represents a complete and thorough plan that has been updated for the Florin Resource Conservation District / Elk Grove Water Service (FRCD/EGWS) to meet the requirements of the Urban Water Management Planning Act and submitted to the State of California, DWR by December 31, 2005. This Plan is intended to provide the necessary detail and information as a long-range planning document for water supply that will be useful for the City of Elk Grove in preparing their General Plan, or as a foundation document for regional water plans, or as a component to and Integrated Regional Water Management Plan and the efforts of the Central Sacramento County Groundwater Forum.

Background

The FRCD Boundary is located in the south part of the County of Sacramento and is shown in Figure 1. The FRCD acquired the Elk Grove Water Works Inc. (EGWW) in December 1999. After the acquisition, the FRCD changed the name to the Elk Grove Water Service (EGWS) and operates as a Department of the FRCD. The FRCD/EGWS provides water service to a small portion within the FRCD Boundary and is shown in Figure 2. The FRCD/EGWS Service Area is located within the City of Elk Grove, CA. Although the City of Elk Grove incorporated in July 2000, water service is provided by both the FRCD/EGWS and the Sacramento County Water Agency (SCWA). The City limits are also shown on Figure 2 of which the FRCD/EGWS provides retail water service to the areas in blue and the SCWA provides retail water service to the remainder of the City in addition to other areas within the County.



Within the FRCD/EGWS service area, there are two distinct boundaries. Figure 3 shows the two boundaries and are known as Tariff Area 1 and Tariff Area 2. Tariff Area 1 is the boundary for the original certificated area by the Public Utilities Commission (PUC) when water was served by the privately held EGWW. FRCD/EGWS has the responsibility for developing water sources to provide safe, reliable water to its customers. Tariff Area 2 is a result of an expanded franchise area in which the FRCD/EGWS and the SCWA are bound by a Master Water Agreement, whereas the SCWA is the wholesaler responsible for developing and delivering



safe, reliable water through a transmission main grid and the FRCD/EGWS is the retailer responsible for the operation and maintenance of the distribution mains and water services to its customers.

The data and information contained within this report attempts to distinguish between the two Tariff Areas since the responsibility for long term planning, developing, constructing

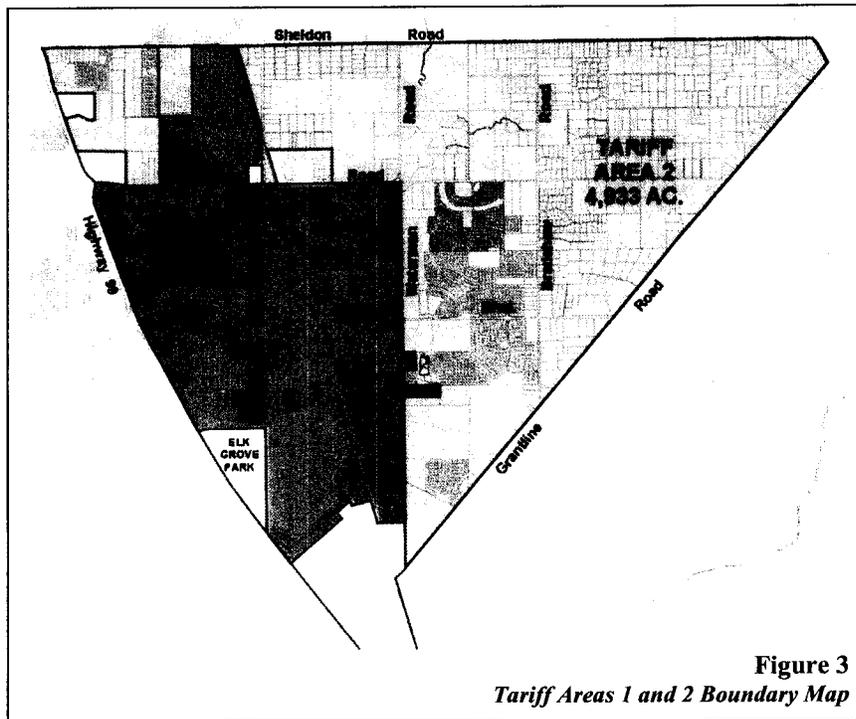


Figure 3
Tariff Areas 1 and 2 Boundary Map

and delivering water supplies fall on the two separate agencies, FRCD/EGWS and SCWA. Separating the data by the two Tariff Areas is intended to avoid confusion by DWR since the water demands, supplies, and projected uses has been included for Tariff Area 2 within the SCWA's Urban Water Management Plan as part of their responsibility being the wholesaler.



Abbreviations and Acronyms

AF or af	Acre Feet
AFY or afy	Acre Feet per Year
Central Basin	Central Sacramento County Groundwater Basin
CSCGF	Central Sacramento County Groundwater Forum
CSCGMP	Central Sacramento County Groundwater Management Plan
CVP	Central Valley Project
DHS	State of California, Department of Health Services
DWR	State of California, Department of Water Resources
EGCSD	Elk Grove Community Services District
EGFD	Elk Grove Community Services District, Elk Grove Fire Department
EGUSD	Elk Grove Unified School District
EGWS	Elk Grove Water Service
ETo	Evapotranspiration
FRCD	Florin Resource Conservation District
FRWA	Freeport Regional Water Authority
FRWP	Freeport Regional Water Project
GMP	Groundwater Management Plan
GPM or gpm	Gallons per Minute
MG	Million Gallons
MGD	Million Gallons per Day
M&I	Municipal and Industrial
mg/l	Milligrams per liter
NWS	National Weather Service
ppb	Parts per billion (identical to ug/l)
ppm	Parts per million (identical to mg/l)
RWQCB	Regional Water Quality Control Board
SACOG	Sacramento Area Council of Local Governments
SAWWA	Sacramento Area Water Works Association
SCWA	Sacramento County Water Agency
SRCSD	Sacramento Regional County Sanitation District
SWRCB	State Water Resources Control Board
ug/l	Micrograms per liter
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
WFA	Water Forum Agreement
WFSE	Water Forum Successor Effort
WTP	Water Treatment Plant
WTSF	Water Treatment and Storage Facility



1. Agency Coordination

1.1 Basin Wide Groundwater Plan (§ 10620 (d))

EGWS is a participant and stakeholder in the Central Sacramento County Groundwater Forum (CSGFM) that is responsible for developing the basin wide Central Sacramento Groundwater Management Plan (CSCGMP). This plan is discussed in more detail in **Section 2.3.1**.

1.2 Coordination with Appropriate Agencies (§ 10620 (d))

EGWS coordinated the development of this UWMP by having specific and on-going coordination meetings with the following appropriate agencies over the last several years:

- City of Elk Grove, Planning Department
- City of Elk Grove, Public Works Department
- Elk Grove Community Services District (CSD), Parks & Recreation Department
- Elk Grove CSD, Elk Grove Fire Department
- Elk Grove Unified School District, Facilities and Planning
- Sacramento County Water Agency
- Sacramento Regional County Sanitation District
- Stakeholders for Central Sacramento County Groundwater Forum

The information and issues discussed with the various agencies included planning of upcoming development projects or expansions of existing facilities to accommodate the current or anticipated growth in the Elk Grove area. This allowed all entities involved to consider the most efficient and effective ways to utilize its resources to develop long-term solutions that focus on health and safety, reliability, and efficiency and conservation. The participation of these appropriate agencies in the development and review of the UWMP are summarized in **Table 1-1**.

One example of coordinating with another agency is when EGWS met with representatives from the Elk Grove CSD, Parks & Recreation Department. Elk Grove CSD is considering the connection of their domestic water lines in its regional park to the EGWS public water system. This will allow the park system to meet the requirements of the new water quality standard for Arsenic that goes into effect in January 2006. EGWS has started implementation of its solution for meeting the new standard and is nearly complete. Another benefit to the regional park connecting its domestic system to the public water supply system is that the regional park was set up originally when it was owned and operated by the County of Sacramento as a dual water system with the domestic system and irrigation system separate. Since the park was being supplied by a single source of water supply, there were modifications to





the park’s water system that created cross connections. Recently, EGCS D conducted a cross connection investigation and identified the necessary improvements required to remedy this situation. EGCS D is moving forward with those improvements and is expected to connect the domestic system to the EGWS public water supply system around January 1, 2006. The irrigation system will still be supplied by an on-site groundwater well; however, the Sacramento Regional County Sanitation District has plans that could potentially deliver recycled water to the Elk Grove Regional Park in the future. The regional park will already have the required infrastructure to be able to easily switch its supply from groundwater to recycled water with minimal costs, once it becomes available.

**Table 1-1
Coordination with Appropriate Agencies**

	Participated in UWMP development	Commented on draft UWMP	Attended public meetings	Contacted for assistance	Received copy of draft UWMP	Sent notice of intention to adopt	Not Involved / No Information
City of Elk Grove	x		x		x	x	
Elk Grove CSD, Parks & Recreation	x			x	x	x	
Elk Grove CSD, Fire Department	x			x	x	x	
Elk Grove Unified School District	x			x	x	x	
Sacramento County Water Agency	x		x	x	x	x	
Sacramento Regional County Sanitation District	x		x		x	x	
Central Sacramento County Groundwater Forum	x		x		x	x	

1.3 UWMP Preparation (§ 10620 (e))

EGWS prepared the UWMP with its own staff in coordination with their consultant, The H2O Group, Inc. EGWS added a Resource Conservation Coordinator (Ms. Ellen Carlson) to its staff in 2003 who splits her time serving the responsibilities for both the FRCD and EGWS. Ms. Carlson was responsible for analyzing and preparing responses for the Demand Management Measures (DMM’s) for the UWMP. The Project Manager responsible for the remainder of the development and preparation of the UWMP is Mr. Scott Myers of The H2O Group who also serves as the District Engineer for EGWS.





1.4 Resource Maximization and Import Minimization Plan (§ 10620 (f))

EGWS is a stakeholder and participates in the Central Sacramento County Groundwater Forum (CSCGF), as discussed previously. The result of this effort will be the development of the Central Sacramento County Groundwater Management Plan (CSCGMP) anticipated to be complete in early 2006. In addition to the CSCGMP, the Sacramento County Water Agency (SCWA) is a signatory to the Water Forum and is working through both the Water Forum Successor Effort (WFSE) and as a participant and stakeholder in the CSCGF to develop and implement a conjunctive use program.

One objective of the groundwater management plan is described in **Appendix G**, SCWA 2005 Zone 41 UWMP under Section 2.3 Water Reliability; Effects of WFA (Water Forum Agreement) Implementation, "...intent of the WFA is to implement a conjunctive use program throughout a large portion of Sacramento County...south of the American River that will increase the use of groundwater in dry years and increase the use of surface water in wet years. ...In wet years, when more surface water is available, diversions will be increased promoting recharge of the groundwater basin." Although the conjunctive use program will import surface water into the Central Basin, it will allow a more efficient use of the groundwater basin effectively maximizing the water resources available. This program would benefit EGWS directly in Tariff Area No. 2 since the SCWA is responsible for providing wholesale water supplies to this area. Even though EGWS Tariff Area No. 1, comprised of approximately 7,700 service connections, is supplied completely by groundwater and will not be a recipient of water that is part of a conjunctive use program, there will be an indirect benefit since the groundwater basin will be recharged as part of the basin wide conjunctive use program.

Another objective of these plans is the further development and implementation of recycled water. Although the cost of developing and delivering recycled water to the areas served by EGWS is not yet cost effective, efforts of the Sacramento Regional County Sanitation District (SRCSD) and the SCWA are continuing to develop the ability to deliver as much as 10 million gallons per day (MGD) to the areas just west of the EGWS service areas and may possibly include the Elk Grove Regional Park discussed in an example previously. A more detailed description of the Recycled Water Program is discussed in Section 5 of this UWMP.





1.5 Due Date for UWMP (§ 10621 (a))

This UWMP has been prepared in coordination with appropriate agencies and a public hearing was conducted to allow the Plan to be submitted to the State of California, Department of Water Resources (DWR) on or before the deadline of December 31, 2005.

1.6 City and County Notification and Participation (§ 10621 (b))

Upon completion of the Draft UWMP, EGWS provided notification to the appropriate agencies, including both the City of Elk Grove and the Sacramento County Water Agency encouraging review of the UWMP and the invitation to provide comments and participate at the public hearing. See **Appendix D** for copies of the letters sent to the various agencies. If comments are received from any agencies or through the public hearing process, the comments will be addressed and incorporated into the UWMP.

1.7 Changes or Amendments to UWMP (§ 10621 (c))

If there are significant changes, impacts or new information that would require the UWMP to be updated or amended prior to the next required plan update in 2010, EGWS will follow the procedures set forth in Water Code Sections 10640 through 10645.





2. Contents of UWMP

2.1 Level of Planning (§ 10630)

The EGWS is a medium sized water purveyor delivering water to over 11,500 service connections (as of 12/2005) representing an estimated population of 38,000 people. The annual water delivery for 2004 totaled nearly 8,500 AFY, which includes both Tariff Area No. 1 and No. 2. Since it is the responsibility of the SCWA, as the wholesaler for Tariff Area No. 2 to plan and develop the long term water supplies, the planning responsibility for EGWS is effectively reduced to the existing customers and projected buildout for Tariff Area No. 1 only. Tariff Area No. 1 represents a total of approximately 7,600 service connections (as of 12/2005) with a projected buildout of 8,000 to 8,500 service connections. The annual water delivery for 2004 to Tariff Area No. 1 only totaled just over 6,300 AFY.

Even though the EGWS is responsible for the planning efforts for its water supply for only Tariff Area No. 1, which is effectively 90-95% built out, it takes its planning responsibilities seriously. This UWMP was prepared based on an appropriate level of planning for its size and responsibilities. Additionally, EGWS is an active participant in local and regional planning efforts (i.e. Central Sacramento County Groundwater Forum), as well as a member in local, state, and federal associations, like the Sacramento Area Water Works Association (SAWWA), Association of California Water Agencies (ACWA), and American Water Works Association (AWWA). EGWS is primarily focusing its planning efforts on issues related to addressing new regulatory requirements (i.e. the new lower Arsenic standard, and meter retrofit requirements), aging infrastructure, and water conservation efforts.

2.2 Service Areas (§ 10631 (a))

2.2.1 Population

In the last several years, the population and growth in the City of Elk Grove has increased at a rapid pace. Population growth within this area is expected to continue for the next several years at this accelerated rate. Currently, the housing market in the resale area is starting to slow; the new housing market is still performing well. The projected populations for the areas served by EGWS are shown in **Table 2-1**. These values were developed based partly on data obtained from the Sacramento Area Council of Governments (SACOG) website (www.sacog.org). The areas served by EGWS are fixed and will limit the growth rate within these areas as they reach maximum buildout condition. It is estimated the maximum number of service connections for the EGWS service area is in the range of 14,000 to 15,000, representing a population of approximately 46,000 to 50,000 people. The population





projections shown in **Table 2-1** have been adjusted to slow the growth rate down in years 2020, 2025 and 2030 as the service areas are expected to be nearing maximum buildout.

Table 2-1 Population - Current and Projected						
	2005	2010	2015	2020	2025	2030 - opt
Tariff Area #1¹	25,097	25,598	25,854	26,113	26,348	26,400
Tariff Area #2²	12,979	14,926	17,165	19,568	21,720	23,100
Total Service Area Population	38,075	40,524	43,019	45,681	48,068	49,500

Note: Population based on an average of 3.3 persons per service connection with projections modified based on data extracted from SACOG and adjusting growth rate down as both Tariff Areas reach maximum build out conditions. The growth rate for Tariff Area No. 1 is slower overall compared to the new growth areas of Tariff Area No. 2. This is due to the fact that Tariff Area No. 1 is already 90 – 95% built out.

¹ FRCD/EGWS is responsible for both the water supply and retail service for Tariff Area # 1.

² FRCD/EGWS is responsible for retail service only for Tariff Area #2. Sacramento County Water Agency is responsible for the water supplies.

2.2.2 Climate

EGWS is located in Sacramento County within the Central Valley of California and has a moderate climate. Typically the summers are warm to hot with little to no rain, and winters are cool and wet with an average rainfall of 18 inches per year. The transition from summer to winter and winter to summer is generally short with little noticeable season for fall or spring. The data is summarized and shown in **Table 2-2**. The source of this data is based on information obtained from the Western Region Climate Center, www.wrcc.dri.edu and the California Irrigation Management Information System (CIMIS), www.cimis.water.ca.gov.





**Table 2-2
Climate**

	Average Eto¹	Average Precip. (in.)²	Average Max. Temp. (°F)	Average Min. Temp. (°F)
January	1.59	3.69	53.3	39.5
February	2.20	3.20	59.6	43.1
March	3.66	2.64	64.8	45.7
April	5.08	1.40	71.1	48.4
May	6.83	0.62	78.1	52.4
June	7.80	0.15	85.8	56.8
July	8.67	0.01	91.5	59.1
August	7.81	0.03	90.4	58.6
September	5.67	0.31	86.2	57.0
October	4.03	0.93	76.7	51.6
November	2.13	2.02	64.0	44.5
December	1.59	3.14	54.0	39.9
Annual	57.06	18.14	73.0	49.7

¹ Eto is an abbreviation for Evapotranspiration. Source: California Irrigation Management Information System (CIMIS)

² Source: Western Regional Climate Center

2.2.3 Demographic Factors

EGWS is located within the City of Elk Grove in Sacramento County and is comprised of single family residential units with some multi-family units, neighborhood commercial establishments, and limited light industrial users. Most residential units are of a typical size and on a lot size of approximately 8,000 square feet (typical of 5 homes to an acre). Most residential units are priced near the median home price with family incomes also in the median range. The only noticeable demographic factors that affect water management or usage in the area, is the home sites near the rural agricultural-residential properties where residential developments have created lot sizes of 1 to 2 acres in size. These larger lots typically contain estate style homes that generally significantly exceed the median home price and are owned by families that generally exceed the median income range. The lots of these homes will typically be fully landscaped containing mostly turf as the landscape material. This tends to lead to significant water use for irrigation purposes during the warmer summer periods. Efforts of EGWS include attempting to inform and educate our customers in utilizing water efficient landscaping designs, materials, irrigation equipment, etc. in order to conserve water. Other areas that may encourage water





conservation measures include the evaluation of EGWS' water rate structure to establish more significant tiered rates for higher than average water users.

2.3 Water Supply Sources (§ 10631 (b))

The water supply sources for EGWS consist of primarily groundwater for both service areas, Tariff Area No.1 and No. 2. Areas in Tariff Area No. 2 are provided water through a wholesale master water agreement with the SCWA. Tariff Area No. 2 is located within the boundaries of SCWA's Zone 40, which has various sources of water supply, including groundwater, surface water, and recycled water. EGWS has a contractual agreement of up to 8,000 AFY with SCWA. Although Tariff Area No. 2 does not receive recycled water, and currently does not receive any significant amount of surface water, SCWA is in the process of developing substantial surface water supplies as part of the Freeport Regional Water Project (FRWP) operating in a cooperative effort under the Freeport Regional Water Authority (FRWA). For additional information on the efforts of SCWA and their conjunctive use program, refer to the SCWA 2005 Zone 41 UWMP, Section 2 entitled "Water Supplies", see **Appendix G**.

Groundwater supplies will be discussed in the following section, see **Section 2.3.1**. **Table 2-3** summarizes the current and future water supply sources and the quantities available.

Water Supply Sources	2005	2015	2018	2020	2025	2031 - out
Water purchased from:						
Securities Energy Water Agency	3,933	4,523	5,201	5,930	6,582	7,000
Supplier purchased groundwater	7,605	7,757	7,835	7,913	7,984	8,000
Total	11,538	12,280	13,036	13,843	14,566	15,000



2.3.1 Groundwater Supplies

Groundwater is the primary source of water supply for EGWS for both of its service areas. Tariff Area No. 1 has historically been served by 12 shallow wells (between 200 and 600 ft. in depth). EGWS is currently upgrading this older system with a major capital improvement program, which includes 5 new deep wells (between 800 and 1100 ft. in depth), a centralized groundwater treatment and storage facility, and many miles of large diameter water transmission mains. The new infrastructure is primarily a capital replacement program, however, the infrastructure has been sized to support the maximum buildout of Tariff Area No. 1, currently 90 – 95% built out.

2.3.2 Groundwater Management Plan

Zone 40 Groundwater Management Plan

As a recipient of water supplies from our wholesaler for Tariff Area No. 2, EGWS is indirectly a part of the SCWA's Zone 40 Groundwater Management Plan that was adopted in October 2004. This GMP contains more detailed information about Zone 40's groundwater basin, groundwater supplies, and basin management objectives. A copy of the Zone 40 GMP can be found in the SCWA 2005 Zone 41 UWMP.

Central Sacramento County Groundwater Management Plan

EGWS has been participating as a member of the Central Sacramento Groundwater Forum, which is responsible for developing the Central Sacramento County Groundwater Management Plan (CSCGMP). This effort brings together various basin stakeholder groups including representatives of urban, business, environmental, agricultural, and agricultural-residential interests. The CSCGMP will be the basis of establishing the governance authority covering the Central Sacramento County Groundwater Basin. The Groundwater Management Plan is expected to be completed in early 2006. Upon completion, a copy will be provided to DWR.

2.3.3 Groundwater Basin

South American Basin

Both EGWS and its wholesaler, SCWA, pumps groundwater from the South American Subbasin of the Sacramento Valley Groundwater Basin, as defined by DWR's Bulletin 118 to serve Tariff Area No. 1 and No. 2, respectively. This subbasin is bounded on the east by the Sierra Nevadas, on the west by the Sacramento River, on the north by the American River, on the south by the Cosumnes and Mokelumne Rivers. Additional details about this subbasin is summarized below:

- DWR Groundwater Basin Number: 5-21.65
- Surface Area: 248,000 acres (388 square miles)
- Average annual precipitation ranges from about 14" along the western boundary to greater than 20" along the eastern boundary.





- Water bearing formations is comprised of continental deposits of Later Tertiary to Quaternary age, and includes younger alluvium, older alluvium, and Miocene/Pliocene volcanics.
- Older alluvium deposits consist of loosely to moderately compacted sand, silt and gravel deposited in alluvial fans. A number of formational names have been assigned to the older alluvium, including the Modesto and Riverbank Formations, Victor Formation, Laguna Formation, Arroyo Seco Gravels, South Fork Gravels, and Fair Oaks Formation. Thickness of the older alluvium is about 100 to 650 feet.
- Miocene/Pliocene Volcanics deposits consist of a sequence of fragmental volcanic rocks and are comprised of intervals of “black sands”, stream gravels, silt, and clay interbedded with intervals of dense tuff breccia. The sand and gravel intervals are highly permeable and wells completed in them have high yields. The formation name for this unit is the Mehrten Formation, having thicknesses between 200 and 1,200 feet.

A copy of the description of the South American Subbasin from DWR’s Bulletin 118 is included in **Appendix E**. This groundwater basin is not adjudicated and the groundwater level trends do not indicate the basin to be in an overdraft condition. According to the description of this subbasin, “From 1995 to 2000 most water levels recovered by up to 20 feet leaving them generally higher than levels prior to the 1987 through 1992 drought”.

2.3.4 Groundwater Production

The information provided in this discussion will summarize the details of the groundwater production for the area served by EGWS within its Tariff Area No. 1 service area. For Tariff Area No. 2, the discussion of water supply and groundwater production is identified by our wholesaler and can be found in the SCWA 2005 Zone 41 UWMP, see **Appendix G**.

EGWS has historically supplied its customers in Tariff Area No. 1 with groundwater pumped from 12 shallow wells completed in the Laguna Formation as identified in the previous section. However, the addition of several new deep wells completed in the Mehrten Formation as part of a capital improvement and capital replacement program is also supplying the demands of Tariff Area No. 1. These projects and program is discussed later in **Section 2.9**. Historical and projected groundwater pumping amounts are provided for Tariff Area No. 1 only and are shown in **Tables 2-4 and 2-5**.





Table 2-4
Amount of Groundwater pumped - AFY

Service Area(s)	2010	2015	2020	2025	2030
S. American River Basin (Tariff Area No. 1 only)	6,411	6,882	6,762	6,346	6,337
% of Total Water Supply	N/A	N/A	84.74%	79.60%	74.60%

Table 2-5
Amount of Groundwater projected to be pumped - AFY

Service Area(s)	2010	2015	2020	2025	2030 - opt
S. American River Basin (Tariff Area No. 1 only)	7,757	7,835	7,913	7,984	8,000
% of Total Water Supply	63.2%	60.1%	57.2%	54.8%	53.3%

2.4 Reliability of Supply (§ 10631(c))

Again, the information provided in this discussion will summarize the details of the reliability of water supply for the area served by EGWS within its Tariff Area No. 1 service area only. For Tariff Area No. 2, the discussion of water reliability is identified by our wholesaler and can be found in the SCWA 2005 Zone 41 UWMP in Section 2.3 “Water Reliability”, see **Appendix G**.

EGWS provides water to Tariff Area No. 1 and is supplied completely by utilizing only groundwater to its customers. According to the Water Forum Agreement (WFA), the long-term average annual yield from the Central Basin is 273,000 AFY, of which the projected year 2030 demand for Tariff Area No. 1 is 8,000 AFY. As a participant of the CSCGF discussed previously in **Section 2.3.2**, the demands for EGWS’ Tariff Area No. 1 are accounted for in the total yield of the Central Basin, and become less susceptible to reductions in supply during dry years. This is due to the better management of groundwater resources with the addition of surface water to the Basin. In wet years, neighboring water purveyors (primarily SCWA) will be relying more on available surface water supplies allowing for in-lieu groundwater storage or “groundwater banking” that will allow a more reliable supply of groundwater in the dry years without creating an overdraft condition for the Basin. See **Tables 2-6, 2-7 and 2-8** for a summary of the water supply reliability and the factors affecting those supplies.



**Table 2-6
Supply Reliability for 2030 - AF Year (Tariff Area No. 1 only)**

Normal Water Year	Single-Dry Water Year	Year 1	Year 2	Year 3	Year 4
8,000	8,000	8,000	8,000	8,000	8,000
% of Normal	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 2-7
Basis of Water Year Data**

Water Year Type	Base Year(s)	Year Sequence
Average Water Year	1981	1961-1991
Single-Dry Water Year	1989	
Multiple-Dry Water Years	1987-1990	

**Table 2-8
Factors resulting in inconsistency of supply**

Name of supply	Legal	Environmental	Water Quality	Climatic
Groundwater (Tariff Area No. 1)	None	None	None	None
SCWA Wholesale Water (Tariff Area No. 2)	Refer to SCWA 2005 UWMP			

2.4.1 Water Use By Year Type

Water Use in Wet/Normal Year

According to the SCWA 2005 Zone 41 UWMP, a wet/average year occurs 64 percent of the years over the 70-year hydrologic period. In those years, SCWA will maximize its surface water diversions and deliveries allowing groundwater supplies to be used at or below the identified average annual yield for the Central Basin. For additional details, refer to the SCWA 2005 Zone 41 UWMP in **Appendix G**.

Water Use in a Drier Year

Drier years occur in 28 percent of the years according to the SCWA 2005 Zone 41 UWMP. In those years, the surface water diversion and deliveries by SCWA will be less than during wet/normal years. Through the SCWA's conjunctive use program, in drier years, groundwater will be used to supplement the reduction in available supplies of surface water. According to the SCWA UWMP, water supply deliveries of 95% will be provided compared to wet/normal water years. For additional details, refer to the SCWA 2005 Zone 41 UWMP, see **Appendix G**.





Water Use in Multiple Dry Years

The driest years occur in only 8 percent of the years according to the SCWA 2005 Zone 41 UWMP. In those years, a majority of the supplemental supplies will be derived from additional groundwater extraction. According to the SCWA UWMP, water supply deliveries of 85% will be provided compared to wet/normal water years. For additional details, refer to the SCWA 2005 Zone 41 UWMP, see **Appendix G**.

Impacts to EGWS During Dry or Multiple Dry Years

EGWS will likely not be impacted during periods of dry or drier years within the Central Basin due to the programs implemented by the Water Forum, largely by SCWA. When EGWS and SCWA experience a dry or drier years, SCWA and EGWS may need to implement their Water Shortage Contingency Plans. Since SCWA and EGWS rely on the same groundwater basin, both agencies will be subject to similar conditions. Efforts by EGWS to address any water shortages will be similar to that of SCWA; it has, therefore, modeled its Water Shortage Contingency Plan after that of SCWA. EGWS would subject both of its service areas (Tariff Area No. 1 and No. 2) to the same restrictions, as it would benefit the Central Basin as a whole. Refer to **Section 4** in this UWMP for additional details of the Water Shortage Contingency Plan.

2.5 Transfers and Exchanges (§ 10631(d))

Due to the fixed boundaries and medium size of the areas served where EGWS is responsible for its water supplies, there is little opportunity or need to identify any transfers or exchanges. Only in the event of a major catastrophe, effecting multiple portions of the infrastructure and facilities of EGWS, would there be a need to have our neighboring water purveyor, SCWA, provide the Tariff Area No. 1 service area with supplemental water supplies. The water source, facilities and infrastructure in Tariff Area No. 1 currently has several layers of redundancy that would allow EGWS to continue to provide reliable service to its customers during most conditions. In the event that supplemental water deliveries were required for Tariff Area No. 1, or deliveries from Tariff Area No. 1 to SCWA, there are multiple emergency inter-tie connections throughout the perimeter of the common service boundaries to support such a need. In most scenarios conceivable, this would only require what would be categorized as a short-term period. See **Table 2-9** for a summary of the anticipated or conceivable transfers or exchanges.

Table 2-9
Transfer and Exchange Opportunities - AF Year

Transfer Agency	Type of Exchange	Short Term	Proposed Quantities	Long Term	Proposed Quantities
SCWA	Emergency	Yes	<500	Possible	<2,000
Total			<500		<2,000

