American River Basin

Attachment 3: Work Plan

Supporting Documents

Att3_IG1_ARB_Workplan_5of10 includes the following:

Project No.	Project Name	Supporting Documentation Included	Notes
8	Sacramento Regional County Sanitation District / Sacramento Power Authority Recycled Water Project	SRCSD/SPA Recycled Water Project Feasibility Study	The Feasibility Study for the project also includes the conceptual design drawings for the project.

SRCSD/SPA Recycled Water Project Feasibility Study (Part 1 of 3)

Sacramento Regional County Sanitation District (SRCSD) / Sacramento Power Authority (SPA) Recycled Water Project to Serve the SPA Cogeneration Facility at the Campbell Soup Plant

(SRCSD/SPA Recycled Water Project)

Feasibility Study

(Last Update: December 2010)

Sacramento Regional County Sanitation District

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ATTACHMENTS:

FEASIBILITY STUDY

Section 1: Introduction

Sacramento Regional County Sanitation District (SRCSD), in consultation with the City of Sacramento (City) and the Sacramento Power Authority (SPA), evaluated the feasibility of providing recycled water service to SPA's Cogeneration Facility, located at the Campbell and Soup Plant in south Sacramento. This Feasibility Study addresses the feasibility for a new pipeline to convey recycled water from the Sacramento Regional Wastewater Treatment Plant (SRWTP) to the Cogeneration facility. Furthermore, this Feasibility Study identifies other possible users along the potential pipeline alignment that could take advantage of the recycled water pipeline to connect to a recycled water supply.

SRCSD provides wastewater conveyance, treatment, and disposal services for approximately 1.4 million residents that live in the Sacramento metropolitan region. City provides a variety of public services—one of these services includes the production, delivery, and distribution of potable water to local customers within the City limits and select nearby areas. SPA is a joint powers authority formed by the Sacramento Municipal Utility District (SMUD) and the Sacramento Municipal Utility District Financing Authority in 1993. SPA was formed for the purpose of owning and operating the SPA Cogeneration Project and related facilities for electric power generation. SPA has no staff and is obligated to reimburse SMUD for the actual costs of providing general and administrative services and fuel costs. SPA's Commission is comprised of SMUD's Board of Directors.

Two levels of recycled water were considered: secondary-23 and tertiary recycled water. These two types of recycled water meet Title-22 of the California Code of Regulations. Both sources of recycled water are produced at the SRCSD Sacramento Regional Wastewater Treatment Plant (SRWTP) and the Water Reclamation Facility (WRF). The SRWTP currently produces secondary recycled water and the WRF produces tertiary recycled water. An alternative that included the potential construction of a Satellite Wastewater Treatment Plant near the Cogeneration Facility was also considered, but it was deemed less cost-effective and less flexible when compared with the SRWTP and the WRF.

Section 2: Regional Setting and Project Description

Regional Setting

The Sacramento region has historically relied upon local rivers and groundwater basins to meet its potable and non-potable water demands. However, as periods of prolonged droughts occurred in the 1970s/80's coupled with population growth, increased water demands contributed to declining groundwater levels. The decline in these levels became more significant in the southern portion of Sacramento County. At the same time, standard requirements to discharge into local and state water ways continued to become more stringent.

Recognizing the need to provide adequate water supply and wastewater services for a growing community and the benefits that a Water Recycling Program (WRP) could bring to each agency, SRCSD and the Sacramento County Water Agency (SCWA) started working together in the 1990's to explore the possibility of using recycled water within their service area. In June 2002, SRCSD and SCWA entered into the recycled water Wholesale Agreement. Through this agreement, SRCSD is responsible for producing and providing recycled water to SCWA, which in turn is responsible for distributing and retailing recycled water to select customers.

In April 2003, SRCSD completed the construction of the WRF Phase I Demonstration Project and has been producing tertiary recycled water since then. Based on the success of this project, in 2004, the SRCSD Board of Directors approved strategic concepts to evaluate the possibility of increasing the delivery of recycled water from 5 million gallons per day (MGD) to 30-40 MGD over the next 20 years.

In February 2007, SRCSD completed its Water Recycling Opportunities Study (WROS), which is included in Attachment E for reference The WROS was the culmination of a two year effort that examined opportunities for the use of recycled water throughout the Sacramento region. As part of the WROS efforts, SRCSD, in conjunction with key stakeholders, began looking at the feasibility of supplying recycled water to the most promising opportunities. The WROS concluded that water recycling projects near the vicinity of the SRWTP are the most promising projects for implementation since they are the closest to a recycled water supply—the SRWTP effluent.

Project Description

The Cogeneration Facility and the Campbell Soup Plant are located approximately 5.5 miles north of the SRWTP, at the northwest intersection of Franklin Blvd. and 47th Avenue. Both facilities are next to each other and are within the service area of the Fruitridge Vista Water Company (FVWC). Their properties are adjacent to the water service area covered by the City. Refer to the map in Figure 1 for details.

City supplies the potable water needs for the Cogeneration Plant since its water demands are high and the FVWC is a small water company that may not be able to reliably meet its water needs. The Campbell Plant utilizes its own groundwater wells and treatment facilities to meet its water needs. They also provide a portion of the groundwater they produce to the adjacent Silgan Can Company Plant (Silgan).

This project is expected to include approximately 5.5 miles of 12-inch diameter transmission pipeline, modifications to piping systems and associated appurtenances at the Cogeneration Plant to use recycled water in-lieu of potable water at its cooling towers, and piping and infrastructure modifications at the WRF treatment facilities. As described here, the project would include the production of recycled water by SRCSD and installation of the facilities necessary to bring the recycled water from the SRCSD WRF to the point of connection near the Cogeneration Plant property. In the future, there is potential for expansion in which the size of the recycled water transmission pipeline could be upsized to allow other recycled water users to connect.

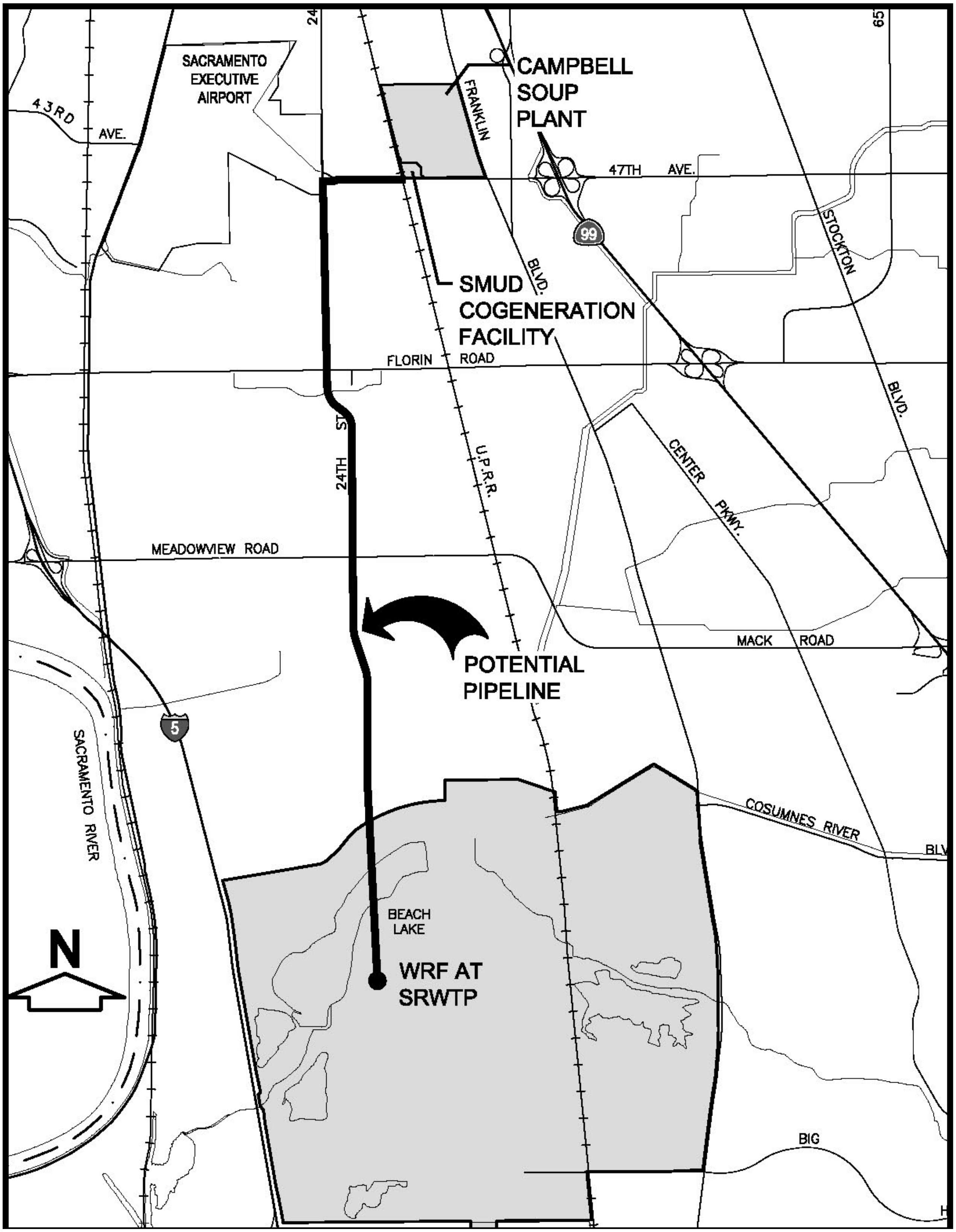


Figure 1 – Vicinity and Project Map

Section 3: Confirm Recycled Water Demand

Estimated Recycled Water Demand and Discharge Analysis for the Cogeneration Facility

City provided the annual amount of potable water supplied to the Cogeneration Facility, while the Campbell Soup staff provided the amount of groundwater they produce per year. SRCSD provided the amount of wastewater discharged into the sanitary sewer system by the Cogeneration Facility, Campbell Plant, and Silgan Plant. Table 1 below summarizes the estimated water demands and discharges for all three industrial facilities.

Table 1. Summary of Estimated Water Demands & Discharges[1]

Facility	Water Demand		Sewer Discharges		Estimated RW Demand[2,3]	
	(AFY)[4]	(MGD)[5]	(AFY)	(MGD)	(AFY)	(MGD)
Cogeneration Plant	1,000	0.9	74	0.066	1,000	0.9
Campbell Plant	1,936	1.46 to 3.44	1,998	1.73	0	0
Silgan	56	0.04 to 0.06	28	0.025	0	0
Total	**2,992**	**2.4 to 4.4**	**2,100**	**1.821**	**1,000**	**0.9**

[1]The estimates shown in this table are based on the information provided by the three industrial facilities.
[2]There may exist opportunities to provide recycled water service to the Campbell Plant and Silgan. Staff from the Campbell Plant did not know at the time of this draft TM what their non-potable demands might be. The staff from Silgan noted that there may not be an opportunity at their facility.
[3]For the purposes of this analysis, it is assumed that recycled water service is only provided to the Cogen Plant. Further coordination with staffs from the Campbell Plant and Silgan is necessary to determine if any of their water demands could be met with the use of recycled water.
[4]AFY = Acre-Feet per year
[4]MGD = Million Gallons per Day

Estimated Recycled Water Demands for other Potential Recycled Water Users near the Project Alignment

Other potential recycled water users, which are shown in Figures 2 and 3, could benefit from the SRCSD/SPA Recycle Water project. These potential additional users include public parks, school grounds, a golf course, and commercial sites. Table 2 below provides a rough estimate on the number of potential users and their potential recycled water demand. At this time the 12-inch diameter recycled water pipeline ($8.38M project capital costs) has been sized to serve the Cogeneration Facility only. If more grant funding became available and with City's concurrence, the pipeline could be easily upsized at a cost-effective manner to serve these additional areas.

Table 2. Potential Additional Recycled Water Customers

User Description	Potential Number of Sites	Potential RW Demand (April – Oct.) (Ac-Ft/Year)
Existing Parks[1]	8	108
Existing Schools[1]	3	109
Existing Irrigation[1]	1	85
Existing Commercial Sites[1]	2	44
Proposed Delta Shores Development[2]	Several	394
Existing Bartley Cavanaugh Golf Course[2]	1	591
Total	**>15**	**1,331**

[1]Potential sites and estimated recycled water demands identified within the existing developed area of the City of Sacramento—along 24th Street, south of 47th Avenue. Refer to Figure 2 for details.
[2]Potential sites and estimated recycled water demands identified in the SRCSC Water Recycling Opportunities Study (SRCSD, Feb. 2007). Refer to Figure 3 for details.

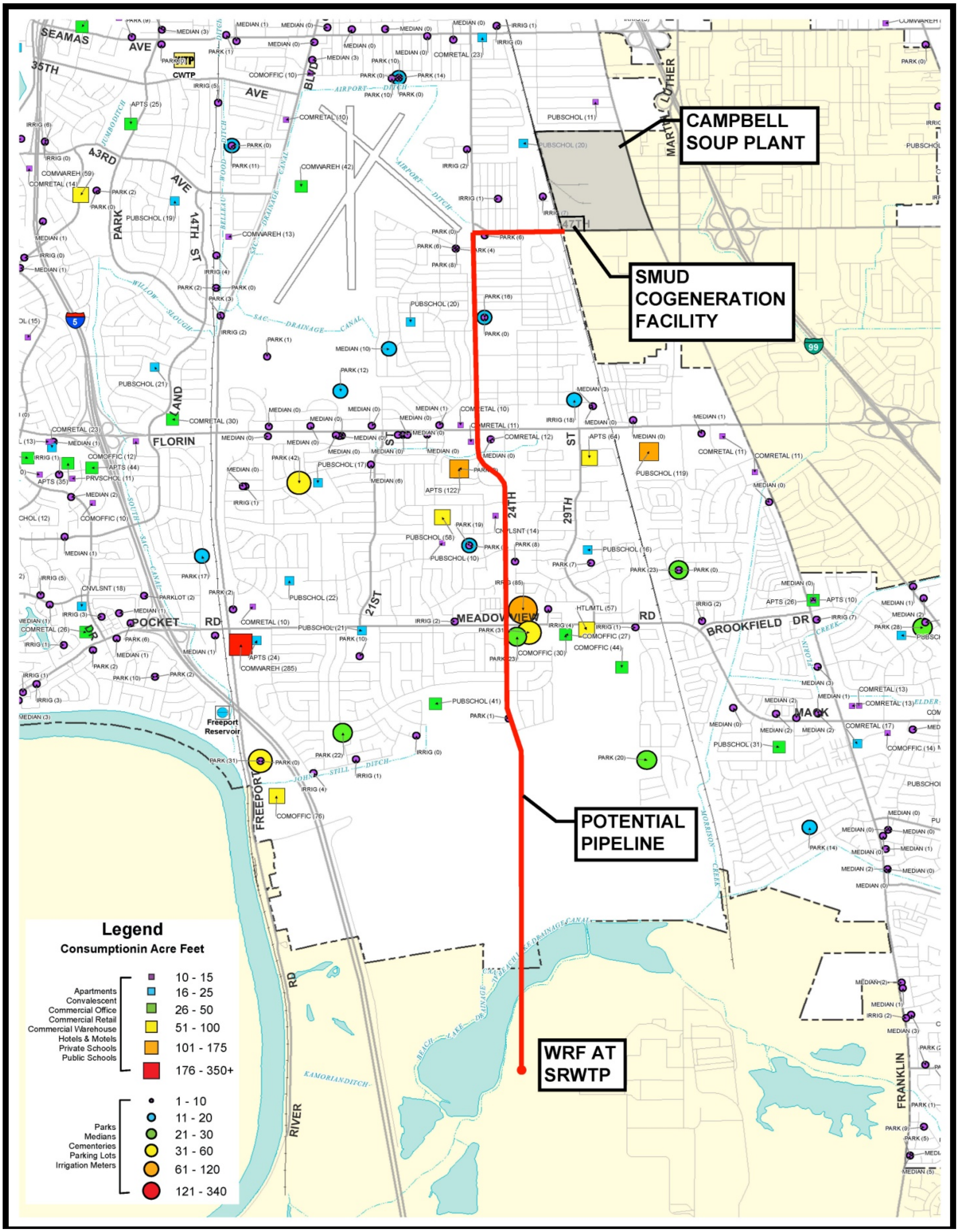


Figure 2 – Other Potential Recycled Water Customers along Pipeline Alignment

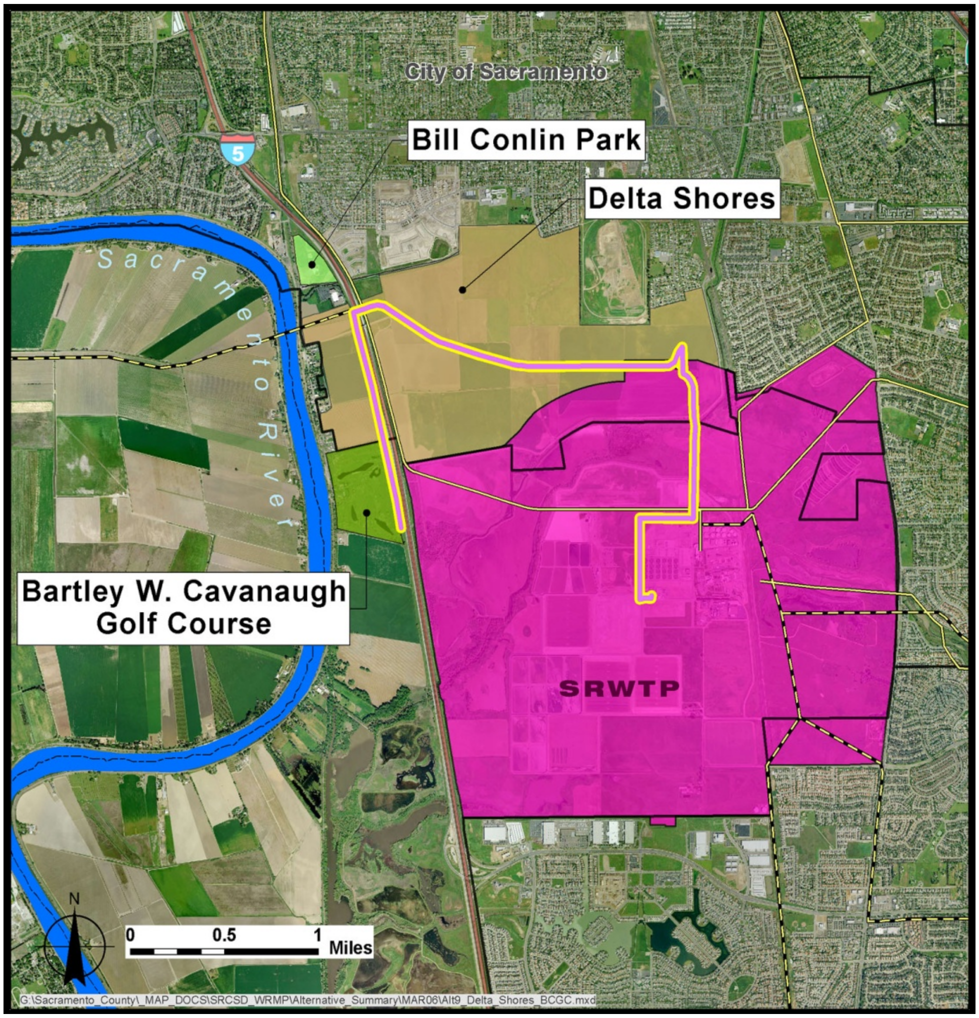


Figure 3. Other Potential Areas that Could Benefit from the SRCSD/SPA Recycled Water Project

Figure 4. Aerial Photograph of Cogeneration Facility

Section 4: Confirm Recycled Water Availability and Selection of Preferred Recycled Water Supply

The following three potential sources of recycled water were considered in this study:

- **WRF at SRWTP**

  Existing WRF (5-MGD capacity)

  The existing WRF was constructed as part of the Phase I Demonstration in the early 2000s. The WRF began operation in April 2003 on a seasonal basis from April to October under the Master Reclamation Permit (Order No. 97-146) that allows for a 5-MGD reclamation plant for Title 22 unrestricted use with expansion up to 10-MGD. The WRF was originally constructed with a design capacity of 5 MGD and provisions were made to facilitate a future expansion up to 10-MGD. During low demand periods where the WRF is offline, the reclaimed water system is supplied by an onsite agricultural well with an estimated capacity of 2.16 MGD.

  The WRF has three major distribution points: 1) SRWTP onsite irrigation, 2) SRWTP onsite non-potable usage, and 3) the Sacramento County Water Agency's (SCWA) reclaimed water distribution system for the Laguna/Elk Grove area. A fourth distribution line could be connected at an existing line reserved for a future connection at the WRF's pumping station. It is anticipated that the SRCSD/SPA Recycled Water Project's pipeline will connect at this location.

  To date, the maximum operating capacity of the WRF is approximately 3.0-MGD, and the average production is approximately 2.14-MGD (2004-2009 periods). SCWA has indicated that over ninety percent (90%) of the recycled water customers identified in the Laguna/Elk Grove area have already been connected to the existing water reclamation system. The future recycled water demand from the remaining customers is not expected to be significant. Therefore, the existing WRF could used to meet the recycled water demand from the Cogeneration Facility.

  Future WRF Expansion Project – Phase II (10-MGD)

  In 2010, SRCSD completed the design of the WRF Expansion Project – Phase II. A copy of the 100% design drawings is included in Attachment F for reference. This project will expand the WRF's treatment capacity from 5 to 10-MGD. Therefore, the Cogeneration Facility can meet its recycled water demands initially through the existing WRF (5-MGD) and eventually through the WRF Phase II Expansion Project (10-MGD).

- **New Satellite Wastewater Treatment Plant at Campbell Soup Plant Property**

  The planning level evaluation for this alternative included the feasibility of constructing a Satellite Wastewater Treatment Plant (Satellite Plant) near the Campbell Soup Plant to produce and provide the recycled water to the Cogeneration Plant. The design for the Satellite Plant would include the use Membrane Bio-Reactor (MBR) technology to scalp and treat raw wastewater flows from nearby sanitary sewer pipelines to produce Title 22 tertiary recycled water.

  Although the use of MBR technology meets Title 22 requirements and has a small footprint area for construction and operations/maintenance, this alternative is not preferred due to higher capital and operational and maintenance expenses, the need to prepare new environmental documents and the acquisition of additional permits, less flexibility to connect new customers, new right-of-way purchases, etc.

- **SRWTP**

  The quality of the recycled water produced by the SRWTP meets or exceeds secondary-23 Title 22 requirements. This type of recycled water could be used to supply the Cogeneration Facility with its non-potable water demands. However, this alternative will require new pumping facilities at the SRWTP, will decrease the flexibility of connecting other recycled water customers along the transmission main alignment, and is very likely to require additional permits.

Recommended Recycled Water Supply Alternative

The use of the WRF is the recommended alternative to produce and supply the recycled water needs of the Cogeneration Facility. The WRF has offers many advantages, such as: use of existing pumping and storage facilities, is permitted to be expanded up to 10-MGD, has a connection point available to connect the transmission pipeline, its water quality is a good fit for the Cogeneration Facility, etc.

Section 5: Recycled Water Transmission Pipeline Alignment

This section briefly describes the alignment for the recycled water transmission pipeline.

Selection of Alignments for Recycled Water Transmission Main

SRCSD staff considered two routes to provide recycled water service from the SRWTP WRF to the SMUD Cogeneration Facility. These two routes include an alignment along 24th Street and the second along the Union Pacific Railroad (UPRR). Attachment A contains several photos taken along these two alignments.

- **SRWTP Property Alignment**
  The recycled water transmission pipeline alignment will start at the connecting point with the WRF's pumping station. The alignment will then head in a west-bound and then north-bound direction following existing (dirt) service roads around the existing SRWTP Solids Storage Basin (SSB) Battery I, before entering the SRWTP Bufferlands west of the Battery. Within the Bufferlands, the alignment crosses Laguna Creek and its associated riparian community, the engineered channel of Morrison Creek (now abandoned), the seasonal wetlands of Upper Beach Lake, and the new Morrison Creek channel. Beyond the creeks, the alignment passes through a broad expanse of grasslands to the northern boundary line of the SRWTP property near 24th Street. A copy of the design drawings associated with this segment of the pipeline alignment is included in Attachment B for reference.

  Tunneling construction methods are anticipated to be used to cross under the creeks and other environmentally sensitive areas. This section of pipeline, from the WRF to the North crossing of Laguna Creek, could be upsized to potentially serve the Barley Cavanaugh Golf Course and other nearby areas with recycled water.

- **Alignment across Proposed Delta Shores Development**
  24th Street currently ends on the northern edge of the proposed Delta Shores Development. It is anticipated that 24th Street will continues south into this development in a North-South fashion. Since the existing lands within this development are undisturbed lands, installation of the recycled water transmission main is expected to be faster and cheaper compared to the other sections of pipeline.

- **24th Street Alignment (North to South)**
  An alignment along 24th Street is possible since it appears to have enough space available to install the recycled water transmission main. 24th Street includes several car lanes and conflicts with overhead utilities are not as restrictive as compared with the UPRR alignment. Furthermore, other nearby water users could be connected to the recycled water transmission in the future as part of an expansion project.

- **UPRR Alignment (North to South)**
  The UPRR alignment is heavily congested with one or two railroad tracks and overhead power lines along one or both sides of the tracks. Other underground utilities may exist, e.g. PG&E gas lines that could be in conflict with the recycled water transmission main.

- **47th Avenue Alignment (East to West)**
  47th Avenue appears to have enough space available to install the recycled water transmission main from 24th Street to the property of the Cogen Plant. However, the crossing of UPRR is likely to require tunneling construction methods to minimize construction impacts.

Section 6: Elements of the SRCSD/SPA Recycled Water Project

This project would require the following elements:

Table 3. Summary of Preliminary Project Elements & Associated Components

Item	Description	Preferred Alternative	Comment
1	Level of Treatment	Tertiary Effluent	The Cogeneration Facility could utilize secondary effluent. However, building a 5-mile long recycled water transmission line to carry secondary effluent does not take advantage of other potential users along the way.
3	Source of Recycled Water	WRF at SRWTP	The WRF at the SRWTP produces tertiary effluent and has capacity available to meet the recycled water demands from the Cogeneration plant
4	Storage Facilities	Existing storage tank at WRF	The existing 2-million gallon storage tank near the WRF can be used to serve the Cogeneration Facility
5	Pumping Facilities	Pumping Station at WRF	The existing pumping station near the SRWTP has capacity to serve the Cogeneration Facility.
6	Back-up Water Supply	Groundwater well at SRWTP or Potable Water from City	In the event recycled water became unavailable to serve the Cogeneration Facility, a back-up groundwater well located at the SRWTP and/or the City's existing potable water supply line could be used to serve the Cogeneration Facility.
7	Recycled Water Pipeline Corridor	24th Street (N-S) and 47th Ave. (E-W)	An alignment along 24th St. has more potential users along the way, including the Bing Maloney G.C. as an example. An alternate alignment along the UPRR may not be possible due to conflicts with other utilities.
8	Length of RW pipeline	~5.5 miles	Actual length will change and depends on the final alignment used.
9	Recycled water demands	~1,000 AFY or ~0.9 mgd	Assumes year round use at Cogeneration Plant. (Refer to Table 2 for details)
10	Pipe Diameter	12 inches	Based on hydraulic conditions
11	Preliminary Cost	$8.38 million	Refer to Table 4 for details.

Section 7: Regulatory and Permitting Requirements

Water Reclamation Facility

1996 FEIR for WRF

The CEQA requirements for the Expansion of the Water Recycling Facility were fulfilled by the *SRCSD Sacramento Regional Wastewater Treatment Plant Reclaimed Water Project Final Environmental Impact Report (FEIR),* which was finalized in April 1996 and certified in May 1996. A Notice of Determination was filed on June 18, 1996. A copy of the 1996 FEIR is included in Attachment C for reference.

Updated Environmental Document for WRF (2009 Update)

Due to the age of the original FEIR, which was certified in May 1996, in 2009 SRCSD completed an Initial Study to determine the appropriate type of environmental document to cover the WRF Phase II Expansion project with up to date environmental requirements. It was determined that a Negative Declaration, pursuant to the California Environmental Quality Act (CEQA), was the appropriate environmental document for the project. This review was prepared consistent with the 1996 EIR and was intended to reflect changes in County requirements now relevant to the project, given consideration to CEQA guidelines § 15162 and 15164. Through this review the applicable mitigation was reiterated, but no new significant impacts were identified. In September 2009, a Negative Declaration was determined as adequate and complete, approving the WRF Phase II Expansion project and adopting the Mitigation Monitoring and Reporting Program (MMRP). A copy of the 2009 Negative Declaration is included in Attachment D for reference.

Wastewater Discharge Requirements

The Central Valley Regional water Quality Control Board (CVRWQCB) Waste Discharge Requirement Permit #97-146, issued in 1997, states that the Water Reclamation Facility is expandable to 10 MGD. In September 2009, SRCSD was notified by the CVRWQCB that there was no need to update this permit to implement the WRF Phase II Expansion Project, which will expand the WRF's treatment capacity from 5 to 10-MGD.

Recycled Water Pipeline within the SRWTP Property

The 1996 SRTWP WRF FEIR included the segment of the recycled water transmission pipeline between the WRF pumping station and the northern most crossing of the creeks located in the SRWTP property.

Recycled Water Pipeline between SRWTP Property and Cogeneration Facility

Since most of the transmission pipeline is anticipated to be installed in existing and developed right-of-way, between the northern SRWTP property line and Cogeneration Facility, it is anticipated that this component of the project will undergo a streamlined CEQA process and that a Negative Declaration is likely to be obtained. This segment of the pipeline includes 24th Street and 47th Avenue.

Cogeneration Facility

SMUD has identified the following to CEQA requirements to modify the Cogeneration Facility and use recycled water: 1) a CEC licensing amendment and 2) a Title V air permit. SMUD estimated that both of these documents can be secured within a six-month timeframe.

Section 8: Financial and Economic Considerations

Water Recycling and Projected Future Costs for Water in the Region and the State

Most of the easiest to get and cheapest water supplies in the Sacramento region, as well as the rest of the state, have already been tapped. Any new water supplies that are developed are expected to be a lot more complicated to obtain and more costly. Several water managers in the state are predicting that the cost to deliver water to their customers would double or triple in the next 10 years. In addition, it is unclear at this time if recent changes in weather patterns would become more frequent or if they would have long term impacts on current water supplies. The ongoing issues associated with the Delta and its water supplies and water quality debates are increasing the need to develop and use reliable and sustainable water supplies.

Locally, water recycling has the potential to transform wastewater effluent into a regional asset, providing a “drought-proof” water supply for irrigation and industrial uses and freeing up potable water for other uses. Uncertainty in the reliability of current water supplies, increases in statewide/regional population projections and their associated increases in water and wastewater services, and the ability to turn wastewater into a reusable water supply make a compelling argument for the implementation of the SRCSD/SPA Recycled Water Project.

Relative Cost of Recycled Water

Perceptions about the relative costs of recycled water as a water supply option are frequently based on unequal comparisons. The costs for recycled water are normally all-inclusive and include the costs for engineering, administration, treatment, transmission, distribution, pumping, storage, on-site pumping, operational costs, etc. In other words it is the full cost of getting the water from its source to the customer’s tap. On the other hand, other water supply alternatives’ costs do not normally reflect the full cost of treatment and delivery to the customer. For example, they typically do not include the costs for the on-site piping systems, full operational costs, and in some instances they may not even include the costs for the distribution system.

The 2003 State’s Recycled Water Task Force estimated that costs for recycled water averaged about $1,075 dollars per acre-foot (updated to today’s dollars) of delivered water, including capital and operational costs. The Task Force noted that this cost is comparable to other water supply options, including new dams and reservoirs or desalination. This Feasibility Study estimated that the SRCSD/SPA Recycled Water Project may cost approximately $420 to $582 per acre-foot of delivered water in today’s dollars, including capital and operational costs. The actual cost will depend on the actual capital and O&M expenses, the inflation rate and amortization period used, etc.

Wastewater Capacity Treatment Costs Offset

On Thursday, December 9, 2010 the CVRWQC Board adopted a new wastewater discharge permit for the SRCSD SRWTP. Among other things, the permit contains new mandates that require SRCSD to begin the process to plan, pilot test, design and build new treatment facility upgrades for ammonia removal, nitrate removal, filtration and disinfection. These new processes are very expensive to construct. Based on preliminary cost estimates prepared by SRCSD in 2009, the estimated unit costs for one of the potential treatment trains evaluated to comply with the new discharge permit requirements is approximately $7.982 million per MGD of capacity and $1,070 per million gallons treated. This is equivalent to a one-time offset of $7.982 million for future capital expenses and $348,000 for annual operations and maintenance costs to treat 1,000 acre-feet of raw wastewater per year.

Potable Supply Water Offset

City provided to the Regional Water Authority (RWA) a cost of $419 per acre-foot of potable water in one of their projects included as part of RWA’s Proposition 84 ARB IRWMP Grant Application. If the

SRCSD/SPA Recycled Water Project replaces 1,000 AFY of potable water with recycled water, the estimated potable water supply offset costs (or savings) is $419,000 per year. City could avoid having to build new potable water treatment capacity by the amount offset by this recycled water project.

City's Financial Considerations

City has noted they may see a drop in revenues if potable water is replaced with recycled water at the Cogeneration Facility, since City currently retails potable water to this facility. In addition, City has invested in the production and delivery of potable water supply infrastructure to serve this facility. SRCSD, City, and SPA are collaborating to address the issues related to potential loss of revenue. City is very likely to find other customers than can use the existing infrastructure and this amount of potable water that will be offset with recycled water.

Estimated Capital Expenses

The estimated capital costs for the project is ~$8.38 million dollars. Refer to Table 4 below for details.

Table 4. Estimated Capital Expenses

	Budget Category	Capital Cost Estimate	Apx. % of PBCC*
(a)	Direct Project Administration Costs	$129,760	2%
(b)	Land Purchase/Easement	$310,000	5%
(c)	Planning/Design/Engineering/ Environmental Documentation	$1,188,755	19.5%
(d)	Construction/Implementation (PBCC*)	$5,069,000	
(e)	Environmental Compliance/ Mitigation/Enhancement	$59,950	1%
(f)	Construction Administration	$612,000	10%
(g)	Other Costs	$525	
(h)	Construction/Implementation Contingency	$1,013,800	20%
(i)	**Grand Total (Sum rows (a) through (h) for each column)**	**$8,385,370**	

PBCC* = Probable Base Construction Cost = Pipeline Base Costs + Cogen Plant Modifications Base Costs
Pipeline Base Costs = ($68,000/I.D.M) x (5.5 I.D.M.) x (12- I.D.) = $4.488 million
Cogen Plant Modifications (onsite improvements) = $0.581 million
PBCC* = $4.488 million + $0.58 million = $5.069

State and Federal Funding Considerations

The acquisition of State and Federal funds is paramount to help implement this project. Funding may be available from the following funding opportunities.

- State funding opportunities: Several State funded Propositions (e.g. Prop. 84), Clean Water State Revolving Fund Program, State Water Bond of 2009, etc.
- Federal funding opportunities: U.S. Bureau of Reclamation's Title XVI Program.

Section 9: Project Benefits

The SRCSD/SPA Recycled Water project will provide two significant benefits to the Sacramento Region. The first benefit comes in the form of environmental preservation. By providing recycled water to the Cogeneration Facility year-round, SRCSD reduces its discharge to the Sacramento River. Preserving the Sacramento River Watershed is consistent with the goals of SRCSD, as it has demonstrated with past and current activities like the Sacramento Constructed Wetlands project and the Phase I Water Recycling Demonstration Project.

The second benefit of the project is related to the region's limited water supplies. The Cogeneration Facility is currently served with potable water, which includes surface water and groundwater supplies, provided by the City. Once the Cogeneration Facility begins to use recycled water in-lieu of potable water to meet its non-potable water demands, approximately 1,000 Acre-Feet per Year (AFY) of potable water will be conserved. This conserved potable water supply could then be made available to other water users.

The SRCSD/SPA Recycled Water project will offer the following benefits:

- Conserve surface water and groundwater potable water supplies (now supplied by the City) that would otherwise be used for non-potable industrial uses.
- Replaces apx. 1,000 AFY of potable water with recycled water to meet non-potable water demands.
- Avoids having to build new potable water supplies by apx. 1-MGD of treatment capacity.
- Provides year-round use of recycled water at the SRWTP.
- Reduces the amount of effluent and related water quality constituents discharged into the Sacramento River by apx. 1,000 AFY.
- Avoids having to build new wastewater treatment capacity at the SRWTP by apx. 1-MGD.
- Supports the SRCSD and State goals for increased use of recycled water to meet non-potable water demands.
- Helps to provide an effluent management option for the SRWTP.
- Augments the region's limited water supplies with a "drought-proof", reliable, and sustainable water supply that remains largely untapped.
- The construction of a 5.5-mile long recycled water transmission main to serve the Cogeneration Facilities can open up opportunities to serve other nearby customers along the pipeline alignment and increase the use of recycled water.

Section 10: Observations & Conclusions

The results from this Feasibility Study led to the following observations & conclusions.

- The use of recycled water at the Cogeneration Facility is a good fit for the use of recycled water. No fatal flaws were identified for the use recycled water at the Cogeneration Facility.

- The production of recycled water at the existing WRF to provide recycled water service to the Cogeneration Facility is the preferred source of recycled water. The WRF can use a lot of the existing infrastructure, provides the greatest flexibility, is permitted to be expandable up to 10-MGD of capacity, has capacity available to meet the water needs of the Cogeneration Facility, etc.

- SMUD estimated the number of water cycles may be reduced from 10 to 7 if recycled water is used in-lieu of potable water. This may have a slight increase in the amount of wastewater discharged into the sanitary sewer system.

- Secondary effluent produced by the SRWTP can be used at the Cogeneration Facility. However, the use of secondary effluent would prevent other potential customers from connecting into the 5.5-mile long recycled water transmission line.

- A Satellite Wastewater Treatment, using MBR treatment technology, could be built near the Cogeneration Facility to supply the recycled water. However, a centralized facility utilizing the SRWTP WRF is more cost effective and provides additional flexibility, such as allowing potential recycled water customers along to connect into the recycled water distribution system.

- The Campbell Plant has a significant amount of water demand per year that is met through on-site groundwater wells. It is unknown at this time how much of that water demand can be replaced with recycled water. Staff from the Campbell Pant indicated they need to figure how what a good split would be for potable and non-potable water demands.

- All the utilities for Silgan are provided through the Campbell Plant. As such, any efforts to provide recycled water service to Silgan must first go though the Campbell Plant.

- The construction of a 5.5-mile long recycled water transmission main to serve the Cogeneration/Campbell facilities opens up the opportunities to serve other nearby customers and increase the use of recycled water.

- The potential recycled water demands for the Cogeneration Facility are year round, not seasonal. This provides an opportunity to avoid future wastewater treatment capacity and operational expenses at the SRWTP.

- The estimated annual recycled water demand for this project is approximately the same as the entire current demand for the Phase I Demonstration Project, which includes the Laguna/Stonelakes/Lakeside communities in Elk Grove and the SRWTP.

- Offsetting potable water use with recycled water, to meet non-potable water demands, frees up valuable potable water to meet potable water needs.

Attachment A

Photos Along Recycled Water Alignment
(Between 47th Avenue and 24th Street)

Picture 1. Railroad crossing at 47th Ave (facing south)

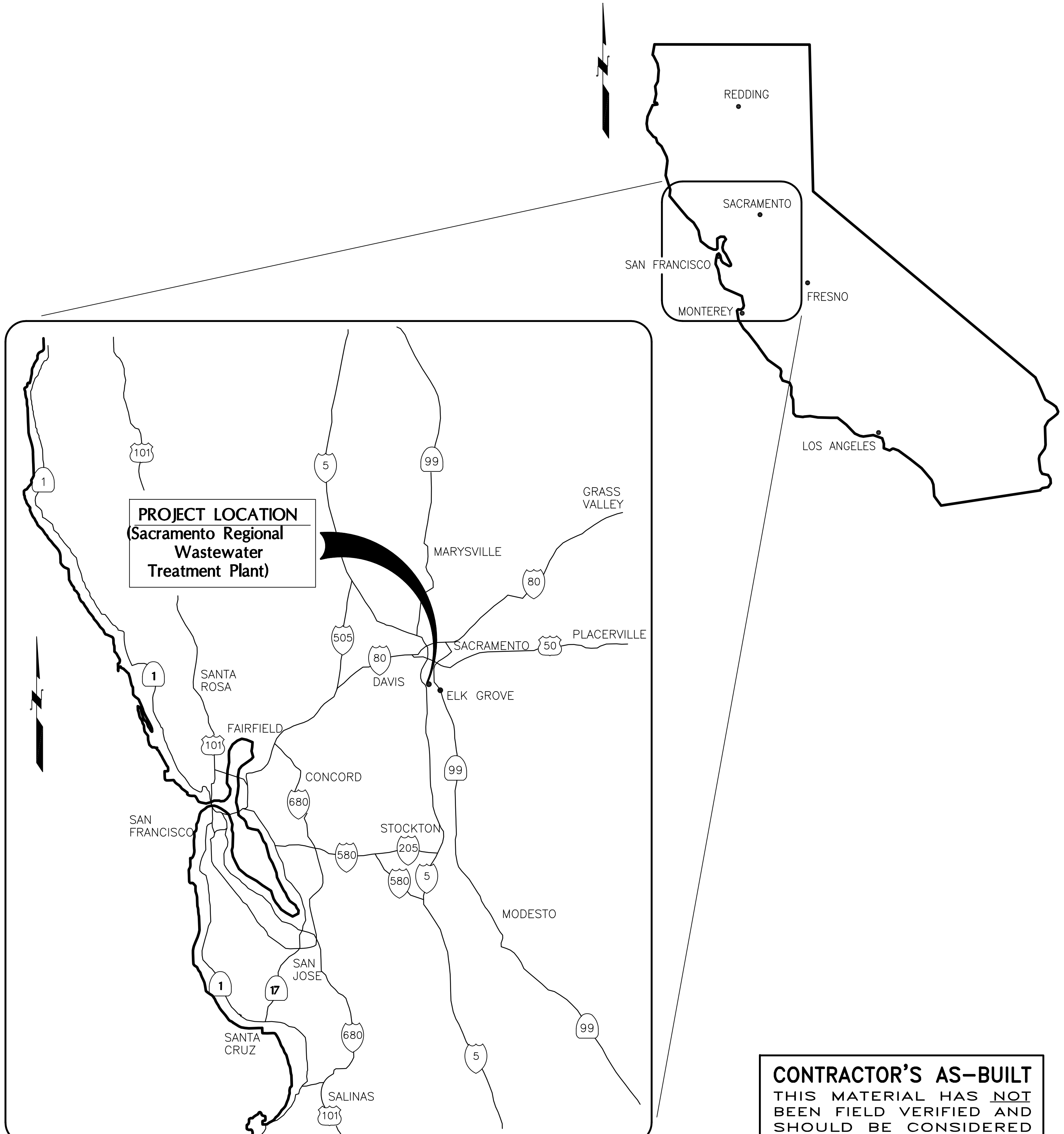
Picture 2. Intersection of 47th Ave and 24th St (facing south)

Picture 3. 24th St and Meadowview Rd (facing south)

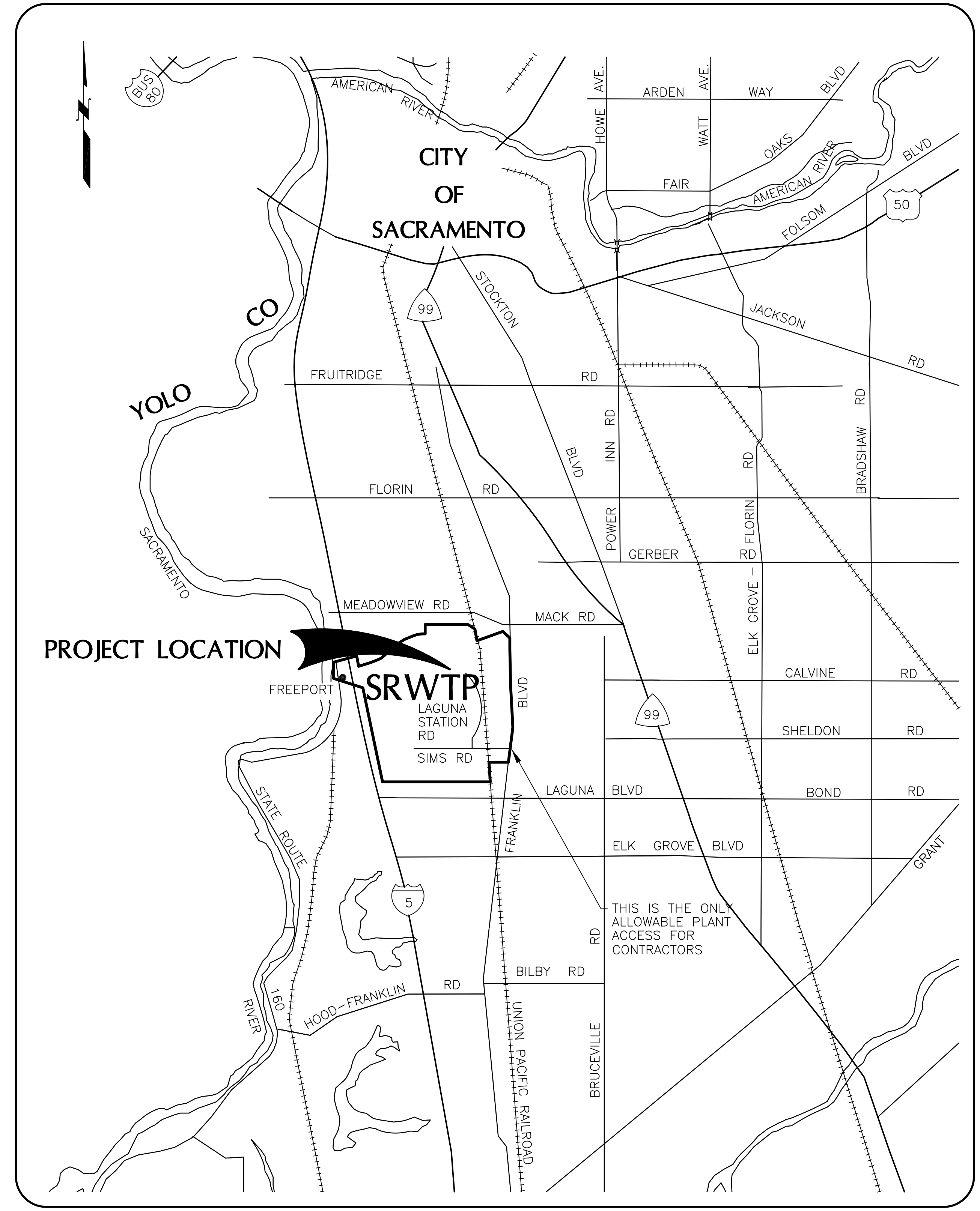
Picture 4. South end of 24th St (facing south, towards the SRWTP)

Attachment B

Drawings for Section of Recycled Water Pipeline within the SRWTP Property



VICINITY MAP



LOCATION MAP

CONTRACTOR'S AS-BUILT
THIS MATERIAL HAS NOT BEEN FIELD VERIFIED AND SHOULD BE CONSIDERED
FOR REFERENCE ONLY

NOLTE and ASSOCIATES
Engineers / Planners / Surveyors
Sacramento, San Diego, San Jose, Walnut Creek

SUBMITTED: ____ DATE: ____
SUBMITTAL APPROVED: ____ DATE: ____

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2"—SCALE ACCORDINGLY)

FILE 70001
DRAWN K.C. HAYES
DESIGNED L.S. SCROGGS
CHECKED T.J. MINGEE
CHECKED

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

APPROVAL RECOMMENDED ____ DATE
APPROVED ____ WATER QUALITY DIVISION DATE

3002
CONTRACT NUMBER

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT
OF SACRAMENTO COUNTY, CALIFORNIA

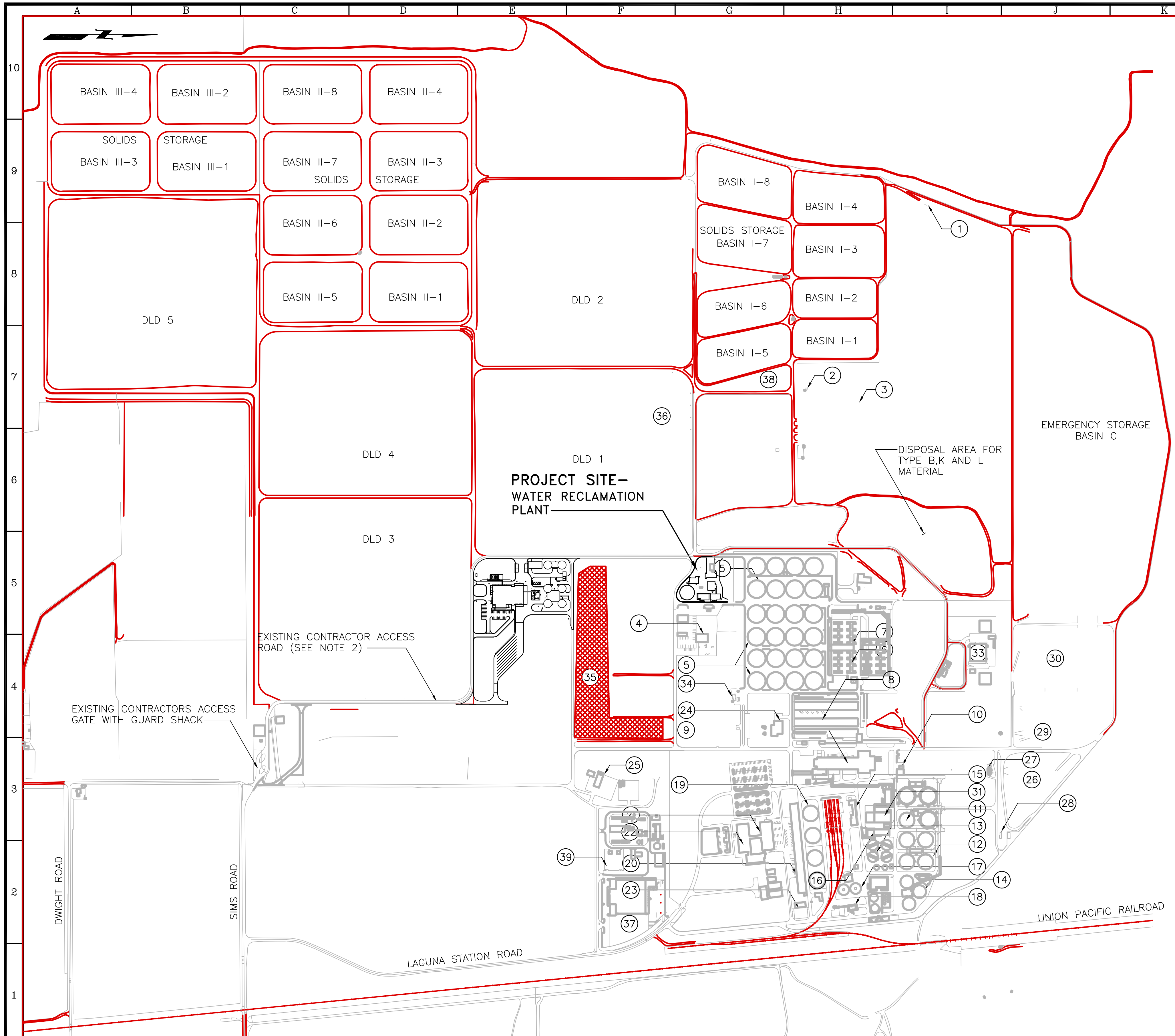
SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
WATER RECLAMATION PLANT
PHASE 1

GENERAL

LOCATION AND VICINITY MAP

SCALE NO SCALE
DRAWING NUMBER 11G1
SHEET NUMBER 1 OF 422

2963-91-63



KEY NOTES:

1. STORM WATER PUMP STATION
2. FLOWMETERING STRUCTURE
3. OUTFALL DIVERSION STRUCTURE
4. EQUIPMENT MAINTENANCE & STORAGE AREA
5. SECONDARY SEDIMENTATION TANKS
6. OXIDATION STRUCTURE
7. COMPRESSOR BUILDING
8. PRIMARY SEDIMENTATION TANKS
9. INFLUENT – EFFLUENT PUMP BUILDING
10. TUNNEL VENTILATION BUILDING
11. BATTERY III BLENDING DIGESTER
12. BATTERY II DIGESTERS
13. WASTE ACTIVATED SLUDGE THICKENERS
14. BATTERY I DIGESTERS
15. CHEMICAL CONTROL BUILDING
16. SOLIDS CONTROL BUILDING
17. BATTERY S DIGESTERS
18. STORM WATER PUMP STATION
19. CHEMICAL STORAGE
20. MAINTENANCE STORAGE BUILDING
21. MAINTENANCE BUILDING
22. ADMINISTRATION BUILDING
23. MAIN ELECTRICAL BUILDING
24. OXYGEN GENERATION FACILITY
25. EXISTING BUFFERLAND TRAILER
26. EMERGENCY STORAGE BASIN E
27. INFLUENT JUNCTION STRUCTURE
28. SEPTAGE DISPOSAL FACILITY
29. EMERGENCY STORAGE BASIN A
30. EMERGENCY STORAGE BASIN B
31. GRAVITY BELT THICKENER
32. NOT USED
33. RESIDENT ENGINEER BUILDING AREA
34. EFFLUENT OBSERVATION STRUCTURE
35. LANDFILL CLOSURE AREA
36. DLD PILOT TEST CELL
37. CARSON ENERGY ICE PLANT
38. WHEELABRATOR DEWATERING AREA
39. SMUD COGENERATION PLANT

NOTES:

1. TRACK MOUNTED VEHICLES SHALL NOT BE OPERATED ON EXISTING PAVED ROADS.
2. CONTRACTORS FOR ALL CONSTRUCTION CONTRACTS SHALL UTILIZE THIS ROADWAY FOR PERSONNEL AND DELIVERIES.

CONTRACTOR'S AS-BUILT
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FOR REFERENCE ONLY

2963–91–63

NOLTE and ASSOCIATES
Engineers / Planners / Surveyors
Sacramento · San Diego · San Jose · Walnut Creek

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SUBMITTAL APPROVED: ______ DATE: ______

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2"–SCALE ACCORDINGLY)
FILE 70002
DRAWN K.C. HAYES
DESIGNED L.S. SCROGGS
CHECKED T.J. MINGEE
CHECKED

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

APPROVAL RECOMMENDED ______ DATE
APPROVED ______ WATER QUALITY DIVISION DATE

3002
CONTRACT NUMBER

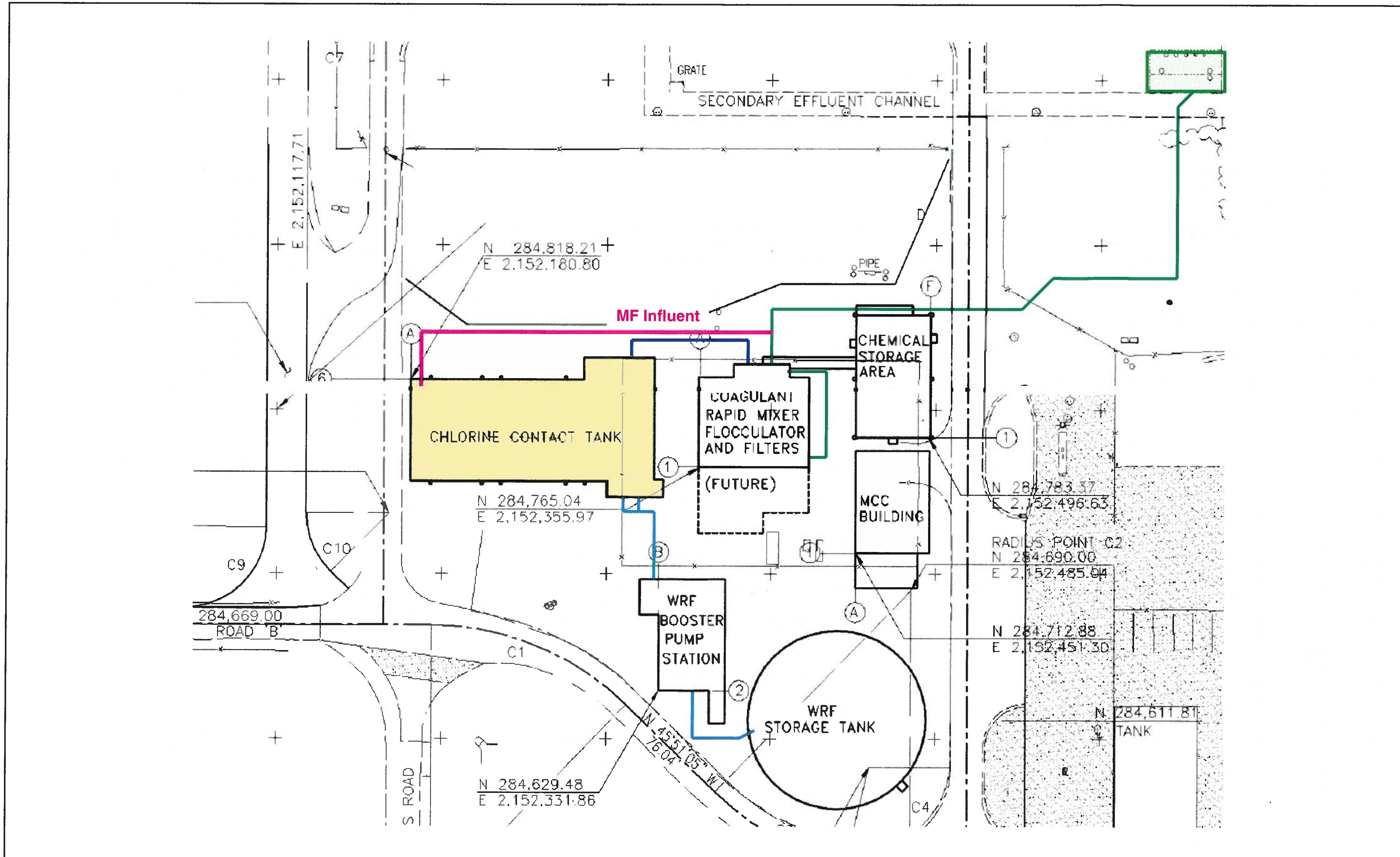
SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT
OF SACRAMENTO COUNTY, CALIFORNIA

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
WATER RECLAMATION PLANT
PHASE 1

GENERAL

EXISTING SITE PLAN

SCALE 1"=400'
DRAWING NUMBER 11G2
SHEET NUMBER 2 OF 422



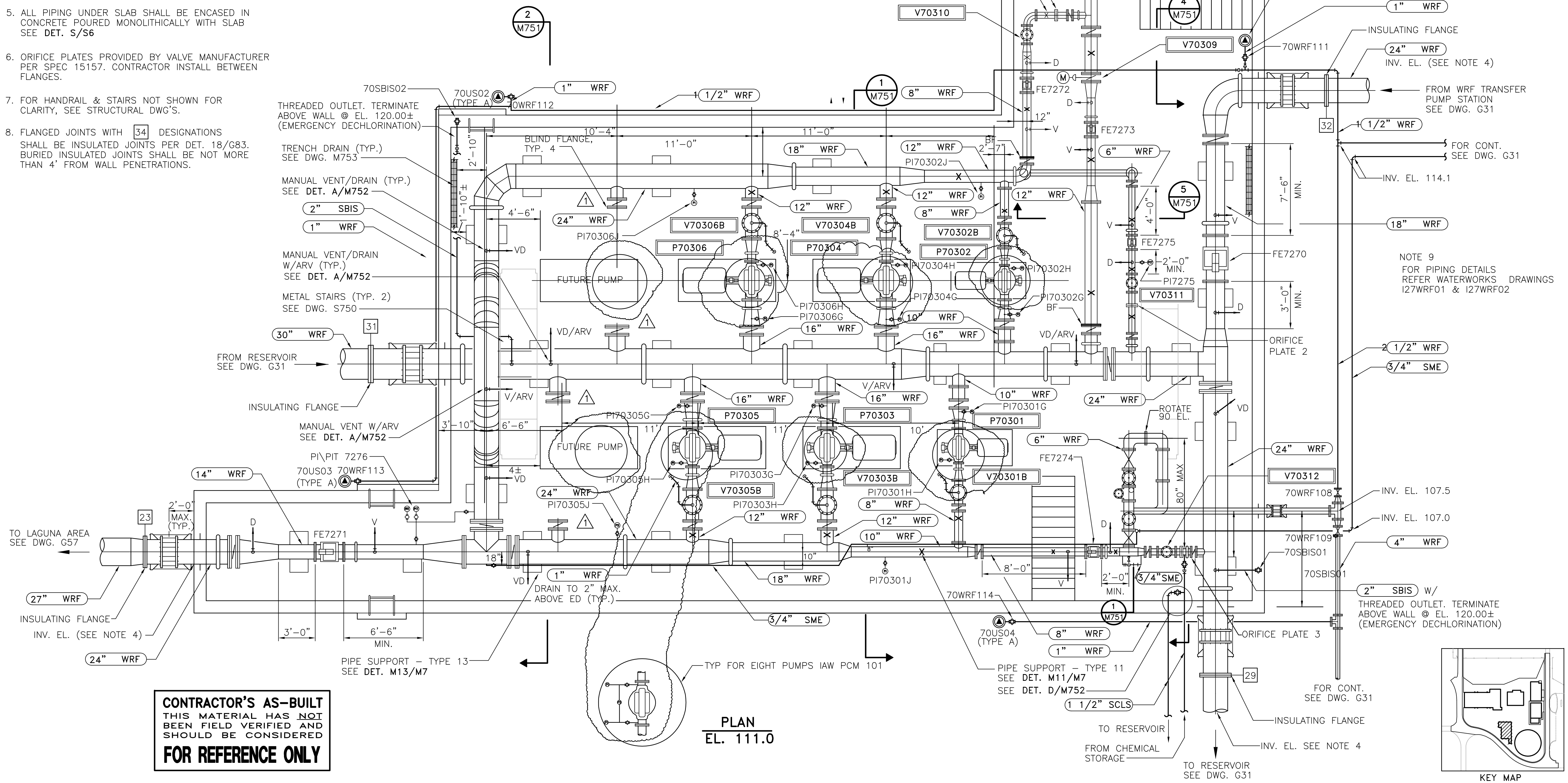
Plant Layout

NOTES:

1. ALL CONNECTIONS OF SMALL DIA. PIPE (≤2") TO PROCESS PIPE SHALL BE WELDED BOSS.
2. FOR EQUIPMENT AND STRUCTURE DRAINS SEE DWG. M753.
3. PROVIDE 1" DRAIN PIPE FROM PUMP BASE DRAIN PAN TO EQUIPMENT DRAIN.
4. PIPE ELEVATION TO BE DETERMINED BY CONTRACTOR BASED ON PUMPS FURNISHED. SUBMIT PROPOSED ELEVATIONS FOR REVIEW BY ENGINEER. MIN. COVER OF 42" REQUIRED.
5. ALL PIPING UNDER SLAB SHALL BE ENCASED IN CONCRETE POURED MONOLITHICALLY WITH SLAB SEE DET. S/S6
6. ORIFICE PLATES PROVIDED BY VALVE MANUFACTURER PER SPEC 15157. CONTRACTOR INSTALL BETWEEN FLANGES.
7. FOR HANDRAIL & STAIRS NOT SHOWN FOR CLARITY, SEE STRUCTURAL DWG'S.
8. FLANGED JOINTS WITH 34 DESIGNATIONS SHALL BE INSULATED JOINTS PER DET. 18/G83. BURIED INSULATED JOINTS SHALL BE NOT MORE THAN 4' FROM WALL PENETRATIONS.

VENT / DRAIN LEGEND

SYMBOLS	DESCRIPTION	DETAIL
VD	VENT AND DRAIN	M68/M10
VD/ARV	VENT, DRAIN AND ARV	A/M752
V/ARV	VENT AND ARV	A/M752
V	VENT	M68/M10
D	DRAIN	M68/M10



PLAN
EL. 111.0

CONTRACTOR'S AS-BUILT
THIS MATERIAL HAS NOT BEEN FIELD VERIFIED AND SHOULD BE CONSIDERED
FOR REFERENCE ONLY

KEY MAP

NOLTE and ASSOCIATES
Engineers / Planners / Surveyors
■ Sacramento □ San Diego □ San Jose □ Walnut Creek

SUBMITTED: ______ DATE: ______
SUBMITTAL APPROVED: ______ DATE: ______

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2"–SCALE ACCORDINGLY)

FILE 70151
DRAWN K.C. HAYES
DESIGNED L.S. SCROGGS
CHECKED T.J. MINGEE
CHECKED

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.
G7	1	ADDENDUM ITEM 2.017	KCH	3/25/99	TJM
VAR	2	PER DCN – 2418	MB	09/02	– –

APPROVAL RECOMMENDED ______ DATE
APPROVED ______ WATER QUALITY DIVISION DATE

3002
CONTRACT NUMBER

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT
OF SACRAMENTO COUNTY, CALIFORNIA

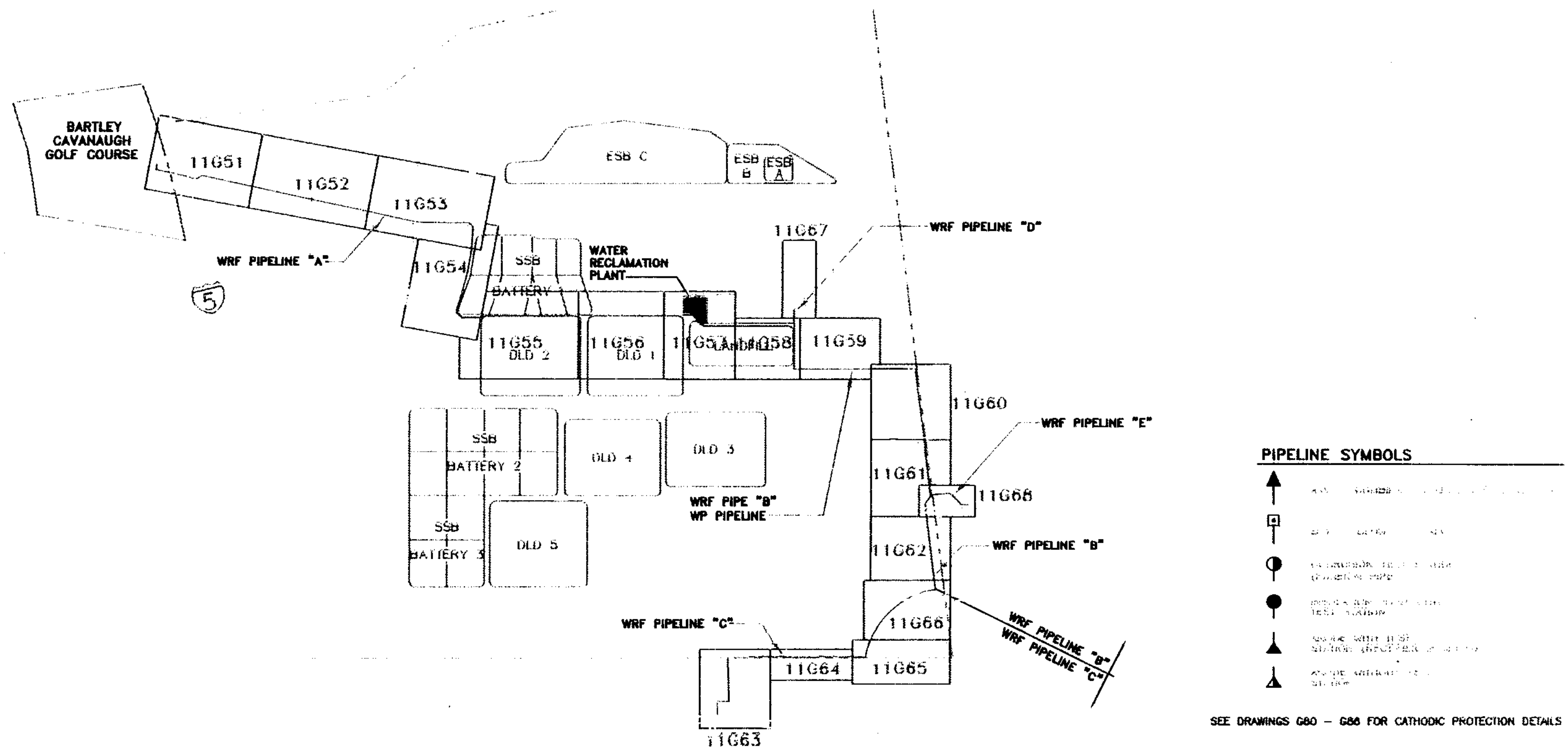
SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
WATER RECLAMATION PLANT
PHASE 1

FILTERED RECLAIMED WATER PUMP STATION

PLAN – EL. 111.0

SCALE 1/4"=1'–0"
DRAWING NUMBER 11M750
SHEET NUMBER 150 OF 422

2963–91–63



NOLTE and ASSOCIATES

SUBMITTED: ______ DATE: ______
SUBMITTAL APPROVED: ______ DATE: ______

LINE IS 2 INCHES AT FULL SIZE

FILE 11G50.DWG
DRAWN K.C. HAYES
DESIGNED L.S. SCROGGS
CHECKED T.J. MINGEE
CHECKED

REVISIONS

APPROVAL RECOMMENDED ______ DATE
APPROVED ______ DATE

3002
CONTRACT NUMBER

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
WATER RECLAMATION PLANT
PHASE 1

GENERAL

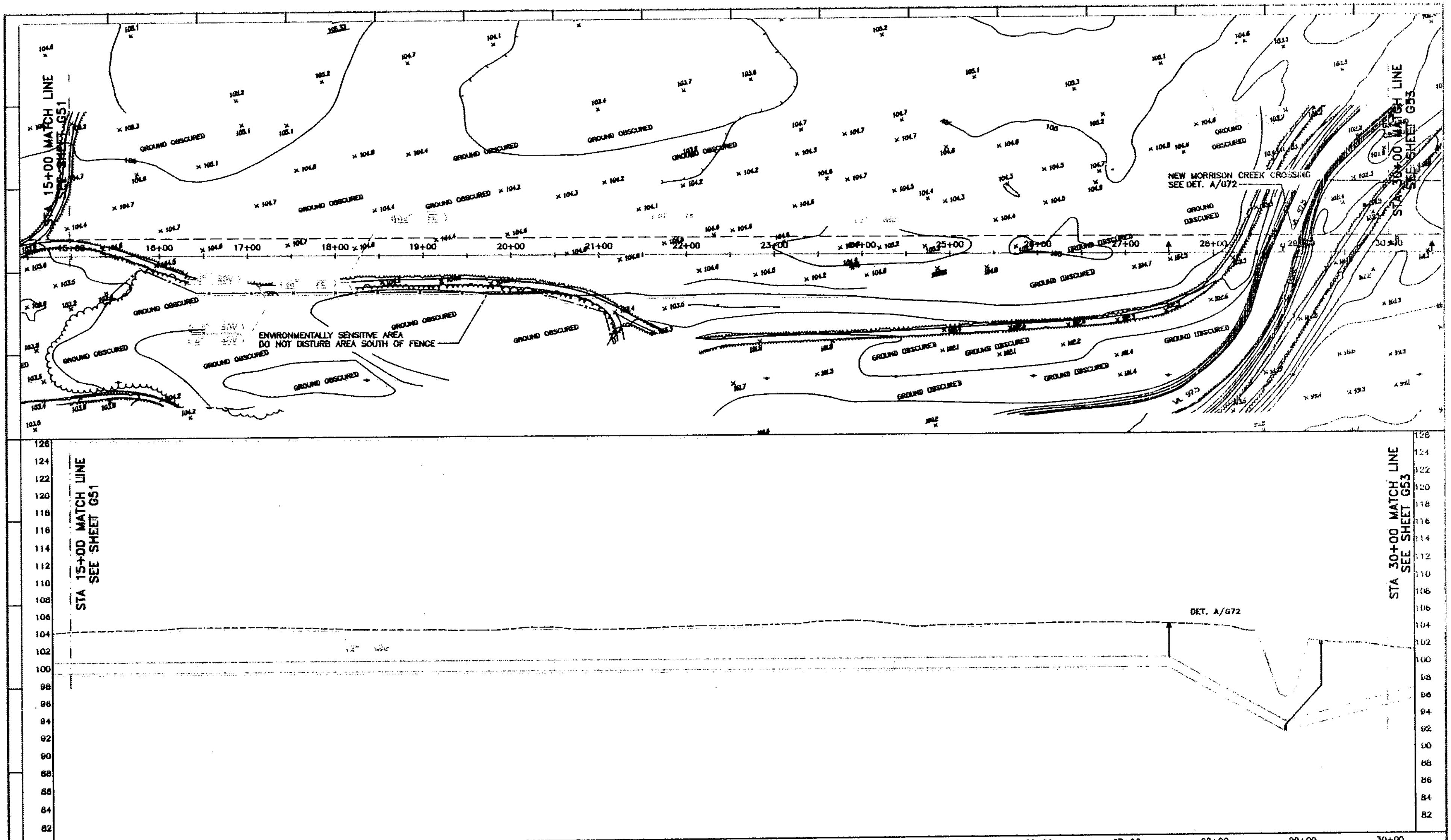
PIPELINE
PLAN AND PROFILE DRAWINGS
KEY MAP

SCALE
NO SCALE

DRAWING NUMBER

SHEET NUMBER
– OF –

2963-91-63



NOLTE and ASSOCIATES

SUBMITTED: ________ DATE: ______

SUBMITTAL APPROVED: ________ DATE: ______

LINE IS 2 INCHES AT FULL SIZE

FILE 11G52.DWG

DRAWN K.C. HAYES

DESIGNED L.S. SCROGGS

CHECKED T.J. MINGEE

CHECKED

REVISIONS

APPROVAL RECOMMENDED ________ DATE

APPROVED ________ DATE

3002

CONTRACT NUMBER

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT WATER RECLAMATION PLANT PHASE 1

GENERAL

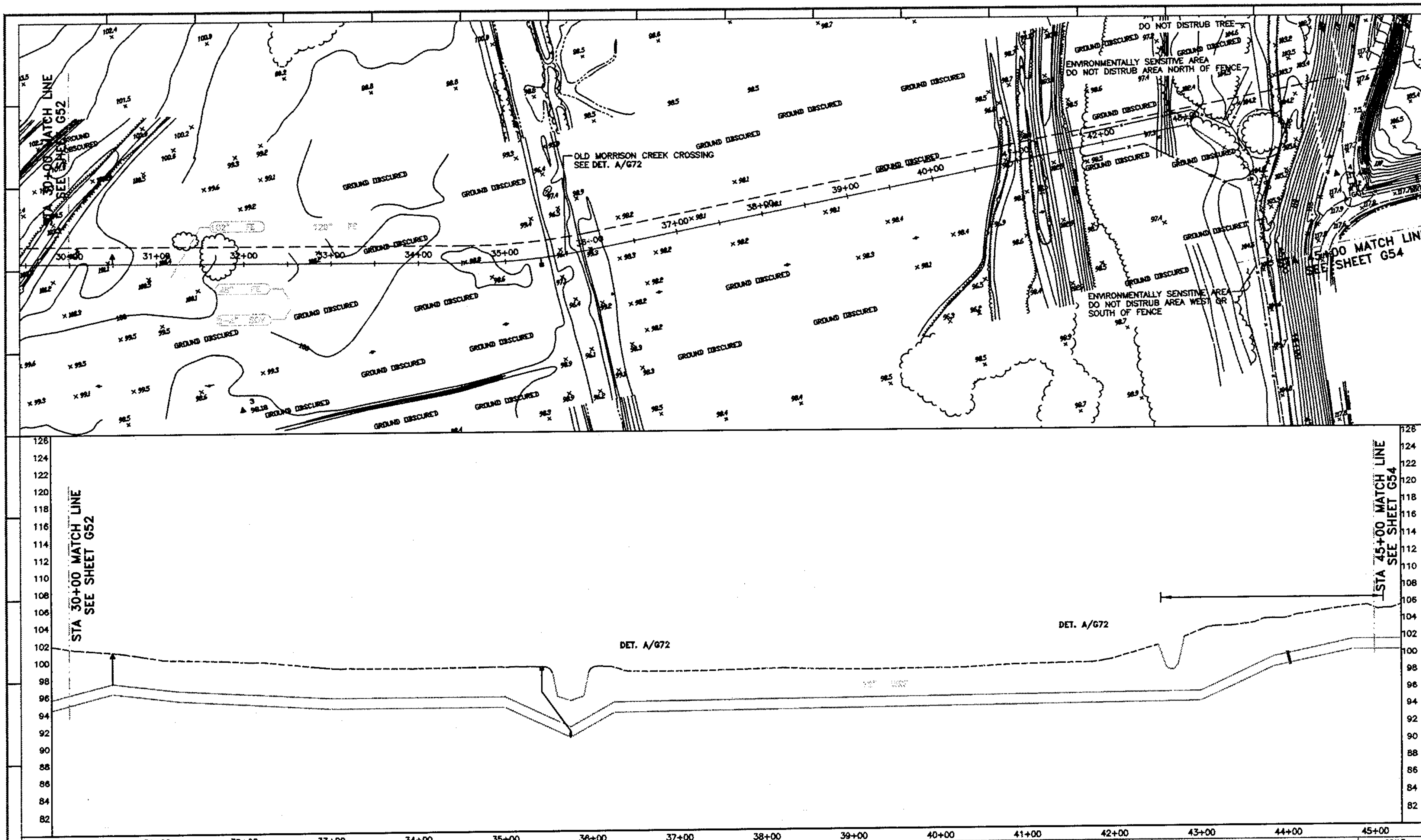
WRF PIPELINE A
STA 15+00 TO 30+00

SCALE 1"=50'

DRAWING NUMBER

SHEET NUMBER
- OF -

2963-91-63



NOLTE and ASSOCIATES
Engineers / Planners / Surveyors
Sacramento · San Diego · San Jose · Walnut Creek

SUBMITTED: ______ DATE: ______
SUBMITTAL APPROVED: ______ DATE: ______

LINE IS 2 INCHES AT FULL SIZE

FILE 11G53.DWG
DRAWN K.C. HAYES
DESIGNED L.S. SCROGGS
CHECKED T.J. MINGEE
CHECKED

REVISIONS

APPROVAL RECOMMENDED ______ DATE
APPROVED ______ DATE

3002
CONTRACT NUMBER

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

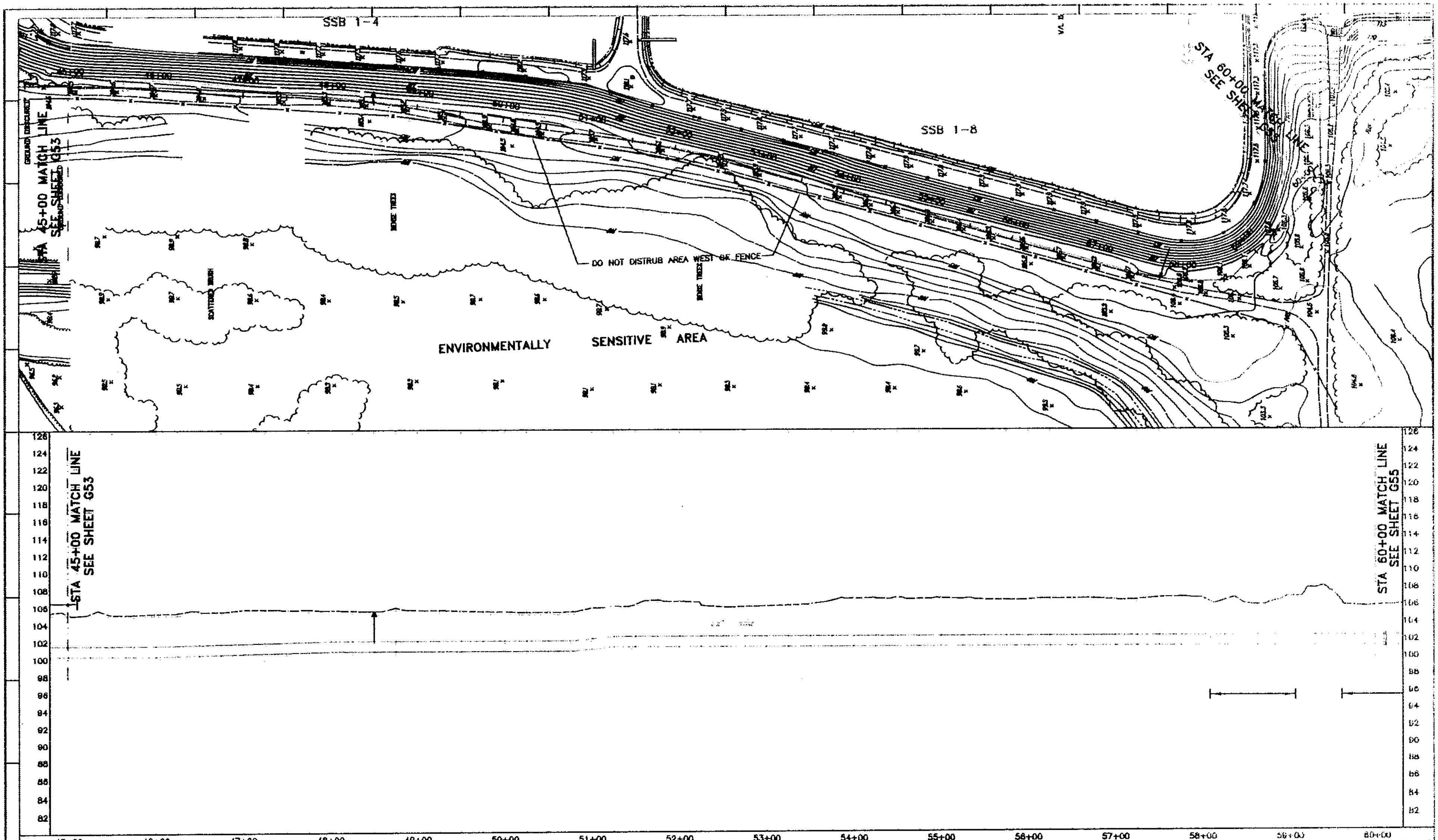
SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT WATER RECLAMATION PLANT PHASE 1

GENERAL

WRF PIPELINE A
STA 30+00 TO 45+00

SCALE 1"=50'
DRAWING NUMBER 11G53
SHEET NUMBER – OF –

2963-91-63



2863-91-63

NOLTE and ASSOCIATES

■ Sacramento □ San Diego □ San Jose □ Walnut Creek

SUBMITTED: ______ DATE ______

SUBMITTAL APPROVED: ______ DATE ______

LINE IS 2 INCHES AT FULL SIZE

FILE 11G54.DWG

DRAWN K.C. HAYES

DESIGNED L.S. SCROGGS

CHECKED T.J. MINGEE

CHECKED

REVISIONS

APPROVAL RECOMMENDED ______ DATE

APPROVED ______ DATE

3002

CONTRACT NUMBER

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT

WATER RECLAMATION PLANT

PHASE 1

GENERAL

WRF PIPELINE A

STA 45+00 TO 60+00

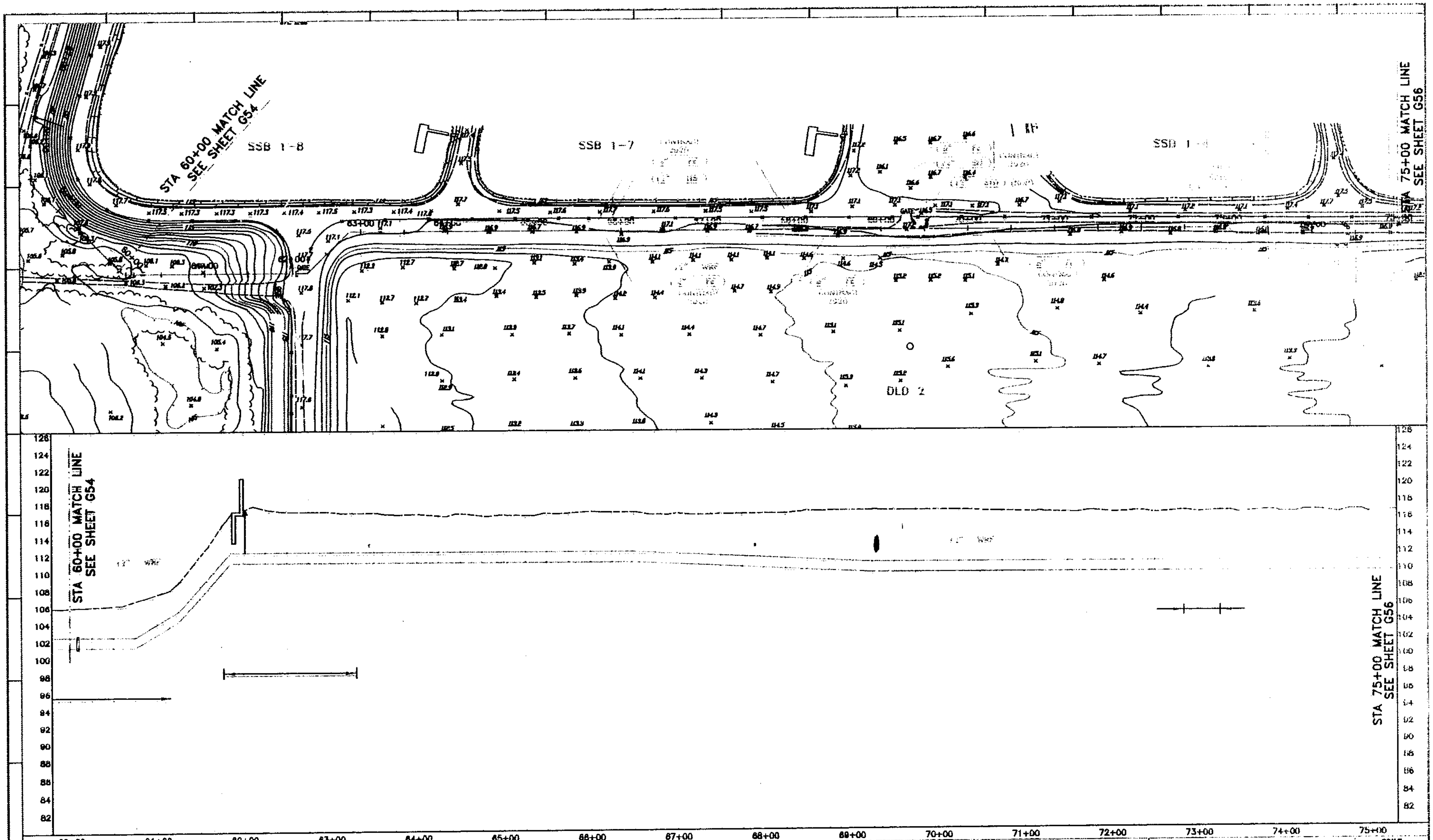
SCALE

1"=50'

DRAWING NUMBER

SHEET NUMBER

- OF -



NOLTE and ASSOCIATES

LINE IS 2 INCHES AT FULL SIZE

FILE 11G55.DWG
DRAWN K.C. HAYES
DESIGNED L.S. SCROGGS
CHECKED T.J. MINGEE
CHECKED

SUBMITTED: DATE:
SUBMITTAL APPROVED: DATE:

REVISIONS

APPROVAL RECOMMENDED DATE
APPROVED DATE

3002
CONTRACT NUMBER

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
WATER RECLAMATION PLANT
PHASE 1

GENERAL

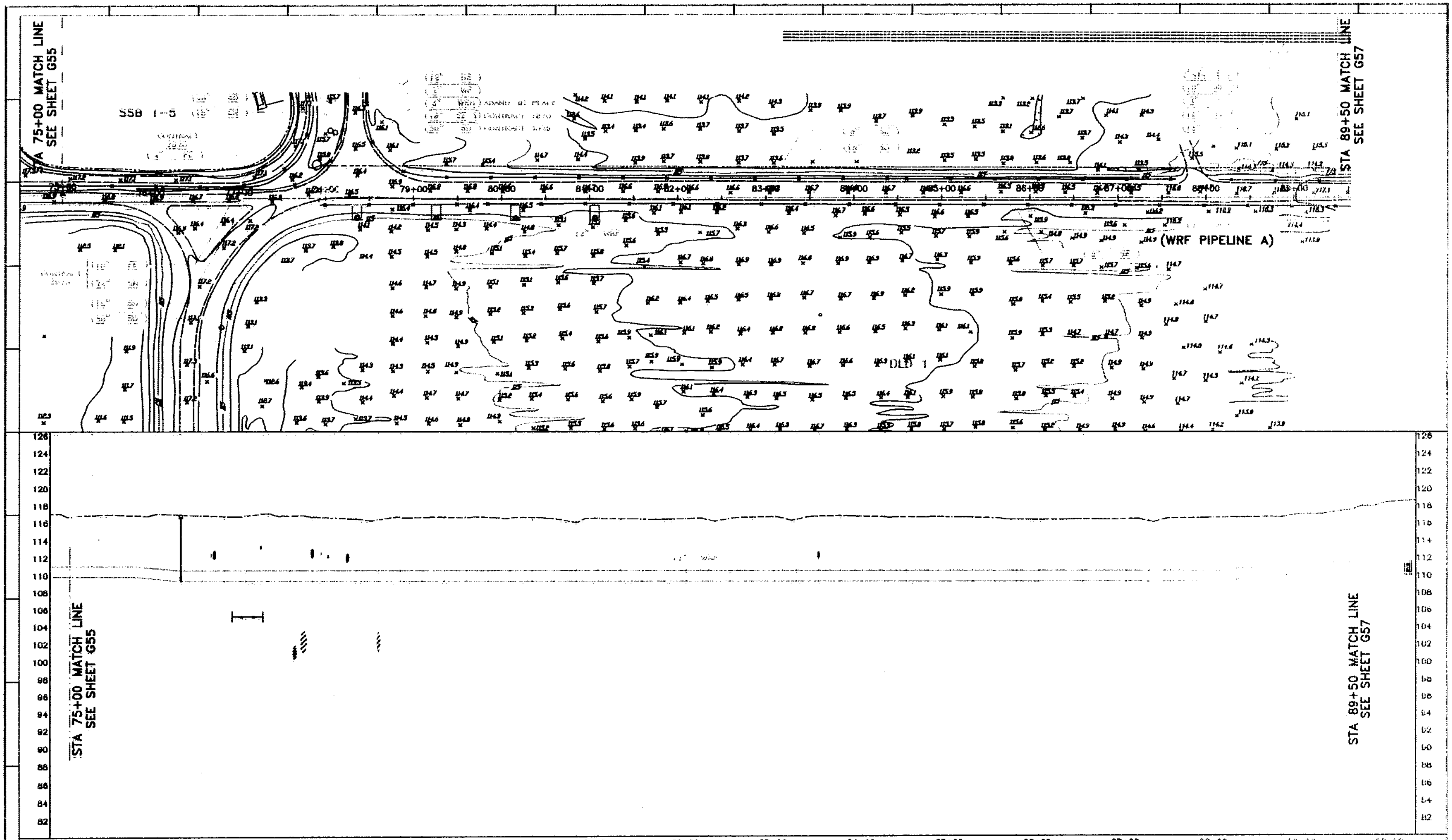
WRF PIPELINE A
STA 60+00 TO 75+00

SCALE 1"=50'

DRAWING NUMBER

SHEET NUMBER - OF -

2963-91-63



NOLTE and ASSOCIATES

SUBMITTED: ______ DATE: ______
SUBMITTAL APPROVED: ______ DATE: ______

LINE IS 2 INCHES AT FULL SIZE

FILE 11G56.DWG
DRAWN K.C. HAYES
DESIGNED L.S. SCROGGS
CHECKED T.J. MINGEE
CHECKED

REVISIONS

APPROVAL RECOMMENDED ______ DATE
APPROVED ______ DATE

3002
CONTRACT NUMBER

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

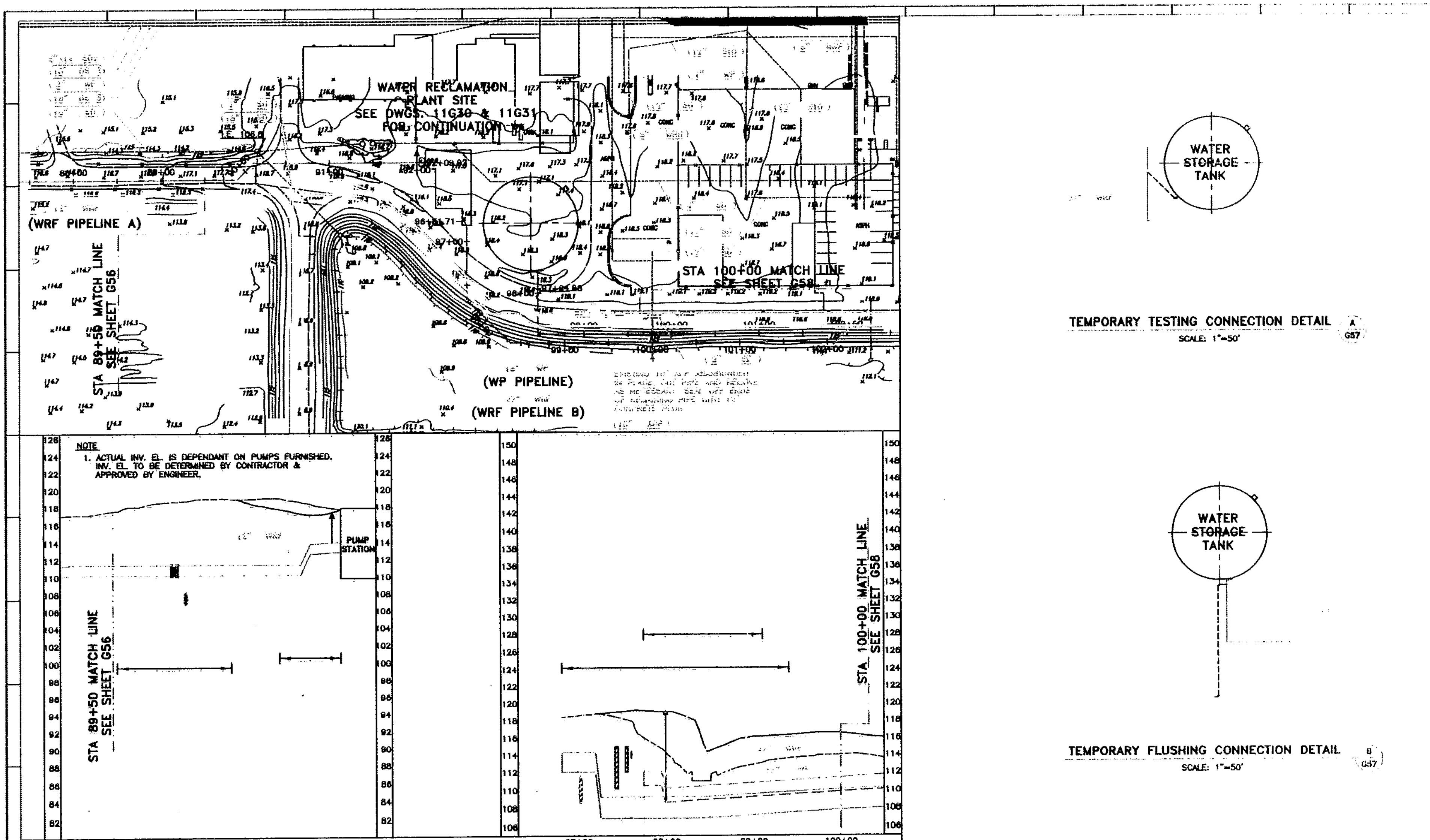
SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
WATER RECLAMATION PLANT
PHASE 1

GENERAL

WRF PIPELINE A
STA 75+00 TO 89+50

SCALE 1"=50'
DRAWING NUMBER
SHEET NUMBER
– OF –

2963-91-63



NOLTE and ASSOCIATES SUBMITTED: DATE: APPROVED: DATE:	LINE IS 2 INCHES AT FULL SIZE FILE 11G57.DWG DRAWN K.C. HAYES DESIGNED L.S. SCROGGS CHECKED T.J. MINGEE CHECKED	REVISIONS	APPROVAL RECOMMENDED DATE APPROVED DATE 3002 CONTRACT NUMBER	SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT WATER RECLAMATION PLANT PHASE 1	GENERAL WRF PIPELINE A STA 89+50 TO STA 92+14.18 WRF PIPELINE B STA 96+81.71 TO 100+00 WP PIPELINE
					SCALE 1"=50' DRAWING NUMBER SHEET NUMBER - OF -

2863-91-63

Attachment C

SRCSD SRWTP WRF Final Environmental Impact Report (1996)

FILE COPY

FINAL
ENVIRONMENTAL IMPACT REPORT

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT (SRWTP) RECLAIMED WATER PROJECT

SACRAMENTO COUNTY CONTROL NUMBER: 94-PWE-0460
STATE CLEARINGHOUSE NUMBER: 95022025

MAY 1996

County of Sacramento
Department of Environmental
Review and Assessment
827 7th Street, Room 220
Sacramento, California 95814

Final

Environmental Impact Report

for

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT (SRWTP) RECLAIMED WATER PROJECT

Control Number: 94-PWE-0460

Assessor's Parcel Number: N/A

This Environmental Impact Report has been prepared pursuant to the California Environmental Quality Act of 1970 (Public Resources Code Division 13). An Environmental Impact Report is an information document which, when its preparation is required by this division shall be considered by every public agency prior to its approval or disapproval of a project. The purpose of an Environmental Impact Report is to provide public agencies with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which any adverse effects of such a project might be minimized; and to suggest alternatives to such a project.

Prepared by the
COUNTY OF SACRAMENTO
DEPARTMENT OF ENVIRONMENTAL REVIEW AND ASSESSMENT
827 Seventh Street, Room 220
Sacramento, California 95814

May 2, 1996

TO: **All Interested Parties**

SUBJECT: FINAL ENVIRONMENTAL IMPACT REPORT FOR SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT (SRWTP) RECLAIMED WATER PROJECT (Control Number: 94-PWE-0460)

The subject Final Environmental Impact Report (EIR) is attached hereto for your review. The proposed project and the Final EIR will be heard before the Sacramento County Board of Supervisors on May 22, 1996 at 9:30 a.m. in the Board of Supervisors Chambers, 700 H Street, Sacramento, California.

Please contact Robert Caikoski or Douglas Bryceson of this office at 440-7914 if you have any questions concerning this Final EIR.

Sincerely,

Dennis E. Yeast

Dennis E. Yeast
Director

DEY/DB:mw

(94-0460.ltr/mw)

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF TABLES

APPENDICES

PREFACE

This document is the Final Environmental Impact Report (FEIR) for the proposed project. It includes comments received on the Draft EIR and responses to those comments. A public hearing on the Draft EIR was held before the Project Planning Commission, meeting in regular session, on March 25, 1996. No comments were received at the hearing. The Commission unanimously voted to close the public hearing and directed staff to respond to written comments received and prepare the Final EIR for the Board of Supervisors.

Changes to the Final EIR, which are noted in redline text, are found on pages 18 and 19 (Land Use section).

The Final EIR will be used by the Board of Supervisors in making a decision as to whether to approve or deny the project.

CHARACTERISTICS OF THE PROJECT

Project Description

The proposed project consists of the construction of a 5 million gallon per day (mgd) water reclamation plant. The plant would be expandable to 10 mgd. The reclamation plant would process secondary effluent from the Sacramento Regional Wastewater Treatment Plant (SRWTP) through additional treatment steps consisting of a pump station drawing secondary effluent from the secondary effluent channel, flow metering, chemical conditioning, flocculation, filtration, and chlorination with extended contact time. Supporting facilities include a chemical storage and feed building, chlorination feed equipment , and controls and alarms connected to SRWTP's existing computer monitoring and control system. A covered storage reservoir and distribution pump station would comprise the balance of the reclamation plant. Transmission mains would be installed to deliver reclaimed water to the areas of use. One transmission main would be constructed to the southern boundary of the SRWTP to serve the Laguna area. This line would also provide water to the regional plant via a 1,020 foot long secondary pipeline, and the Trail of Trees located within the SRWTP bufferlands. A second transmission main would follow the SRWTP main outfall line in a northwesterly direction terminating on the west side of Interstate 5 (I-5) at the Bartley Cavanaugh City Golf Course. All construction would be done within the SRWTP property boundaries, with the exception of 1000± feet of transmission main that would extend from the southern SRWTP property boundary to Laguna Boulevard.

The project would provide reclaimed water to users in the immediate vicinity of the SRWTP. Areas to be served include the proposed Bartley Cavanaugh City Golf Course near Freeport; the Laguna West, Lakeside and Elliott Ranch South developments; commercial properties north of Laguna Boulevard; and the SRWTP process area and bufferlands. All water would be used for irrigation and other nonpotable needs. The reclaimed water would be wholesaled to the Sacramento County Water Agency (SCWA) and retailed by the Sacramento County Water Maintenance District (SCWMD) for distribution to the subdivisions and commercial uses. A supplier agreement and Memorandum of Understanding (MOU) between the SRCSD and the SCWA will be executed as part of this project. The reclaimed water would be retailed directly to the City of Sacramento for irrigation of the golf course. An agreement between the Sacramento Regional County Sanitation District (SRCSD) and the City of Sacramento would be executed as part of this project.

Project Location

The project is located within the SRWTP process area and bufferlands. The SRWTP is located in the Franklin-Laguna community of southwest Sacramento County. (Exhibits A and B).

Project Proponent

Sacramento Regional County Sanitation District
Sacramento Regional Wastewater Treatment Plant
8521 Laguna Station Road
Elk Grove, CA 95758

Project Objectives

The SRCSD has provided the following statement:

"The following water reclamation project benefits have been identified:

1. Conserves groundwater that would otherwise be pumped for non-potable irrigation use.

2. Conserves surface water (now supplied by the City of Sacramento) that would otherwise be used for nonpotable needs at the SRWTP.

3. This project will demonstrate that Sacramento County is willing to manage its available water resources in a responsible and progressive manner. Moreover, the project is intended to comply with the mandatory provisions of California Water Code Sections 13550, et. seq., which require water reclamation and reuse.

EXHIBIT A
VICINITY MAP AND LOCATION MAP

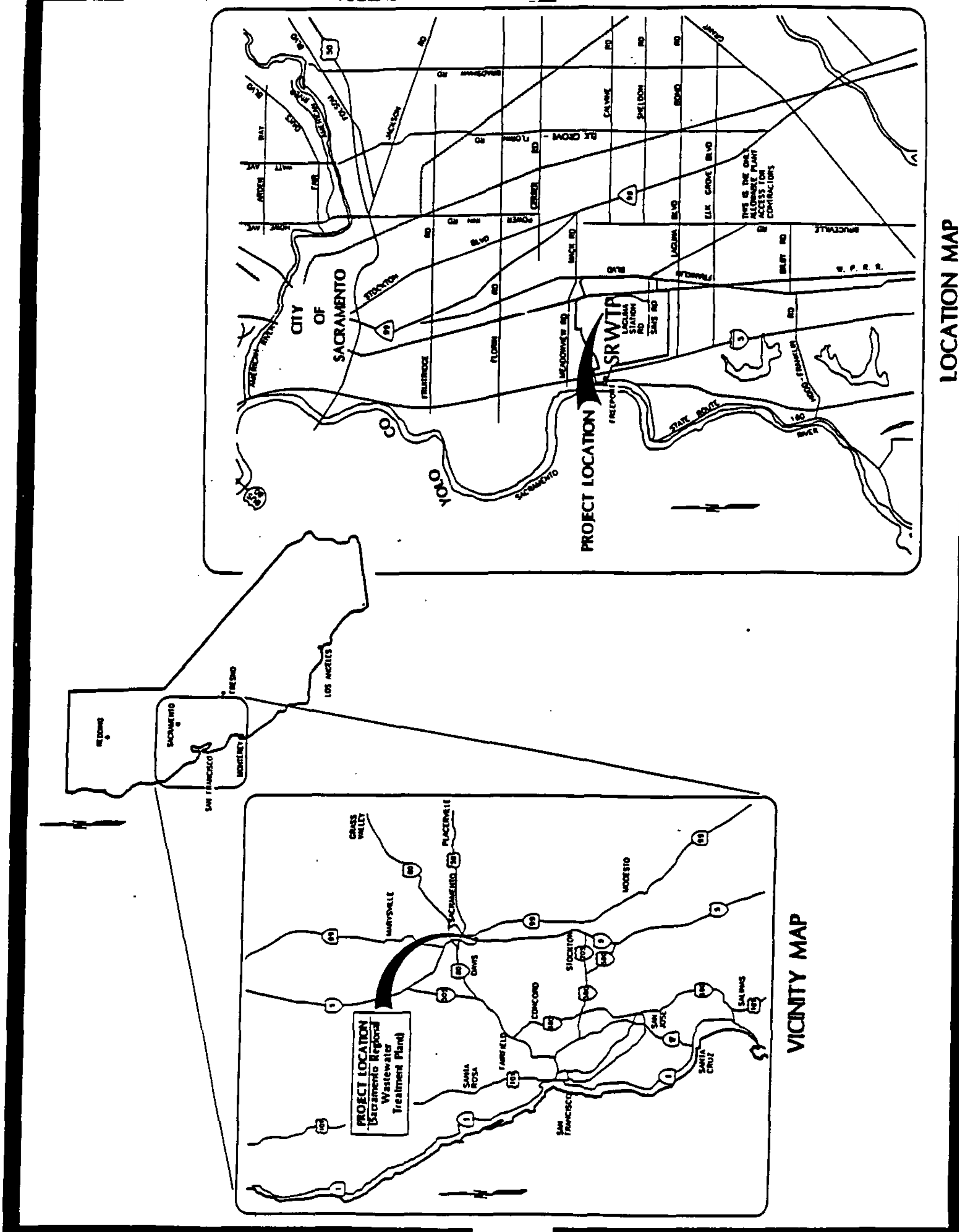
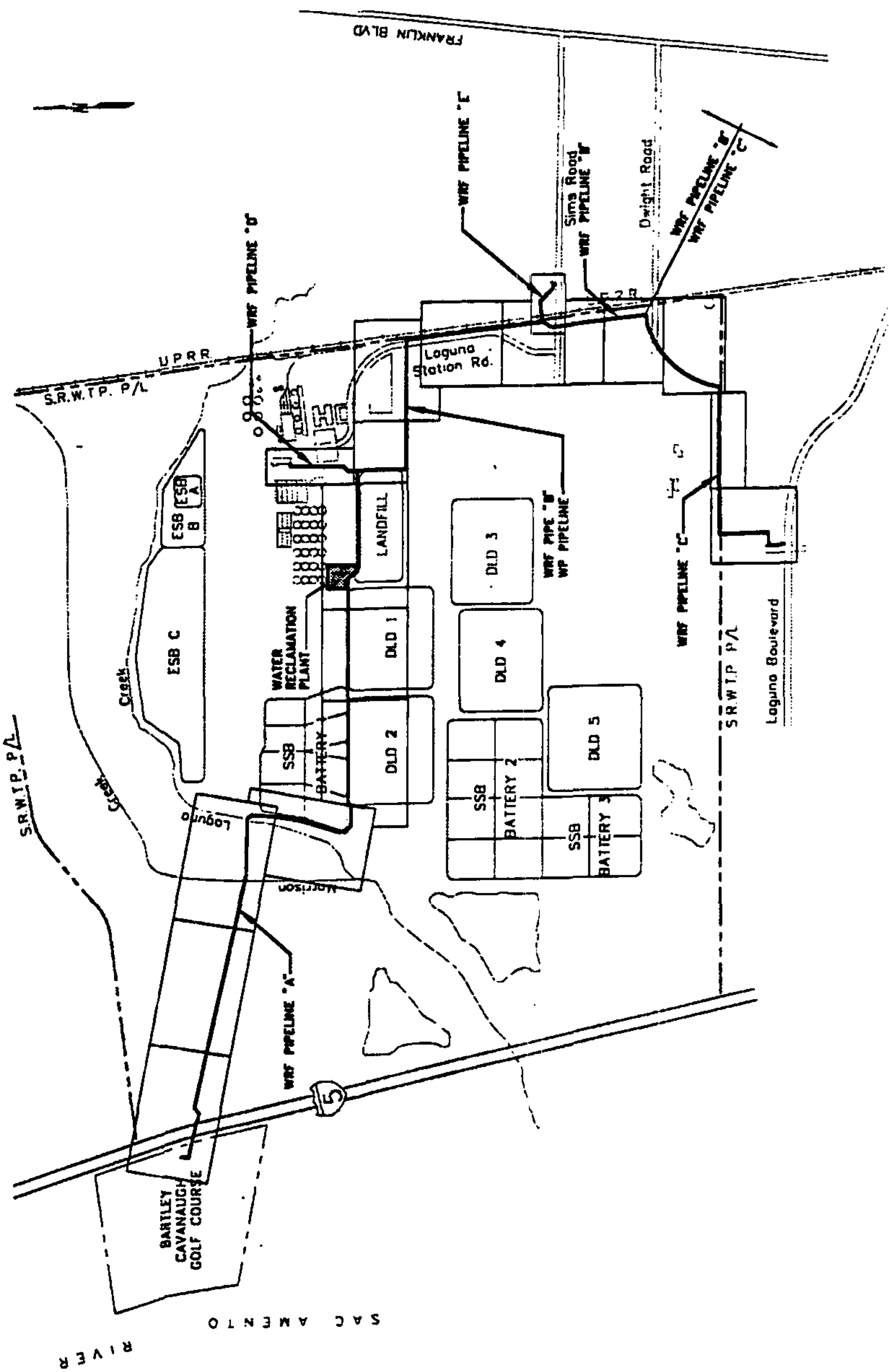


EXHIBIT B

SRWTP, KEY MAP TO DRAWINGS



4. Reclaiming water may reduce the size of costly advanced wastewater treatment facilities that may be required to comply with future river discharge requirements.

5. Reclaiming water may reduce thermal loads to the Sacramento River, helping the SRCSD meet the objectives of the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California.

6. Reclaimed water will provide a reliable and guaranteed alternative water supply source.

7. This project will introduce users and the public to reclaimed water, thereby promoting acceptance and support."

Environmental Setting

The project is located within the SRWTP property in the Franklin-Laguna community of Sacramento County. The water reclamation plant (WRP) would be located within the central process area between the existing on-site landfill to the south and the clarifier tanks to the north. The site has been previously graded flat and is currently used for storage of equipment or contractor vehicles/trailers. No significant vegetation exists here. Exhibit B depicts the proposed reclamation plant and pipelines. The Laguna transmission main would be constructed from the WRP to the southern boundary of the SRWTP via Laguna Station Road, agricultural fields and existing dirt roads. The agricultural lands through which the alignment would pass are used for pasture and/or hay crops, see Exhibits C through M. A secondary line, approximately 1,020 feet in length, would extend from the Laguna transmission main near the WRP to the treatment plant (see Exhibit T). This alignment would pass through disturbed and developed areas of the central process area. No significant biological resources exist in the alignment.

The second transmission main would follow the alignment of the existing main outfall in a northwesterly direction to the west side of Interstate 5 (Bartley Cavanaugh City Golf Course). This alignment would follow existing (dirt) service roads around Solids Storage Basin (SSB) Battery I, before entering the SRWTP Bufferlands west of the battery. Within the Bufferlands, the alignment crosses Laguna Creek and its associated riparian community, the engineered channel of Morrison Creek (now abandoned), the seasonal wetlands of Upper Beach Lake, and the newly constructed Morrison Creek channel. Beyond the creeks, the alignment passes through a broad expanse of grasslands and across the levee located east of Interstate 5. The pipeline alignment passes beneath Interstate 5, via an existing conduit and terminates at the golf course (Exhibits N through S). The portion of the Bufferlands through which the alignment passes is currently undergoing restoration. This restoration effort (Upper Beach Lake Restoration Plan, Control Number: 91-PWE-1225) is an ambitious plan of habitat enhancement and restoration that involves the construction of berms, installation of water control structures, active management practices and a large-scale native plant establishment program.

The land uses surrounding the SRWTP include single-family residential uses to the north and east (City of Sacramento), commercial and residential uses to the south (Laguna West development) and Interstate 5 and the City of Sacramento's Bartley Cavanaugh Golf Course to the west.

EXHIBIT C

LAGUNA RECLAIMED WATER TRANSMISSION MAIN
(WATER RECLAMATION PLANT(WRP) TO STATION 108+00)

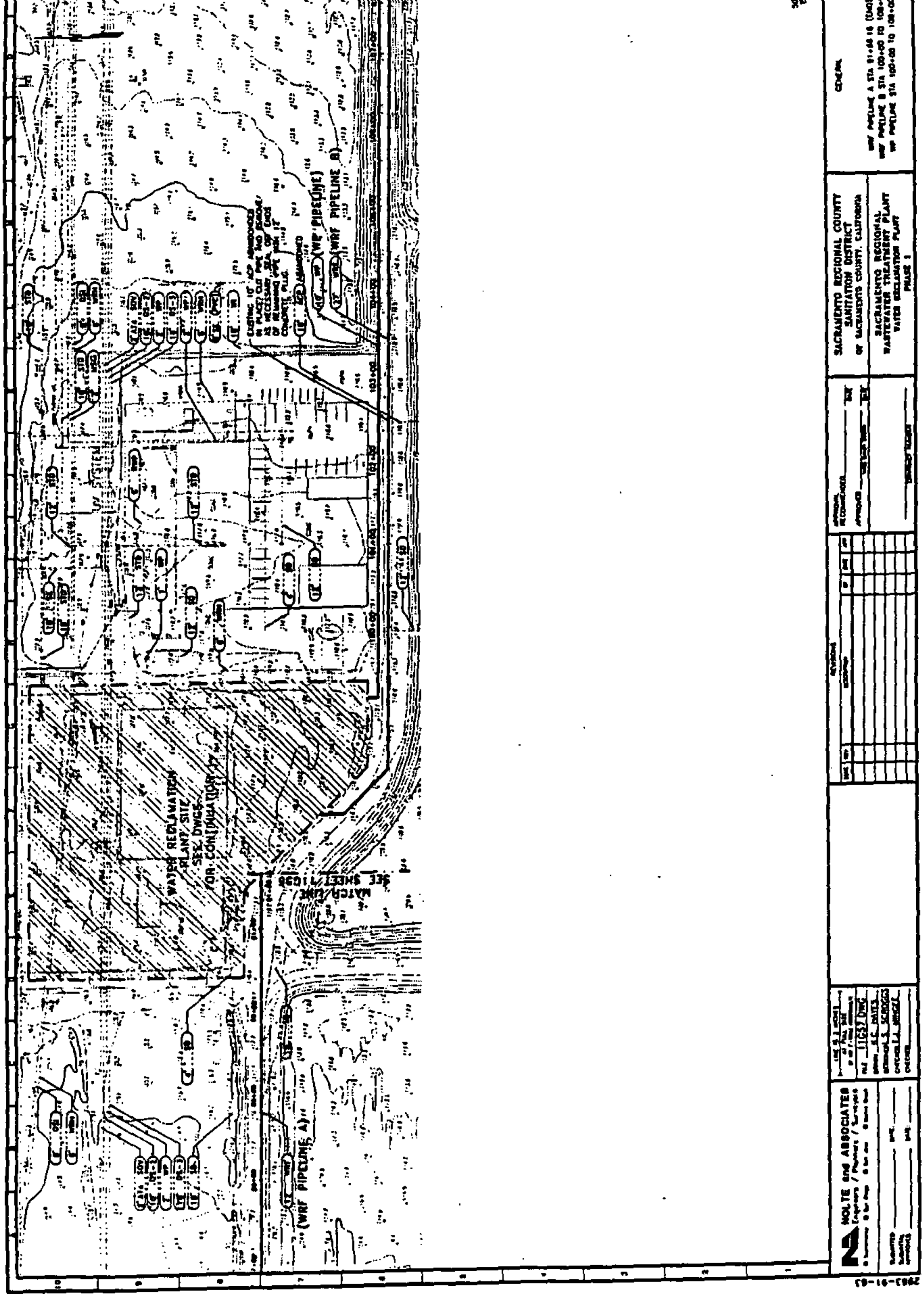


EXHIBIT D

LAGUNA RECLAIMED WATER TRANSMISSION MAIN
(STATION 108+00 TO STATION 125+00)

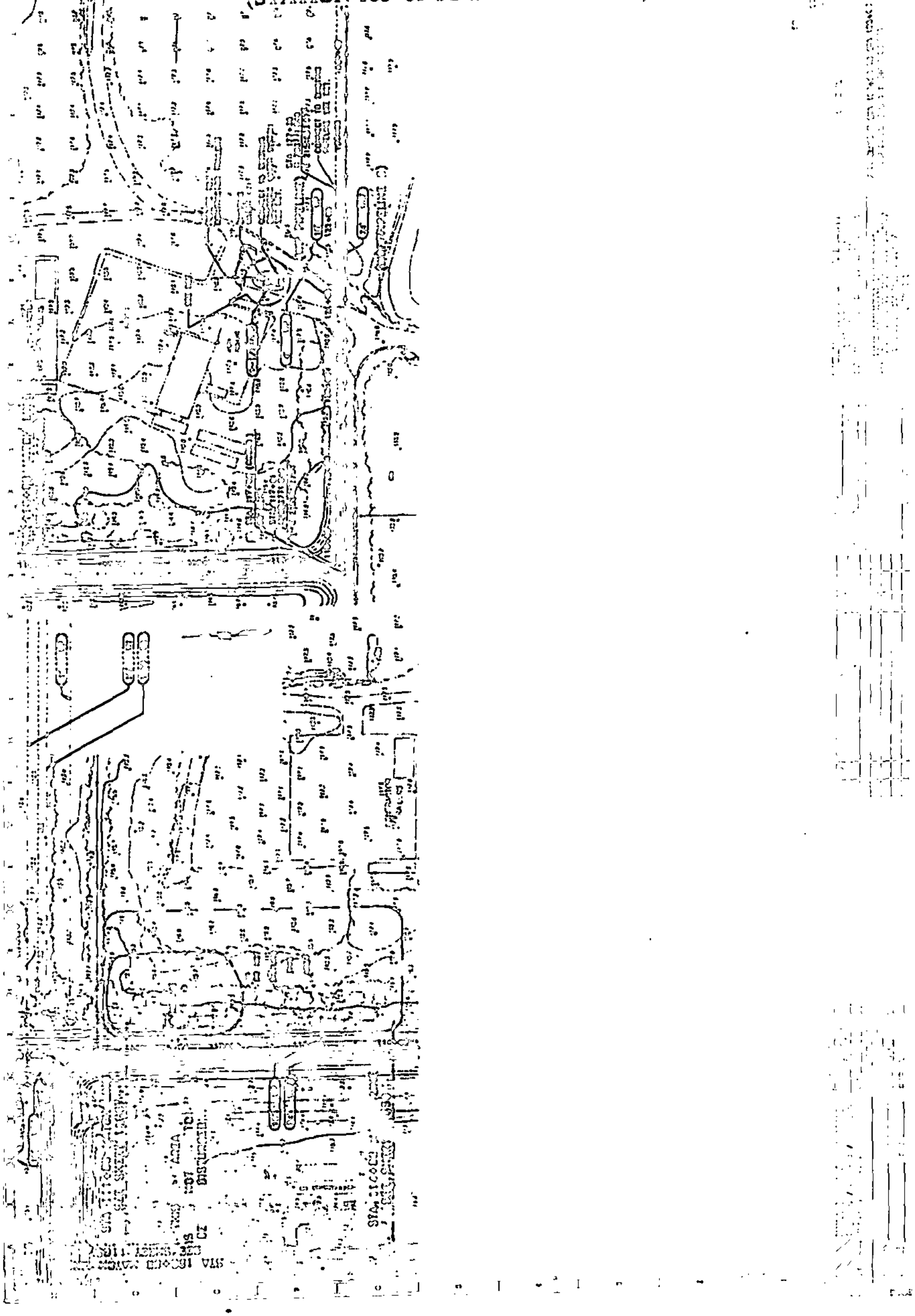


EXHIBIT E

LAGUNA RECLAIMED WATER TRANSMISSION MAIN
(STATION 125+00 TO LAGUNA STATION ROAD)

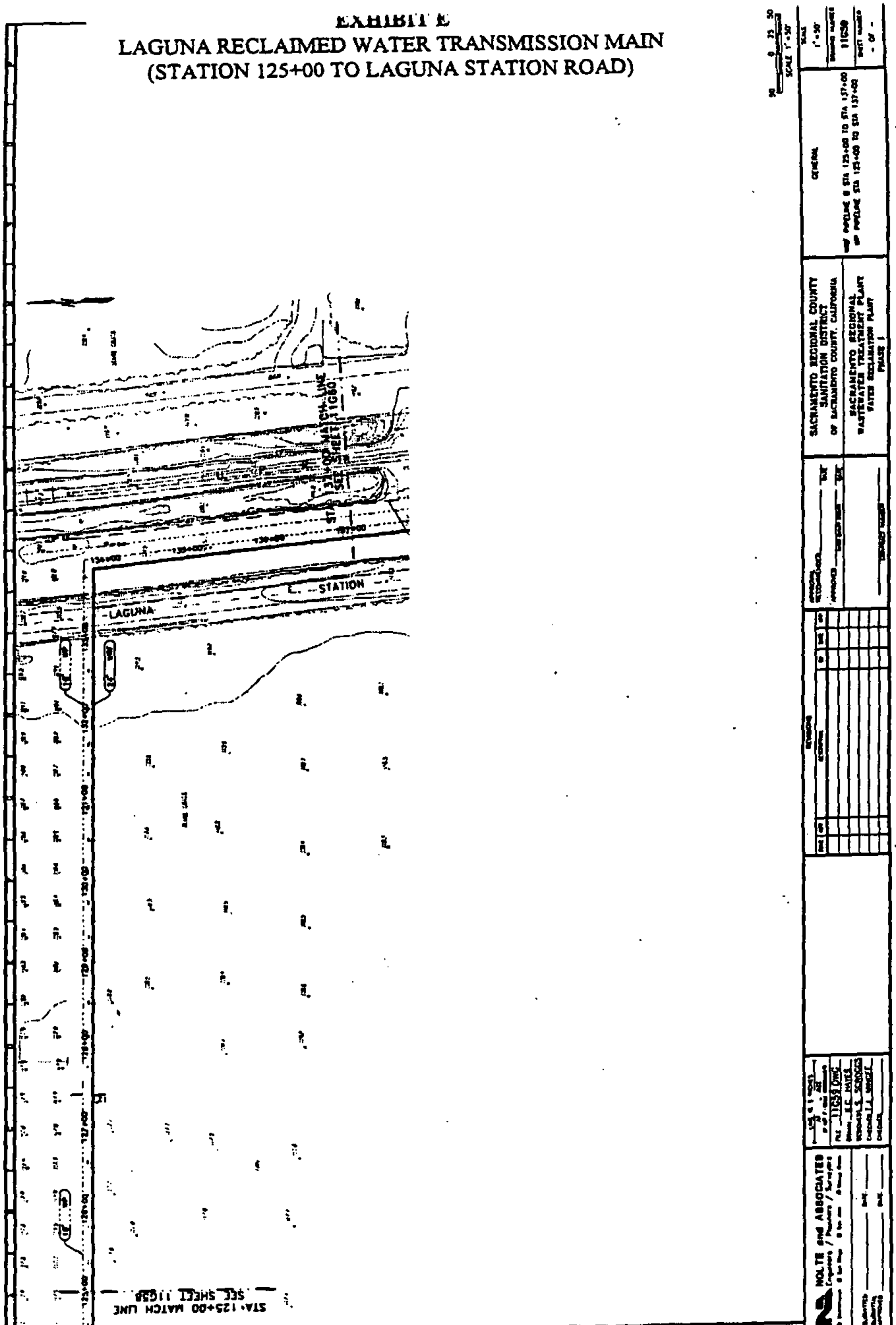


EXHIBIT F

LAGUNA RECLAIMED WATER TRANSMISSION MAIN (LAGUNA STATION ROAD)

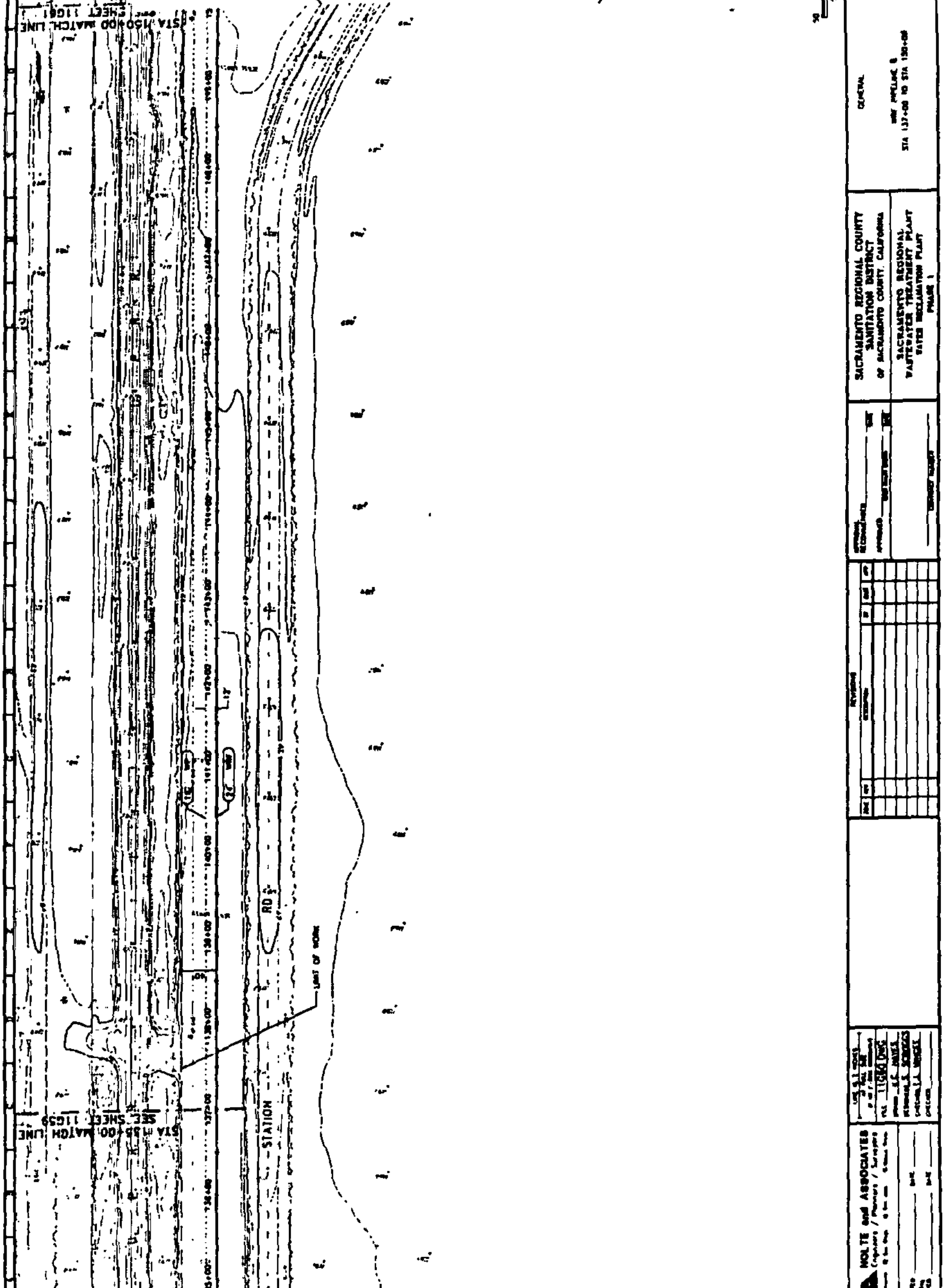


EXHIBIT G

LAGUNA RECLAIMED WATER TRANSMISSION MAIN
(LAGUNA STATION ROAD TO SOUTH OF SIMS ROAD)

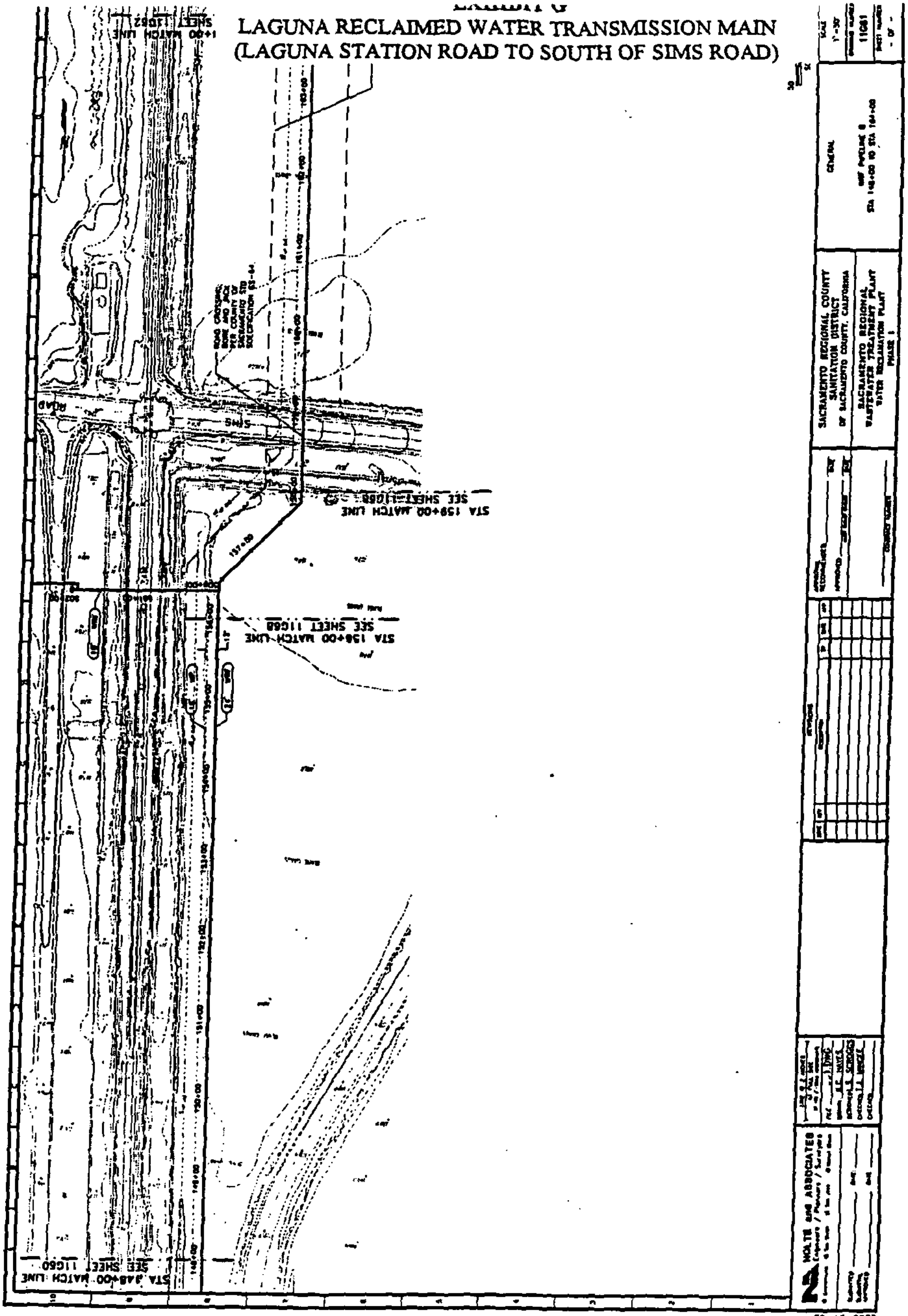
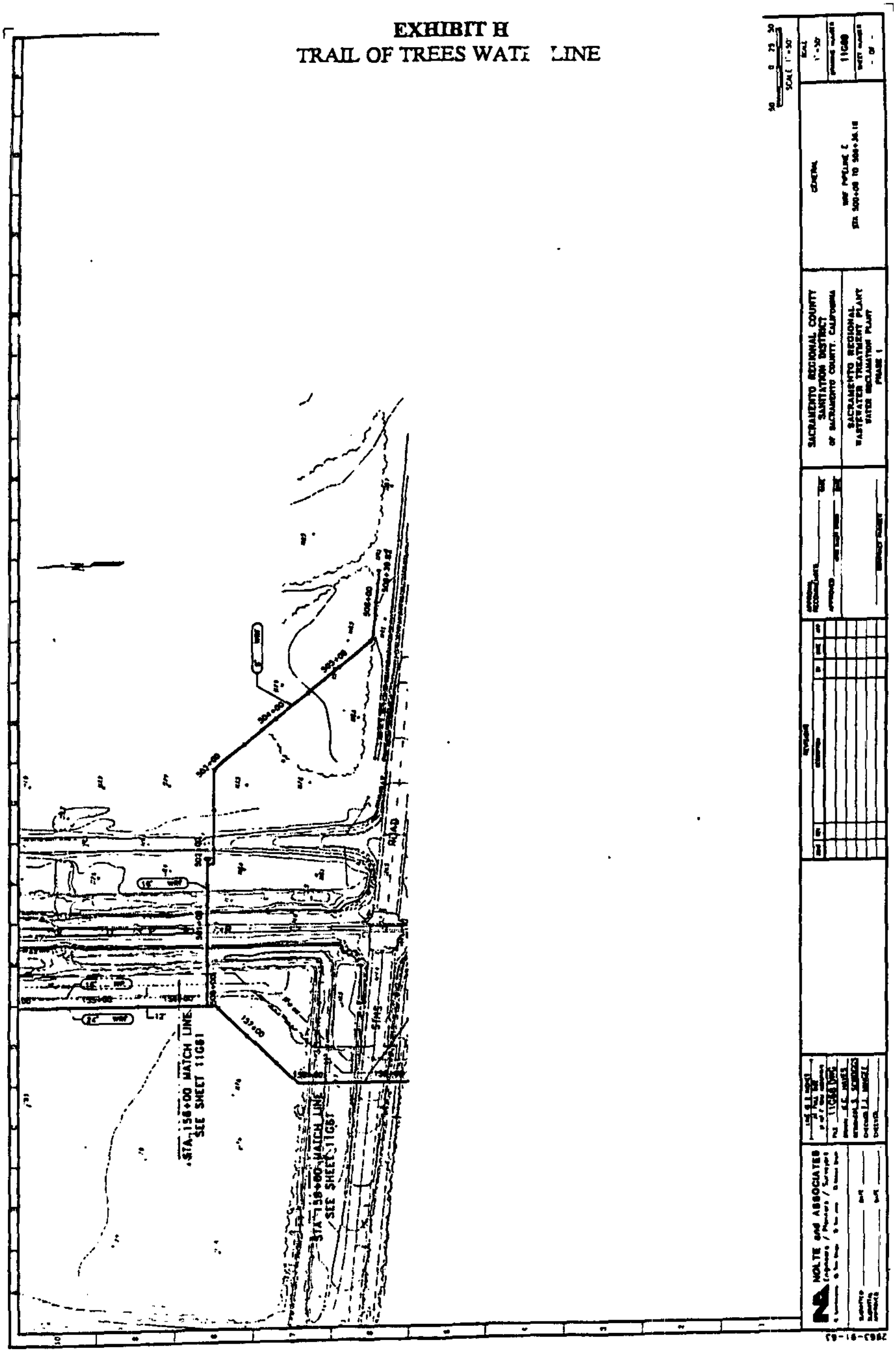


EXHIBIT H
TRAIL OF TREES WATE LINE



LAGUNA RECLAIMED WATER TRANSMISSION MAIN
(SOUTH OF SIMS ROAD TO DWIGHT RD.)

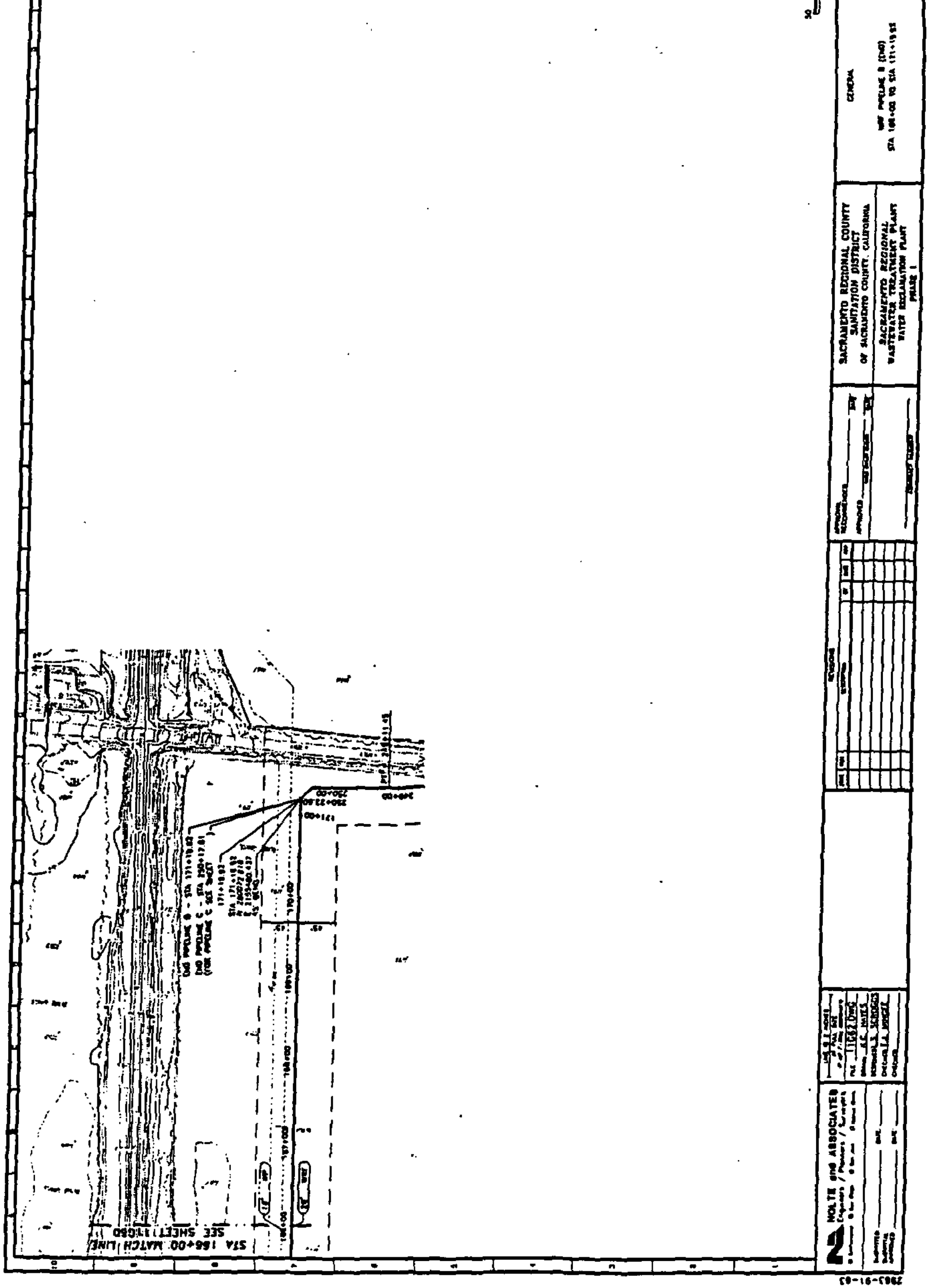
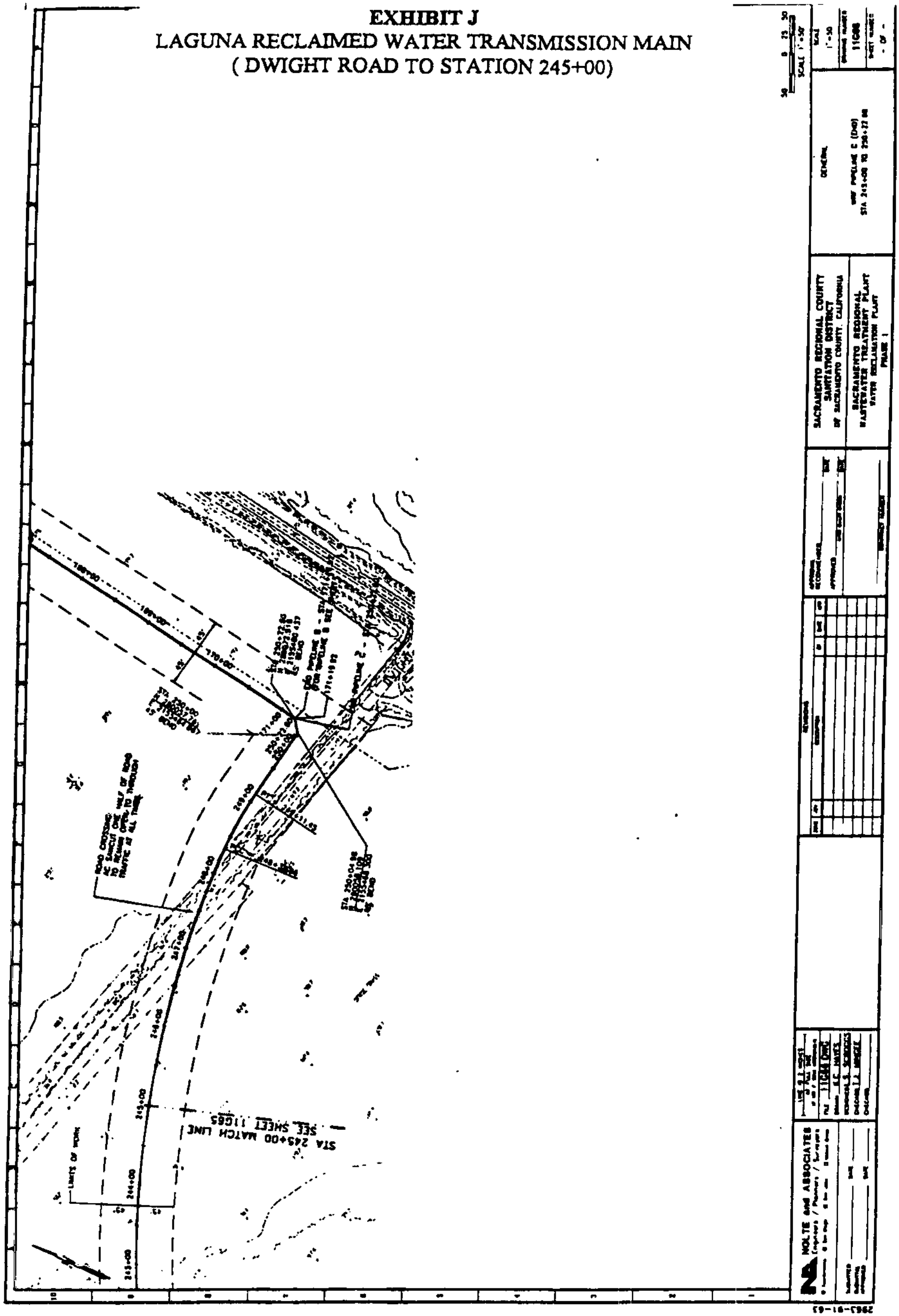


EXHIBIT J

LAGUNA RECLAIMED WATER TRANSMISSION MAIN
(DWIGHT ROAD TO STATION 245+00)



LAGUNA RECLAIMED WATER TRANSMISSION MAIN (STATION 245+00 TO SRWTP SOUTH PROPERTY BOUNDARY)

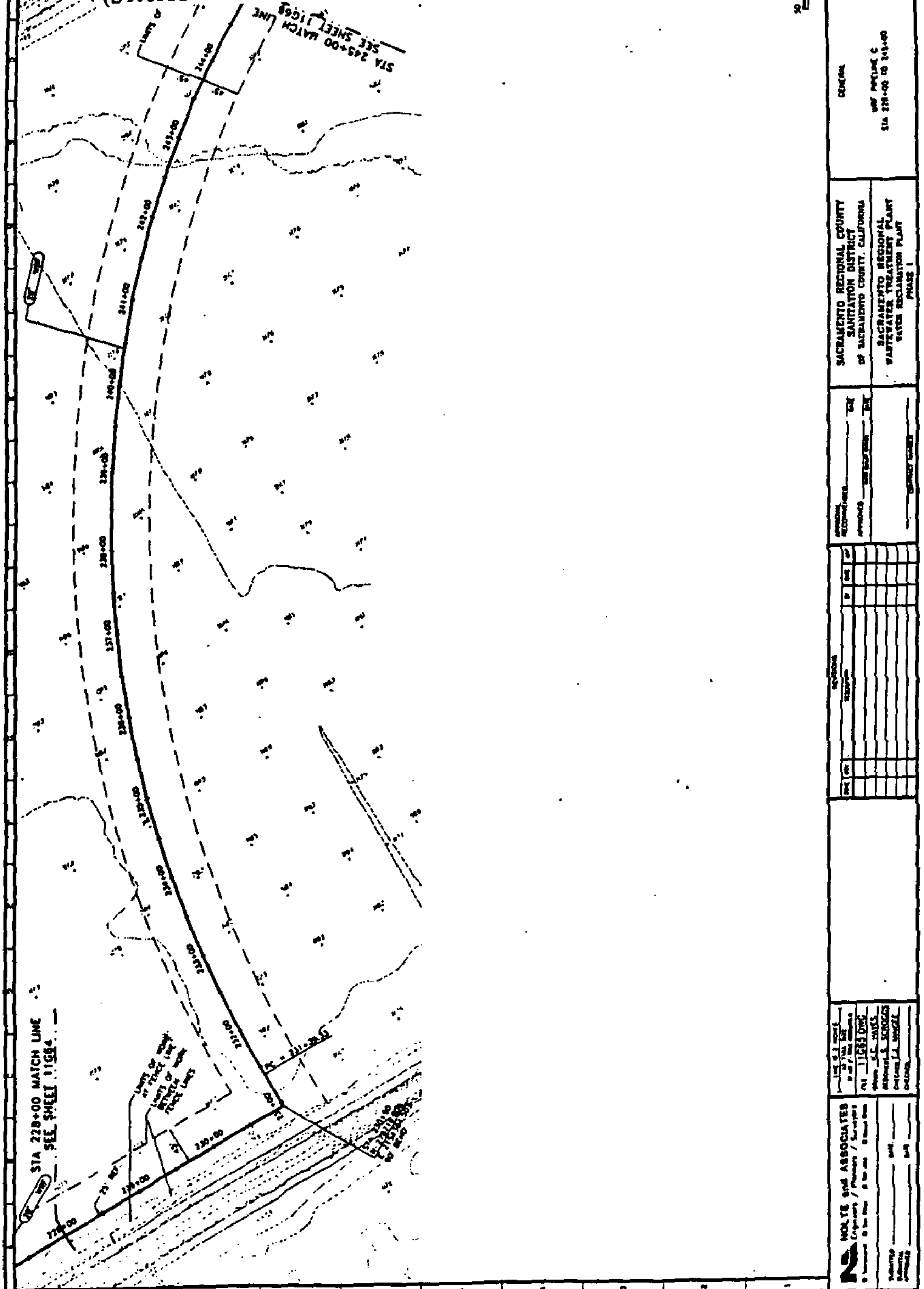
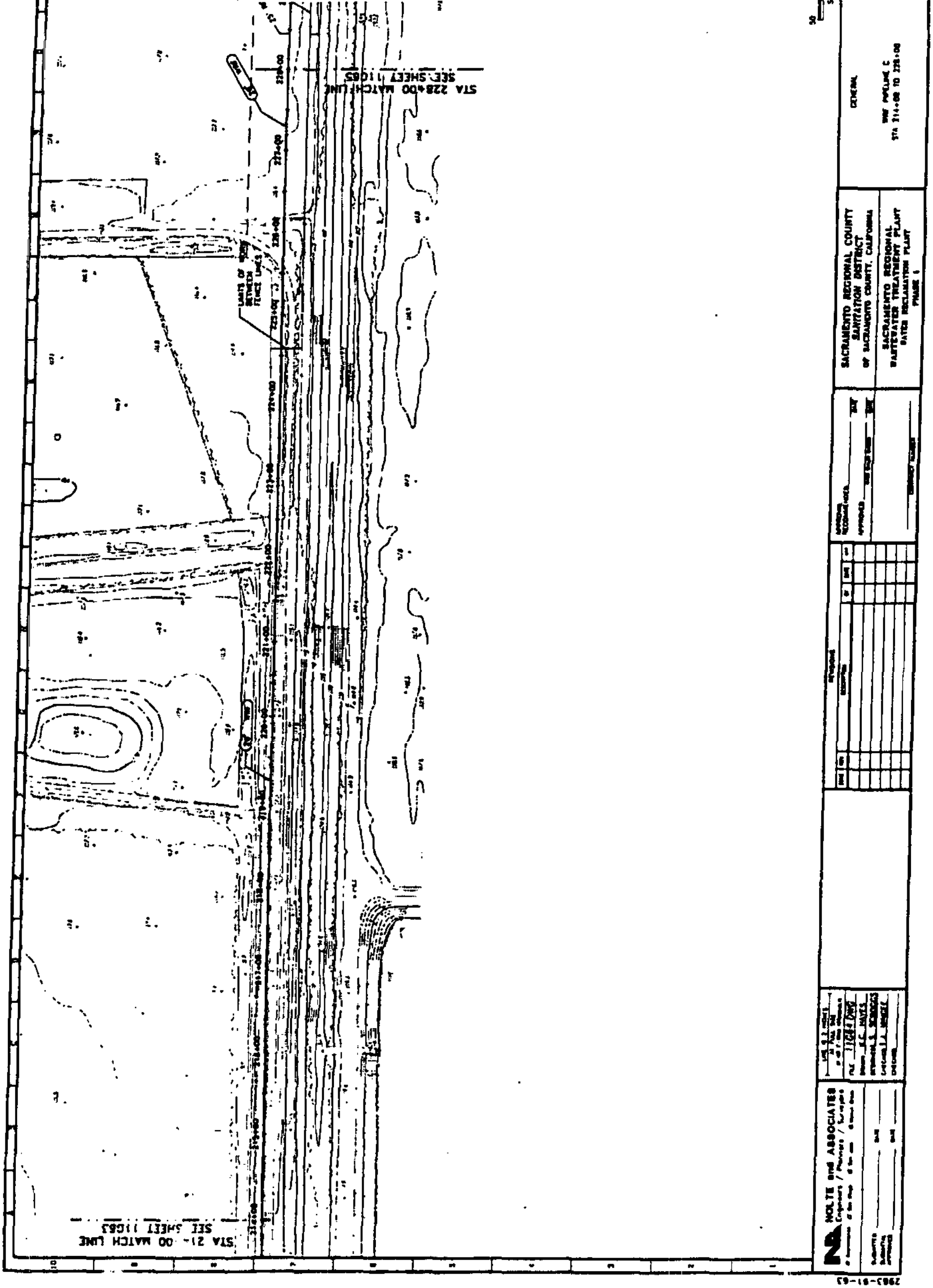


EXHIBIT L

LAGUNA RECLAIMED WATER TRANSMISSION MAIN
(SRWTP SOUTH PROPERTY BOUNDARY)



LAGUNA RECLAIMED WATER TRANSMISSION MAIN
(SRWTP SOUTH PROPERTY BOUNDARY TO LAGUNA BOULEVARD)

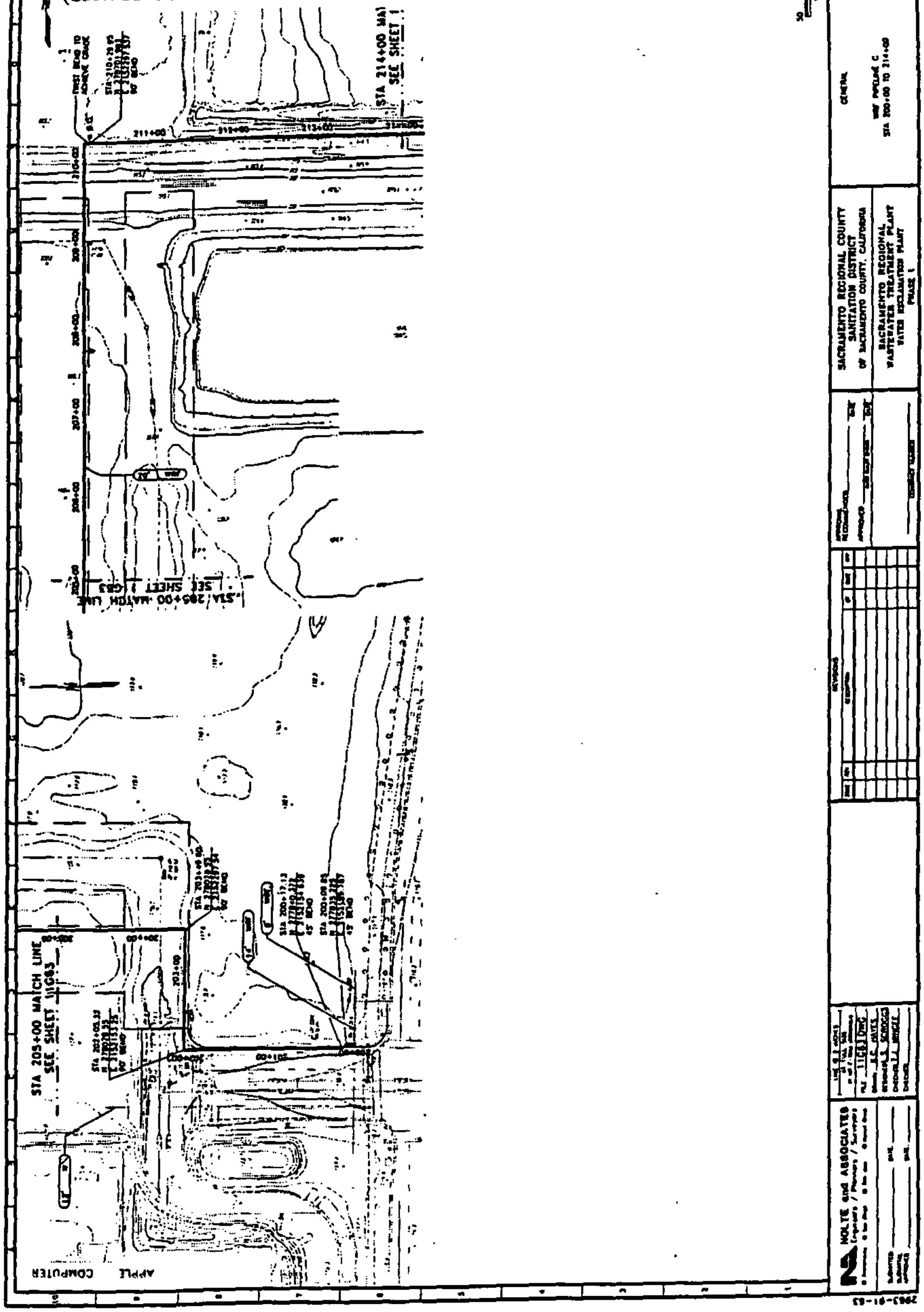
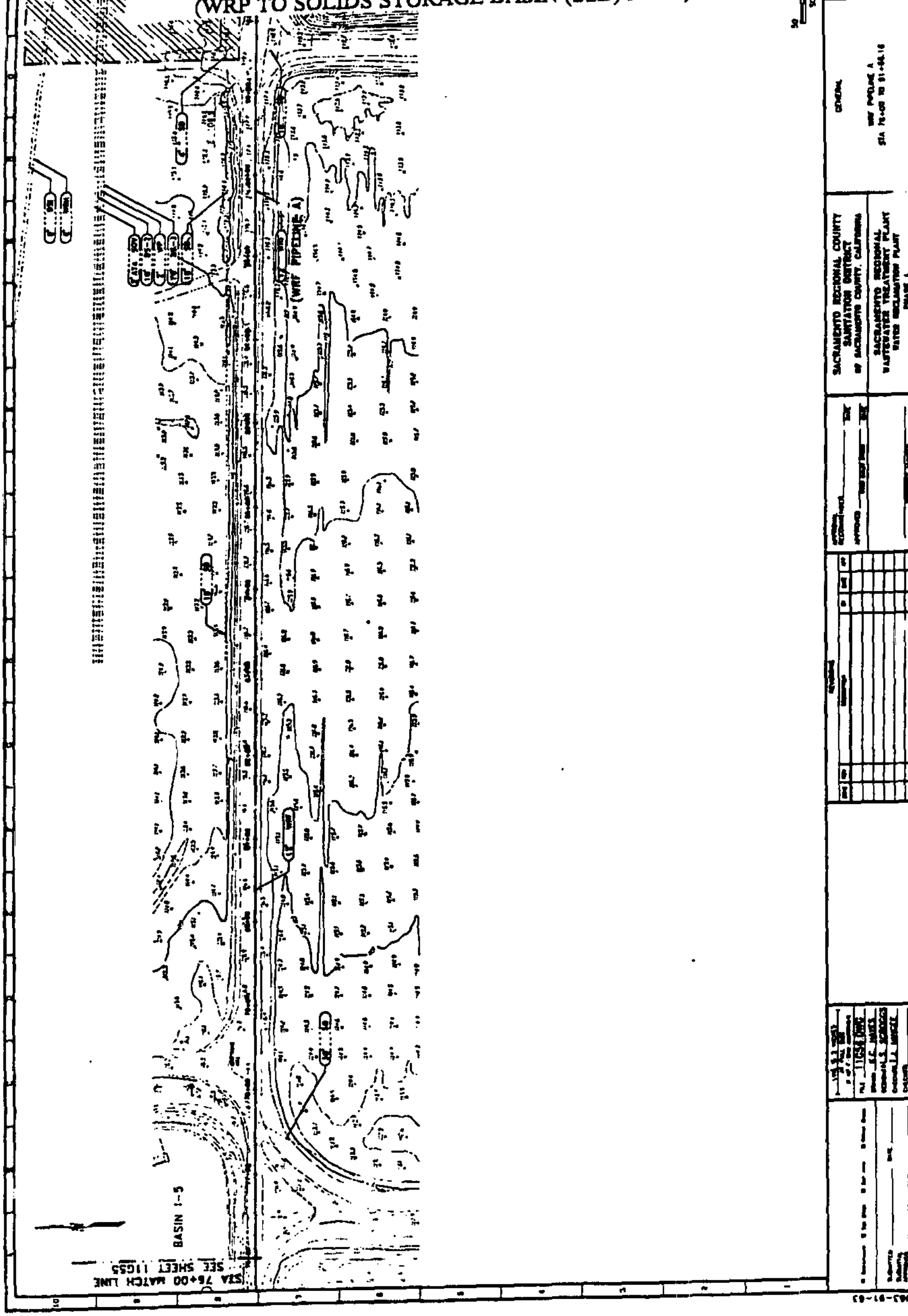
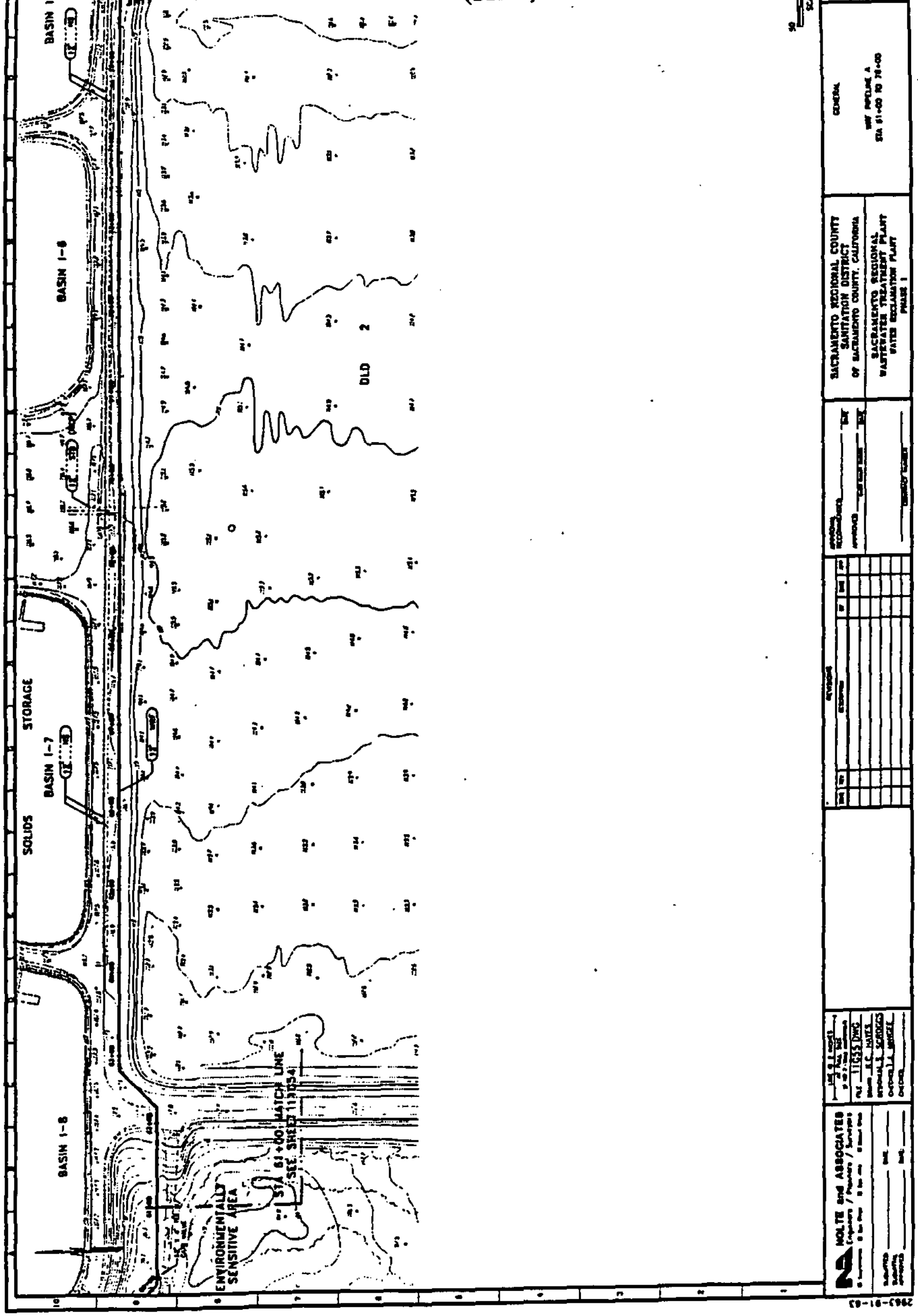


EXHIBIT N

GOLF COURSE RECLAIMED WATER TRANSMISSION MAIN (WRP TO SOLIDS STORAGE BASIN (SSB) NO. 1)



GOLF COURSE RECLAIMED WATER TRANSMISSION MAIN
(SSB 1)



GOLF COURSE RECLAIMED WATER TRANSMISSION MAIN
(MAINTENANCE ROAD BETWEEN SSB 1 AND LAGUNA CREEK)

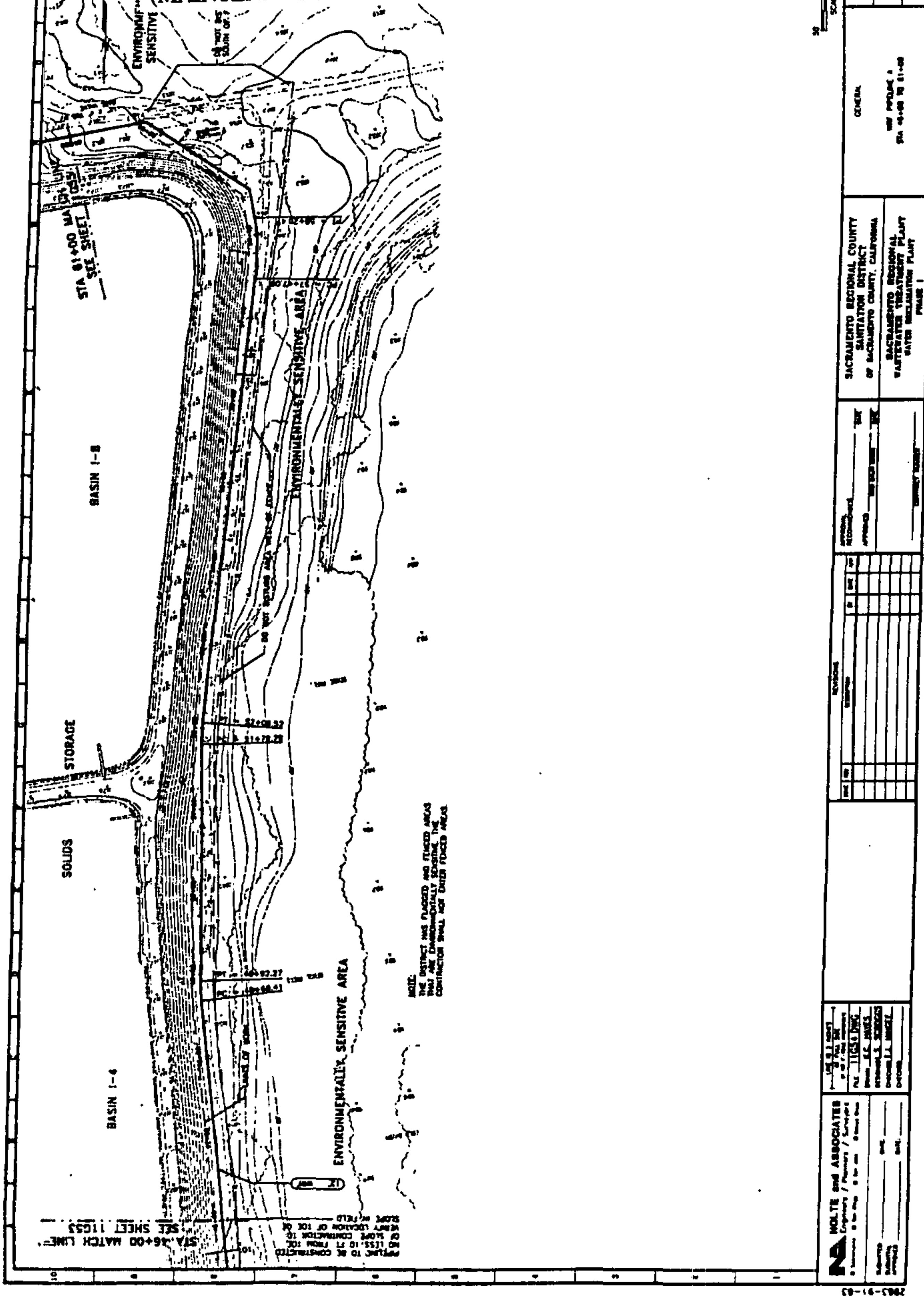


EXHIBIT Q

GOLF COURSE RECLAIMED WATER TRANSMISSION MAIN

(LAGUNA CREEK TO UPPER BEACH LAKE)

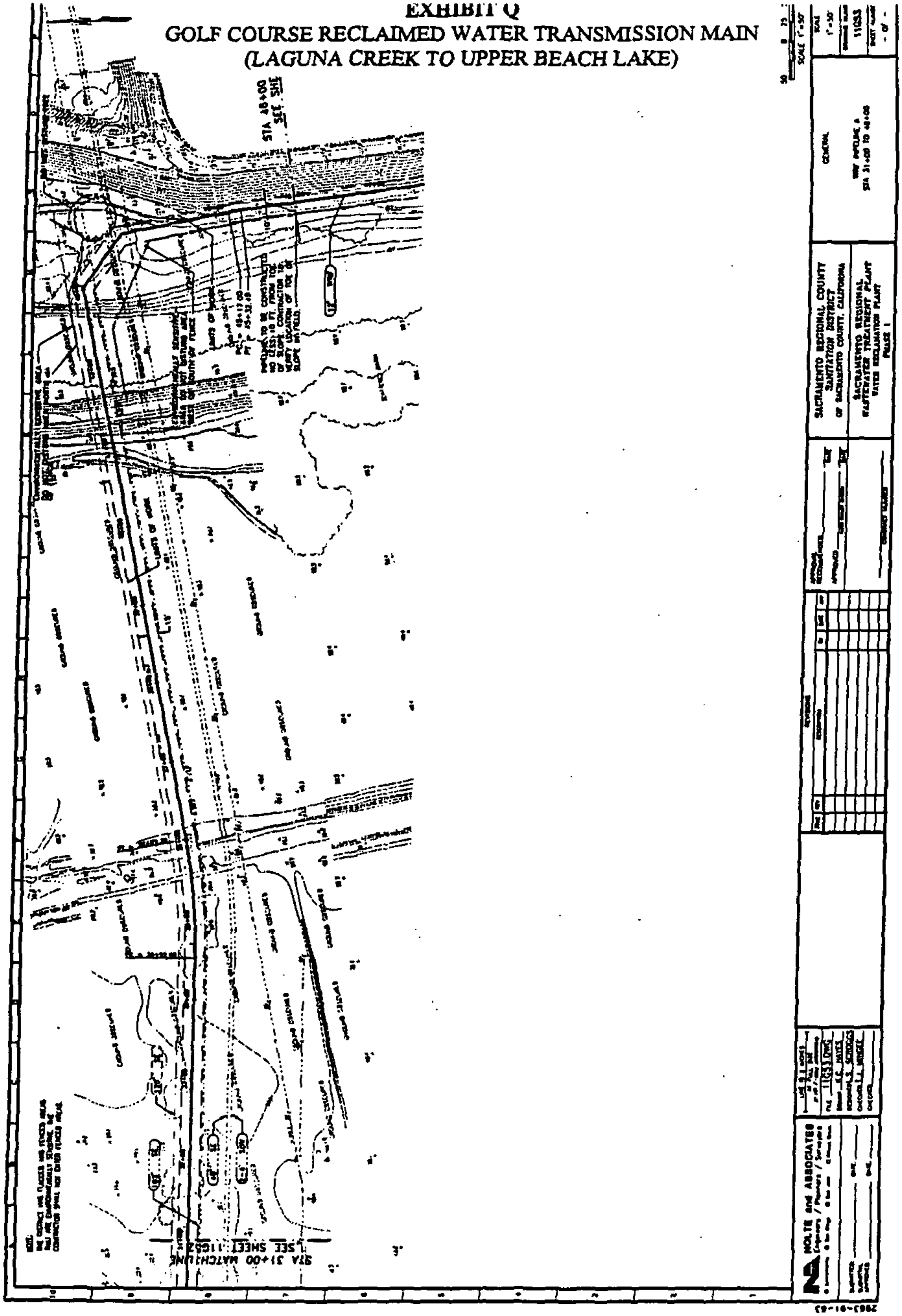


EXHIBIT R
GOLF COURSE RECLAIMED WATER TRANSMISSION MAIN
(UPPER BEACH LAKE)

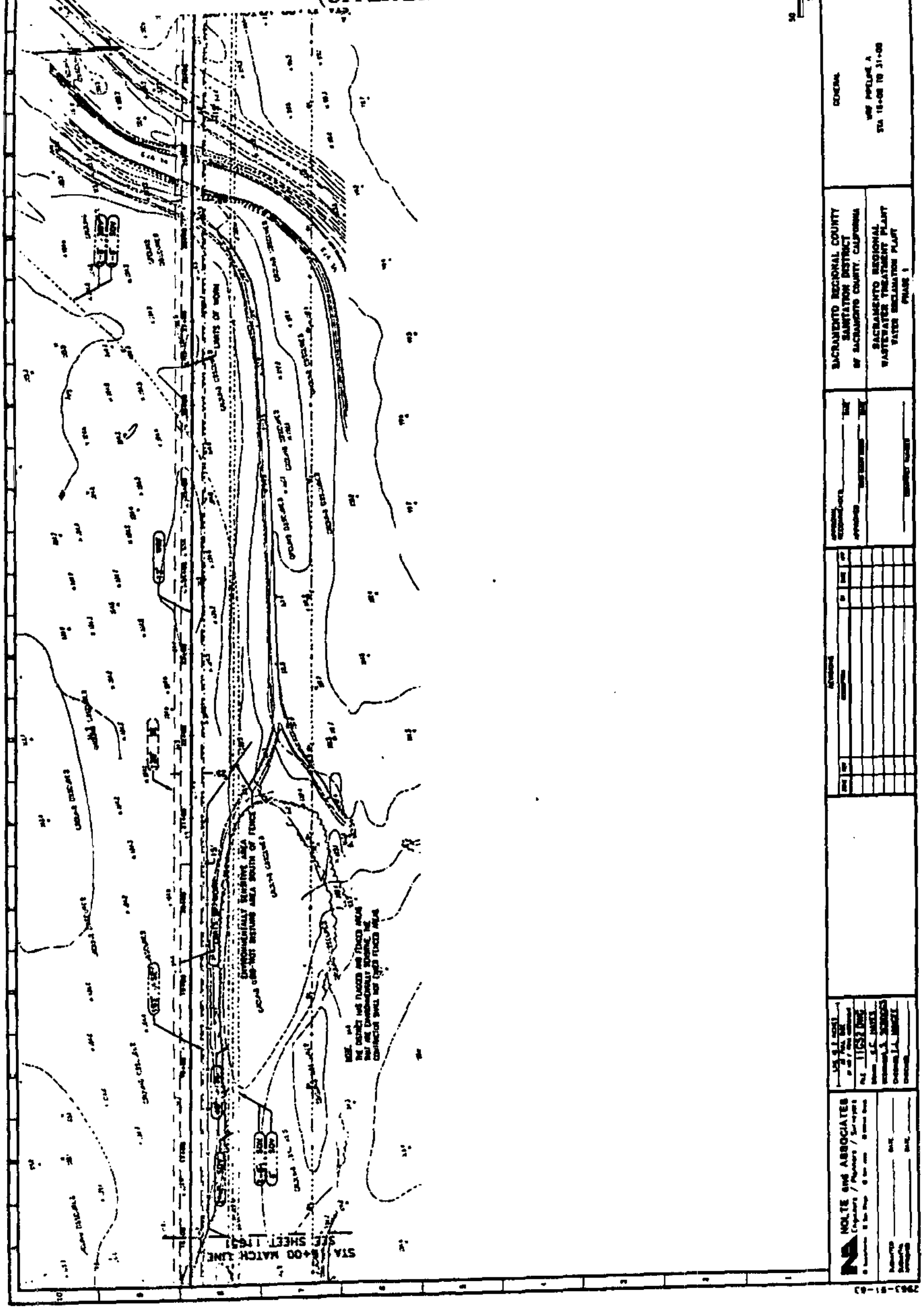


EXHIBIT S
GOLF COURSE RECLAIMED WATER TRANSMISSION MAIN
(UPPER BEACH LAKE TO INTERSTATE 5)

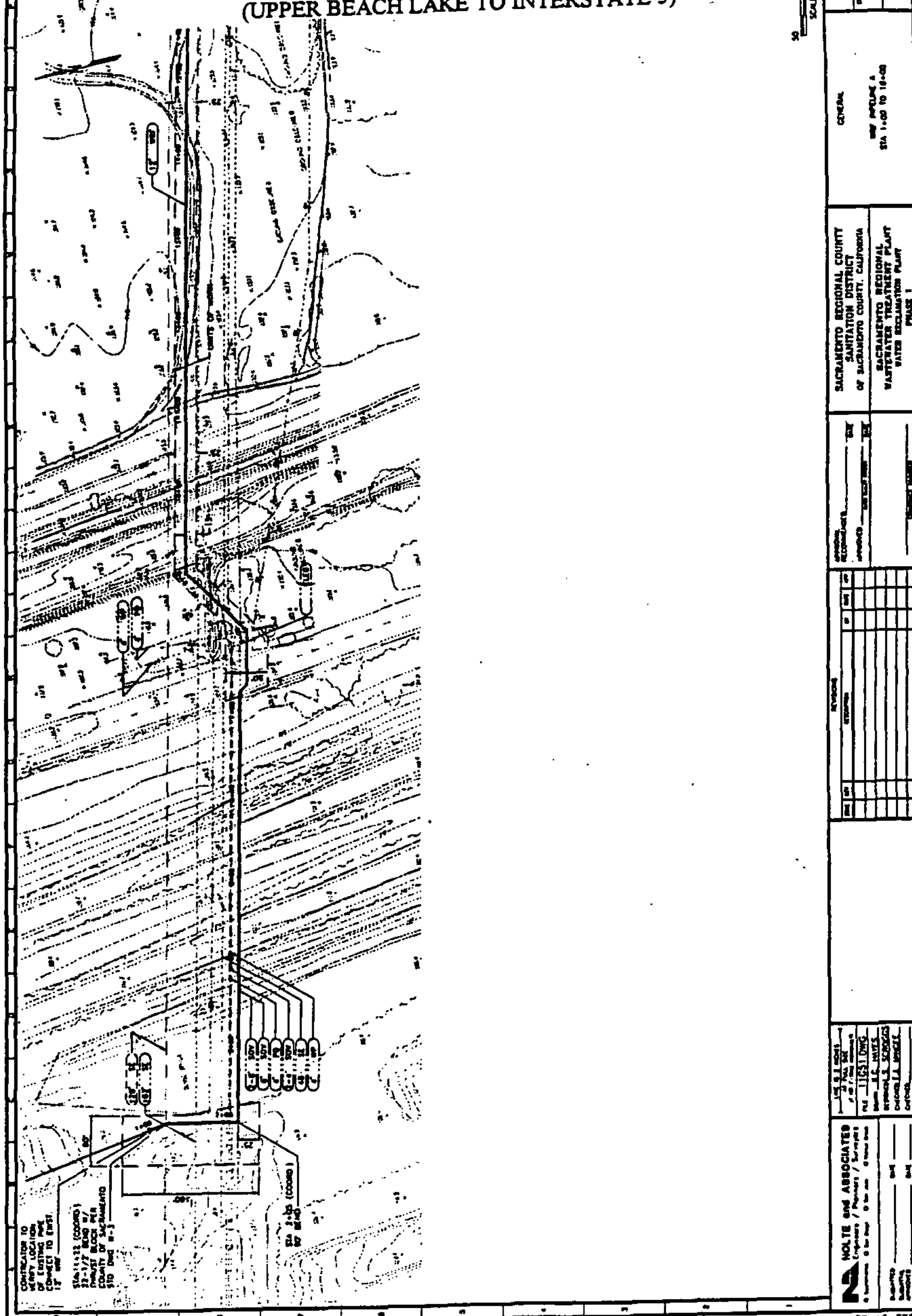
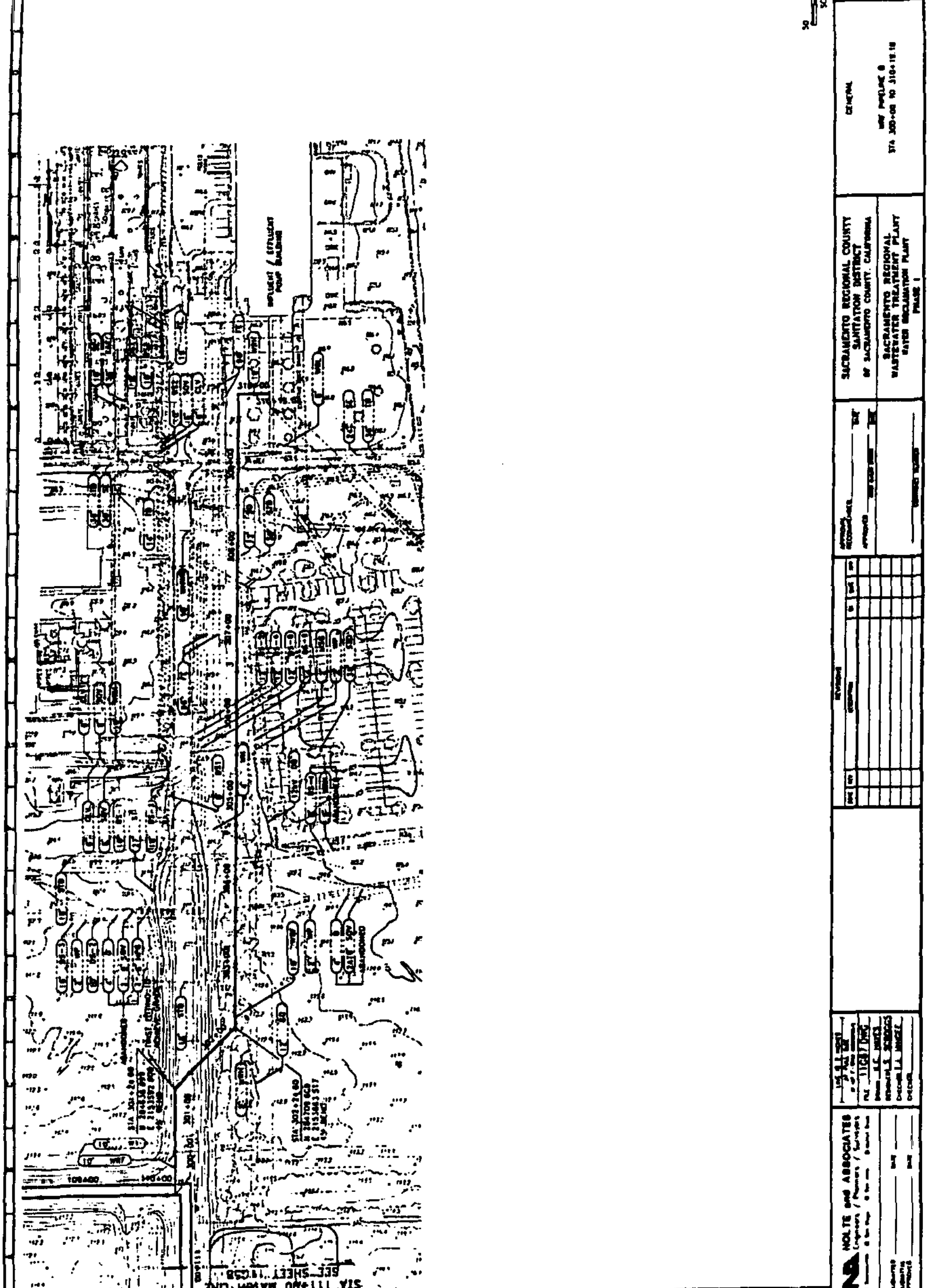


EXHIBIT T
PLANT PROCESS WATER PIPELINE



SUMMARY AND MITIGATION MEASURES

Land Use/Master Plan Consistency

The Sacramento County General Plan Map designates the SRWTP for Public/Quasi-Public uses. The proposed water reclamation plant would be compatible with the existing industrial uses at the SRWTP and the General Plan Land Use designation.

Regarding reclaimed water policy, the General Plan contains an objective requiring "water efficient landscape and design that utilizes water conservation methods and water reuse technology whenever possible". This objective is intended to be met through 1) xeriscaping, 2) reuse of water and water conservation on individual projects and 3) using treated wastewater from the regional treatment plant for crop irrigation, landscape irrigation, wetlands augmentation and other uses.

The proposed project would provide reclaimed water as specified above (item 3). As such, the project would not only be consistent with General Plan Policy, but necessary to meet one of its stated objectives.

The SRWTP is located in the AG-80 and AG-80(F) land use zones. The SRWTP is identified, within this zone, on the Sacramento County Comprehensive Zoning Map.

An updated master plan for the SRWTP has been developed that includes the following recommendations for near-term water reclamation: proceed with preliminary design studies for sizing a reclamation treatment, disinfected tertiary treatment for all reclaimed water uses, locate and design wastewater reclamation facilities for expansion, use of the Laguna area as an opportunity to gain experience in reclaimed water use, and to promote public support for reclaimed water use.

Given the project's consistency with the Sacramento County General Plan, Zoning code and Draft SRWTP Master Plan and the Sacramento County General Plan, the potential land use impacts are considered less than significant.

Mitigation Measures:

None required.

Public Health/Reclaimed Water Quality

Regulatory criteria governing wastewater reuse has been developed by the State of California Department of Health Services (DHS) and are set forth in the California Code of Regulations, Title 22, Division 4, Section 60301, et. seq., commonly referred to as Title 22. The fundamental purpose of the Title 22 criteria is the protection of public health. Treatment requirements, plant process redundancy, facility reliability, monitoring frequency, and reclaimed water quality are specified under Title 22. Reclaimed water use alternatives that generate the highest potential for public exposure require the greatest level of treatment and reliability. The highest degree of reclaimed water treatment is called "disinfected tertiary reclaimed water". This type of water would be produced by the proposed project and is suitable for all of the proposed uses.

The SRCSD is proposing to produce, convey, and use reclaimed water under a Master Reclamation Permit issued by the Regional Water Quality Control Board (RWQCB) . This permit, if approved, would be a "blanket" type permit that would cover all users of reclaimed water for this project.

All reclaimed water would be used in publicly owned areas of the residential neighborhoods or within non-residential areas. No use of reclaimed water by private property owners (i.e., on residential lots) would occur.

In addition to compliance with Title 22 standards, additional measures would be implemented by the SCWA to protect public health. These include delivering reclaimed water through a separate ("purple pipe") distribution system, and the development of construction standards that specify minimum separation of potable and non-potable pipelines. In addition, requirements would be developed for reclaimed water users to follow. These may include identifying reclaimed water meter boxes and valve covers, marking of certain above ground facilities to indicate reclaimed water use, and prohibition of hose bibs or other devices that may allow easy access to the system. Reclaimed water use for the irrigation of parks and streetscapes would be restricted to minimize potential public contact. Irrigation at schools would be restricted to hours to avoid contact with children, and commercial areas would be irrigated before or after business hours. Modification of irrigation practices to minimize ponding and runoff would also be required.

Given the proposed compliance with all applicable regulations related to reclaimed water use and the additional measures proposed to avoid public contact, the health risks associated with the proposed use of reclaimed water are considered less than significant.

Mitigation Measures:

None required.

Sacramento River and Delta Hydrology

The SRCSD has provided an Impacts Evaluation Report (Appendix A) that addresses the project's potential hydrology, water quality and fisheries impacts to the Sacramento River and Delta. From a hydrology standpoint the report analyzes the effects of the expected effluent flow reductions on the Sacramento River and the Delta, including potential effects on the Central Valley Project (CVP) and State Water Project (SWP) operations. The following incorporates and summarizes the conclusions of that analysis.

The water demands of the project require an initial 5 mgd (7.6 cfs), and a future potential 10 mgd (15.5 cfs), treatment capacity. For the purpose of the analysis, the maximum potential discharge reduction was assumed to be 10 mgd (15 cfs), less that portion at the capacity used for the SRWTP process and returned to the river as effluent (903 acre feet/year or 0.8 mgd). Thus the maximum potential discharge reduction to the Sacramento River would be 9.2 mgd (14.2 cfs). It is noted that this maximum potential reduction represents a peak month (July) daily reduction.

Based on these data, the maximum potential reduction in flow (14.2 cfs), relative to the historic range of average daily Sacramento River and Delta flows, represents approximately 0.05 percent and 0.17 percent of the maximum and minimum average daily Sacramento River flows, and 0.04 percent and 0.16 percent of the respective maximum and minimum Delta inflows. These minute flow reductions would be virtually imperceptible, falling well within the range of normal daily and annual discharge fluctuations that already occur natuıally and as a result of CVP/SWP water management.

The proposed project will not result in any long-term volumetric water supply losses due to the hydraulic connections between the surface water and groundwater supplies in the region.

In the absence of the reclaimed water supply, water demands of the identified consumptive users would be met through the use of groundwater, surface water or a combination of the two supplies. Meeting the reclaimed water demand with surface supplies would, in effect, deplete the Sacramento River by the same amount that would be depleted from the effluent stream for reclamation. Likewise, groundwater use would also deplete the Sacramento River or other hydraulically connected surface waters through the river's recharge of the groundwater aquifer in response to groundwater pumping. This recharging process would result in essentially the same net amount of river flow depletion as surface water use or water reclamation, but would occur slower due to the inherently slow movement of groundwater.

Under any of these non-reclaimed water use scenarios the Sacramento River and Delta would be affected to essentially the same degree as that attributed to water reclamation although the rate of impact could be different.

The potential impacts on the Sacramento River, Delta and CVP and SWP operations are considered less than significant due to the nominal amounts of potential flow reduction, and the hydrological connection between water supplies in the region.

Mitigation Measures:

None required.

Sacramento River and Delta Water Quality

The Impacts Evaluation Report (Appendix A) provided by the SRCSD analyzes potential water quality impacts to the Sacramento River and Delta. The following section incorporates and summarizes the conclusions of that analysis.

The SRWTP discharge is a combination of treated domestic wastewater, industrial wastewater, and combined wastewater and urban runoff. The SRW[illegible]monitors the effluent and receiving water at an upstream location on the Sacramento River to measure and ensure compliance with its National Pollutant Discharge Elimination System (NPDES) effluent limitations, and the effectiveness of its industrial pretreatment program. The NPDES effluent limitations are established at levels to protect the beneficial uses in the Sacramento River.

The SRWTP consistently meets its NPDES effluent limitations.

Several previous studies have evaluated the effect of effluent discharge from the SRWTP on water quality in the Sacramento River. Three of the four studies focused on an evaluation of the effects of metals in the effluent discharge. The fourth study focused on contaminants of concern to drinking water. These studies provide background information and a frame of reference for evaluating potential impacts to water quality in the Sacramento River resulting from reduced effluent discharge associated with the proposed project. In general, these studies conclude that few measurable changes in the water quality of the Sacramento River or the Delta can be attributable to the SRWTP discharge. In fact, few differences in constituent concentration exist between the river and the effluent itself. (See Appendix A, Tables 1-1 and 1-2 of the Impacts Evaluation Report).

As stated previously, the maximum 14.2 cfs effluent discharge reduction would represent approximately 0.17 and 0.16 percent of the total Sacramento River flow and Delta inflow, respectively. This minor flow reduction could only affect water quality if the difference in water quality between the effluent and the river was high, which is not the case. Based on this minute reduction of the flow in the river, and the similar water quality of the effluent and the river, no measurable change in water quality of the river or the Delta would be expected to occur as a result of the reduction in the effluent discharge associated with the proposed project.

Mitigation Measures:

None required.

Biological Resources

The project impact area includes the water reclamation plant site itself, the Laguna Transmission Main (including the Trail of Trees pipeline), and the Bartley Cavanaugh Golf Course Transmission Main.

The WRP site itself is located within the process area and has been previously graded. No vegetation or other significant biological resources exist within this area.

The Laguna corridor passes from the WRP to Laguna Boulevard, a distance of approximately 12,500 feet (2.37± miles). This corridor begins at the WRP and extends easterly to Laguna Station Road. At Laguna Station Road, the corridor turns south (parallel to the roadway and the Union Pacific Railroad tracks) and continues southerly across open grasslands to Sims Road. Approximately 50 feet north of Sims Road a second pipeline branches off the transmission main to the east to serve the Trail of Trees project. This line would be approximately 725 feet long. The line would be "jacked and bored" beneath the UPRR tracks and is required (as a mitigation measure) to be bored beneath the two ditches parallel to the UPRR tracks (50 feet to the west, 100 feet to the east). This mitigation measure is intended to prevent potential impacts to the federally-listed freshwater shrimp species that may inhabit these ditches. Beyond the Trail of Trees line, the transmission main would continue south across a third ditch that parallels Sims Road (north side). Jacking and boring below this ditch is also required.

Past Sims Road the main would continue southerly across an agricultural crop field to Dwight Road. At Dwight Road the pipeline would arc southwest ac- ss a ruderal grassland community, following the future alignment of the Dwight Road extension to the southern SRWTP boundary. South of the boundary the main would extend across a large man-made channel containing wetland vegetation and continue to its terminus at Laguna Boulevard.

The golf course corridor extends from the WRP in a generally westerly direction to the Bartley Cavanaugh Golf Course, a distance of approximately 9,000 feet (1.7± miles). The corridor begins at the WRP and extends westerly along existing dirt or paved service roads to the southwest corner of Solids Storage Basin (SSB) Battery 1. From the battery the corridor turns north and continues along an unmaintained dirt roadway that lies between SSB Battery 1 and the riparian corridor of Laguna Creek. Immediately north of the battery, the alignment turns west, entering the SRWTP Bufferlands, and crosses Laguna Creek riparian corridor and the wetland and grassland habitats of Upper Beach Lake.

The Laguna Creek riparian corridor consists of a narrow band of native riparian trees and understory vegetation. Construction of the pipeline across this area would require removal of a small cluster of sandbar willows and areas of introduced annual grasses and forbs. A small valley oak tree and patches of poison oak, wild grape and perennial grasses located at the edge of the construction corridor would be preserved by the Bufferlands Management Staff (BMS) through fencing or flagging prior to beginning construction. Revegetation of the riparian corridor has not been proposed due to the aggressive nature of the species being impacted. The BMS has proposed soil ripping and discing of the compacted pipeline corridor in order to hasten the return of the dominant vegetation.

Approximately 1,300 feet of the proposed pipeline would cross the wetland community of Upper Beach Lake. Based on a 25 foot wide construction corridor, the project would temporarily impact approximately 32,500 square feet (0.75 acres) of jurisdictional wetlands, as regulated by the U.S. Army Corps of Engineers. Corps staff (J. Monroe) indicated that the project could be authorized under Nationwide Permit 12 (utility line backfill and bedding). A Streambed Alteration Agreement between the California Department of Fish and Game and the SRCSD would also be required. The BMS has recommended soil ripping and discing of the pipeline corridor and reseeding with watergrass seed.

The final portion of the alignment within the Bufferlands would cross an annual grassland community that has been subject to a perennial grassland restoration program. Consistent with these efforts, the BMS has recommended reseeding of the disturbed areas with native grasses, preceded by the aforementioned soil ripping and discing prescription.

Special Status Species.

The project area is known to support, or has the potential to support, several special status species (i.e., listed Threatened or Endangered, Candidates, proposed for listing, Protected Raptors, Species of Special Concern, etc.). Project construction has the potential to impact the giant garter snake (*Thamnophis gigas*), Swainson's hawk (*Buteo swainsoni*) and other birds of prey, and two federally-listed freshwater shrimp species (*Branchinecta lynchi* and *Lepidurus packardi*). Mitigation measures for the protection of these species have been proposed. Impacts to other special status species have been determined to be less than significant due to one or more of the following factors: absence of habitat, the defined spatial and temporal limits of the project, the proposed restoration/revegetation of the disturbed areas, and habitat protections included in the project description.

Mitigation Measures:

A. Prior to beginning project construction all designated "Environmentally Sensitive Areas" (riparian habitats) shall be fenced or flagged as shown the proposed plans (Exhibits O, P, Q and R of the EIR). All fencing and flagging shall be performed by, or under the supervision of, a Bufferlands Management staff biologist or other qualified biologist.

B. Upon completion of the pipeline installation, all disturbed habitats within the SRWTP bufferlands shall be restored/revegetated as described in Appendix C of the EIR. All restoration/revegetation shall be performed by, or under the direct supervision of, a BMS biologist or other qualified biologist.

C. In order to avoid potentially adverse impacts to the giant garter snake (*Thamnophis gigas*), the following measures shall apply:

   1. A qualified biologist shall be present during all clearing and grubbing operations in Laguna Creek, Morrison Creek, Upper Beach Lake and the man-made canal along the southern SRWTP boundary, in order to protect any snakes encountered. Any snakes found on the project site must be avoided and left uninjured and alive. If any snake becomes trapped or retreats into an area subject to construction, all work shall stop and the County Department of Environmental Review and Assessment shall be immediately notified in order to determine the proper course of action (i.e., avoidance, relocation, etc.).

   2. No removal of rock slope protection from levees shall occur between October 1 and May 1.

   3. Upon completion of the project, all rock slope protection shall be replaced on the levee faces where construction occurred.

D. In order to determine the presence of Swainson's hawk and other raptors, a pre-construction survey of the riparian corridor adjacent to the pipe alignment shall be performed by a qualified raptor biologist during the period of late April through mid-May.

If an active Swainson's hawk nest is found within the riparian corridor, intensive monitoring as directed by the Department of Fish and Game shall be undertaken by a qualified raptor biologist (subject to Department of Fish and Game approval) during all construction. Exact implementation of this measure will be based upon specific on-site conditions, as determined by the Department of Fish and Game. If during monitoring it is determined that project construction is significantly disturbing the birds, all construction shall be halted until September 15 or fledging.

If other raptor species are found to be nesting in the riparian corridor, a 500 foot no construction (buffer) zone shall be established and maintained throughout construction. The buffer zone may be modified or eliminated only if approved by the Department of Fish and Game.

E. Any/all applicable permits/agreements from the California Department of Fish and Game (CDFG) and/or the U.S. Army Corps of Engineers (Corps) shall be secured prior to beginning construction of the project. Copies of the permits/agreements (or correspondence indicating that permits/agreements are not required) shall be submitted to the Department of Environmental Review and Assessment prior to beginning construction.

Flooding

The golf course transmission line construction would require cutting of the levee that runs east of, and parallel to Interstate 5. According to Reclamation Board staff (K. Scribner), pipelines installed within the levee must be two (2) feet below the crown and one (1) foot into the side slopes. If steel pipe is used it must be lined and butt welded. If polyethylene pipe is used it must be fuse welded. Plastic pipe is not acceptable. All work is required to be done between April 15 and November 1. A Reclamation Board Permit will be required for this work.

The proposed levee cutting, if done as specified above, would not result in any significant flooding impacts because the cutting would occur outside the flood season and within the freeboard of the levee.

Mitigation Measures:

None required.

Erosion Control

Project construction would require excavation of the man-made ditch at the southern SRWTP property line. Disturbed soils left on these slopes could be vulnerable to erosion and thus represents a possible source of water quality degradation. County of Sacramento Standard Specification SS6-02 addresses erosion control in such instances. Hydroseeding pursuant to this specification will be required to reduce potential water quality impacts, see Mitigation Measure below.

Mitigation Measure:

A. In order to prevent erosion all exposed soils generated by crossing man-made channel along the southern SRWTP property boundary shall be hydroseeded upon completion of the channel crossing. All hydroseeding shall be done prior to October 1 the year of project construction. Hydroseeding shall be done in accordance with Sacramento County Standard Construction Specification SS6-02.

Cultural Resources

Various field investigations of the SRWTP site and adjacent areas have been conducted over the last two decades. A comprehensive overview of the prehistoric and historic setting and previous research in the area has been provided in a recent study conducted by PAR Environmental Services, Inc. Their report, entitled "Cultural Resources Investigations of the Sacramento Regional Wastewater Treatment Plant Master Plan Project, Sacramento County, California (November 1994)" includes a list of previous investigations in the area. The list

(Table 3 of their report) is included as Appendix B of this EIR. During the course of these earlier field surveys, several prehistoric, Native American sites have been identified within and adjacent to the SRWTP boundaries. In addition, a number of historic complexes and features have been recorded in the area. However, the transmission lines currently proposed will not directly impact any of the previously identified cultural resources.

Given the relatively high sensitivity of the site and the nature of the current project, there is the potential to unearth previously unidentified cultural remains. Previous investigations consisted primarily of the reconnaissance of the ground surface do not preclude the existence of important subsurface remains. Caution should, therefore, be exercised during future construction activities.

Mitigation Measures:

A. Should any cultural resources, such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains be encountered during any development activities, work shall be suspended and the Department of Environmental Review and Assessment shall be immediately notified at 440-7914. At that time, the Department of Environmental Review and Assessment will coordinate any necessary investigation of the site with appropriate specialists as needed. The project proponent shall be required to implement any mitigation deemed necessary for the protection of the cultural resources. In addition, pursuant to Section 5097.98 of the State Public Resources Code, and Section 7050.5 of the State Health and Safety Code, in the event of the discovery of human remains, all work is to stop and the County Coroner shall be immediately notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission shall be adhered to in the treatment and disposition of the remains.

ALTERNATIVES

·ction 15126(d) of the CEQA requires the EIR to describe a "range of reasonable alternatives" to a project. This alternatives discussion is required to focus upon alternatives capable of eliminating any significant impacts or reducing them to a level of insignificance.

The Initial Study checklist initially identified potentially significant impacts on: Land Use, Public Health, Water Supply and Hydrology, Sacramento River and Delta Water Quality, Biological Resources, Flooding and Cultural Resources. During the course of the EIR analysis it was determined that the potentially significant impacts originally identified were either less than significant or could be reduced to a less than significant level through implementation of mitigation measures. For this reason, the Alternatives discussion describes only two alternatives, the No Project Alternative and the Mitigated Project Alternative.

No Project

Under the No Project Alternative, the water reclamation plant and the associated water transmission mains would not be constructed. Reclaimed water (up to 10 mgd) would not be provided for non-potable use; groundwater pumping (and depending upon timing, surface water supplies), would meet this demand. Current levels of groundwater overdrafting would not be reduced through water reclamation efforts.

Without the facility, the adverse impacts on biological resources would not occur, nor would there be potentially adverse impacts on water quality and cultural resources. Additionally, water supply losses and potential water quality impacts in the Sacramento River, and the Delta, although unmeasurable, would not occur.

Because the potent:.l for public health impacts due to reclaimed water contact are adequately addressed througl. :oposed compliance with Title 22 standards and additional measures to avoid public contact, the No Project Alternative would not appreciably decrease (or increase) potential public health impacts. Similarly, because of the proposed project conforms with the SRWTP Master Plan and County General Plan, land use impacts would not be changed through adoption of the No Project Alternative.

The No Project Alternative would not meet the objectives of the project.

Mitigated Project Alternative

This alternative includes the proposed project as described in the Project Description and the mitigation measures identified that reduce impacts to less than significant levels.

Specifically, this alternative would include the mitigation measures specified to prevent impacts to biological, cultural resources and water quality. Because the Mitigated Project Alternative would meet the objectives of the project and reduce environmental impacts to less than significant levels, this alternative would be the Environmentally Superior Alternative.

ENVIRONMENTAL IMPACTS

Land Use/Master Plan Consis ncy

The proposed wat̄er reclamation facility would include construction of a Water Reclamation Plant (WRP) an two reclaimed water transmission mains. One main would serve the Bartley Cavanaugh Golf Course to the west, the second main (Laguna Transmission Main) would serve landscape areas of the Laguna West, Lakeside and Elliott Ranch South developments south of the SRWTP. With the exception of approximately 1,000 feet of the Laguna Transmission Main that would extend from the southern SRWTP property boundary to Laguna Boulevard and the portion of the golf course transmission main beneath Interstate 5, the project would be constructed entirely within the boundaries of the SRWTP.

General Plan and Zoning.

The SRWTP is designated as a Public/Quasi-Public Land Use on the Sacramento County General Plan Map. Development on the site includes the intensively developed core process area, solids storage basins, dedicated land disposal areas, roadways and other features. Approximately 2,650 acres of undeveloped lands surround the process areas to provide a buffer between the SRWTP and the surrounding community. The Bufferlands are currently used for agriculture, wildlife habitat or certain compatible plant functions (e.g., tertiary wastewater treatment using created wetlands). The proposed facility is compatible with the existing use of the land and its General Plan designation.

The Sacramento County General Plan (Conservation Element) contains the following objective related to this project:

> "Water efficient landscape and design that utilizes water conservation methods and water reuse technology whenever possible."

This objective contains three separate components: 1) xeriscaping, 2) reuse of water and water conservation on a project-by-project basis, and 3) using treated wastewater from the regional plant for crop irrigation, landscape irrigation, wetlands augmentation or other appropriate uses.

The proposed water reclamation facility would provide treated wastewater as specified above (item 3). As such, the project is not only consistent with General Plan Policy, but necessary to meet one of its stated objectives.

The SRWTP is zoned for agricultural uses, AG-80 and AG-80(F) land use zoning. Within this zone, the Sacramento County Comprehensive Zoning Map specifically identifies the SRWTP in its current location. The portion of the Laguna Transmission Main that extends offsite (southern SRWTP property boundary to Laguna Boulevard) would be installed within existing County-owned drainage easements or the County-owned right-of-way of Laguna Boulevard. Construction of a pipeline in these areas is consistent with their intended use. The adjoining industrially zoned (M-1) properties to the east, which are currently undeveloped, would not be impacted by this construction.

An Encroachment Permit from the California Department of Transportation (Caltrans) would be required to install that portion of the Bartley Cavanaugh Golf Course transmission main beneath Interstate 5. Because this main would be installed within an existing conduit running beneath the roadway, no disturbance of Interstate 5 would occur.

SRWTP Master Plan.

An updated master plan for the SRWTP has been developed and is currently undergoing environmental review (Control Number: 89-PWE-0456). The proposed master plan includes the following recommendations for near-term water reclamation:

1. Proceed with preliminary design studies for sizing a reclamation treatment and distribution facility to serve the Laguna Area Development, South City (Bartley Cavanaugh) Golf Course, and SRWTP reclaimed water uses.

2. Provide Type 1 (disinfected tertiary) treatment for all reclaimed water uses to permit unrestricted use of reclaimed water per Title 22, to enhance public acceptability, and to minimize risk associated with reclaimed water use.

3. Locate and design wastewater reclamation facilities with provision for expansion at a later date to accommodate substantially increased wastewater reclamation.

4. Use the Laguna area reclaimed water project as an opportunity to gain experience in reclaimed water use, including the development of workable reclaimed water use agreements.

5. Use the Laguna area reclaimed water development project as opportunity to promote and gain public support and user interest for reclaimed water use.

The water reclamation project site is also shown on the Master Plan Site Layout diagram (September 1992) (Exhibit U).

Given the project's consistency with the Sacramento County General Plan, the Zoning Code and the Draft SRWTP Master Plan, the potential land use impacts of the project are considered less than significant.

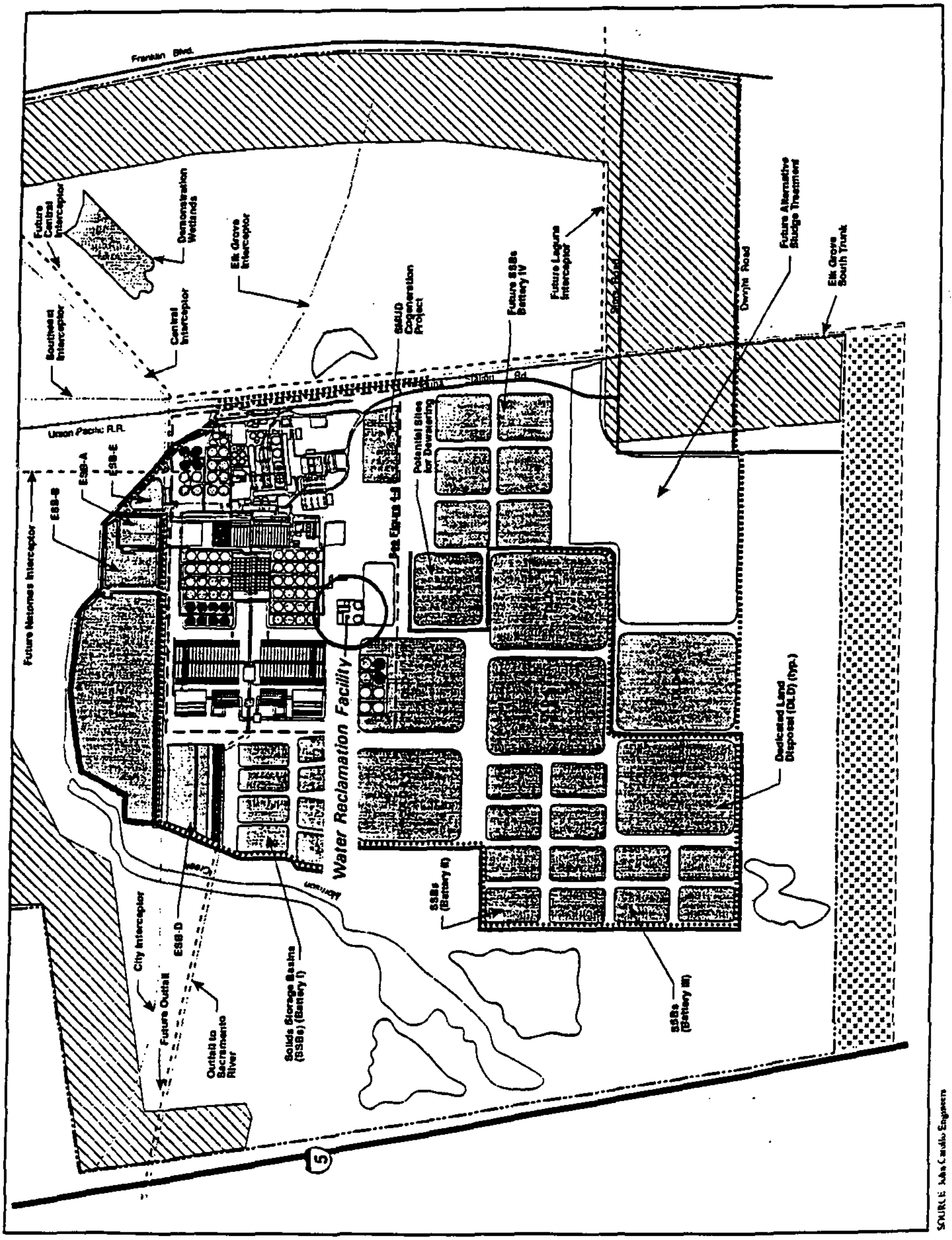
Public Health/Reclaimed Water Quality

The following discussion regarding wastewater reuse was provided by SRCSD staff (C. Jensen):

> Regulatory criteria governing wastewater reuse has been developed by the State of California Department of Health Services (DHS) and are setforth in the California Code of Regulations, Title 22, Division 4, Section 60301, et. seq., commonly referred to as Title 22. The fundamental purpose of the Title 22 criteria is the protection of public health. Treatment requirements, plant process redundancy, facility reliability, monitoring frequency, and reclaimed water quality are specified under Title 22. Reclaimed water use alternatives that generate the highest potential for public exposure require the greatest level of treatment and reliability. The highest degree of reclaimed water treatment is called "disinfected tertiary reclaimed water". This type of water would be produced by the proposed project and is suitable for all of the proposed uses.
>
> The SRCSD is proposing to produce, convey, and use reclaimed water under a Master Reclamation Permit issued to be issued by the Regional Water Quality Control Board (RWQCB) . This permit, if approved, would be a "blanket" type permit that would cover all users of reclaimed water for this project.

Disinfected tertiary water is the focus of the initial SRWTP reclamation program. Disinfected tertiary water is the highest quality specified and can generally be used without restriction of public access. All other categories of reclaimed water are for restricted use only and carry with them requirements to minimize or prevent public exposure.

EXHIBIT U
SRWTP MASTER PLAN SITE LAYOUT DIAGRAM



Title 22 is currently being revised with draft language being prepared by the State Department of Health Services (DHS) policy review committee. Generally speaking, the draft requirements reflect up-to-date water reuse practice in California and, for disinfected tertiary water, do not establish new or conflicting requirements when compared to current Title 22 language.

In addition to compliance with Title 22 standards, additional measures would be implemented by the SCWA to protect public health. These include delivering reclaimed water through a separate distribution system to prevent mixing with potable water supplies and developing construction standards that specify minimum horizontal and vertical separations of potable and non-potable pipelines. In accordance with American Water Works Association recommendations, standard reclaimed water purple pipe would be used or pipe that is clearly marked with tape to prevent any connections intended for potable use. In addition, requirements would be developed for reclaimed water users to follow. These may include identifying reclaimed water meter boxes and valve covers, marking of certain above ground facilities to indicate reclaimed water use, and prohibition of hose bibs or other devices that may allow easy access to the system. Reclaimed water use for the irrigation of parks and streetscapes would be restricted to minimize potential public contact. Irrigation at schools would be restricted to hours to avoid contact with children, and commercial areas would be irrigated before or after business hours. Modification of irrigation practices to minimize ponding and runoff would also be required.

It should be noted that the off-site reclaimed water distribution system discussed above is largely preexisting in the locations identified for service. Environmental analysis of these off-site distribution systems is not included herein.

Given the proposed compliance with all applicable regulations related to reclaimed water use and the additional measures proposed to avoid public contact, the health risks associated with the use of the reclaimed water are considered less than significant. No mitigation measures are necessary.

Sacramento River and Delta Hydrology

The proposed plant would have an initial capacity of 5 mgd (maximum) and is expected to produce approximately 2,504 acre feet of water annually. The plant would be expandable to 10 mgd.

The SRCSD has identified several specific reclaimed water uses, including landscape irrigation for the Laguna West, Lakeside and Elliott Ranch South developments; the Bartley Cavanaugh City Golf Course; the SRWTP process (non-potable); and SRWTP Bufferlands (Exhibit V).

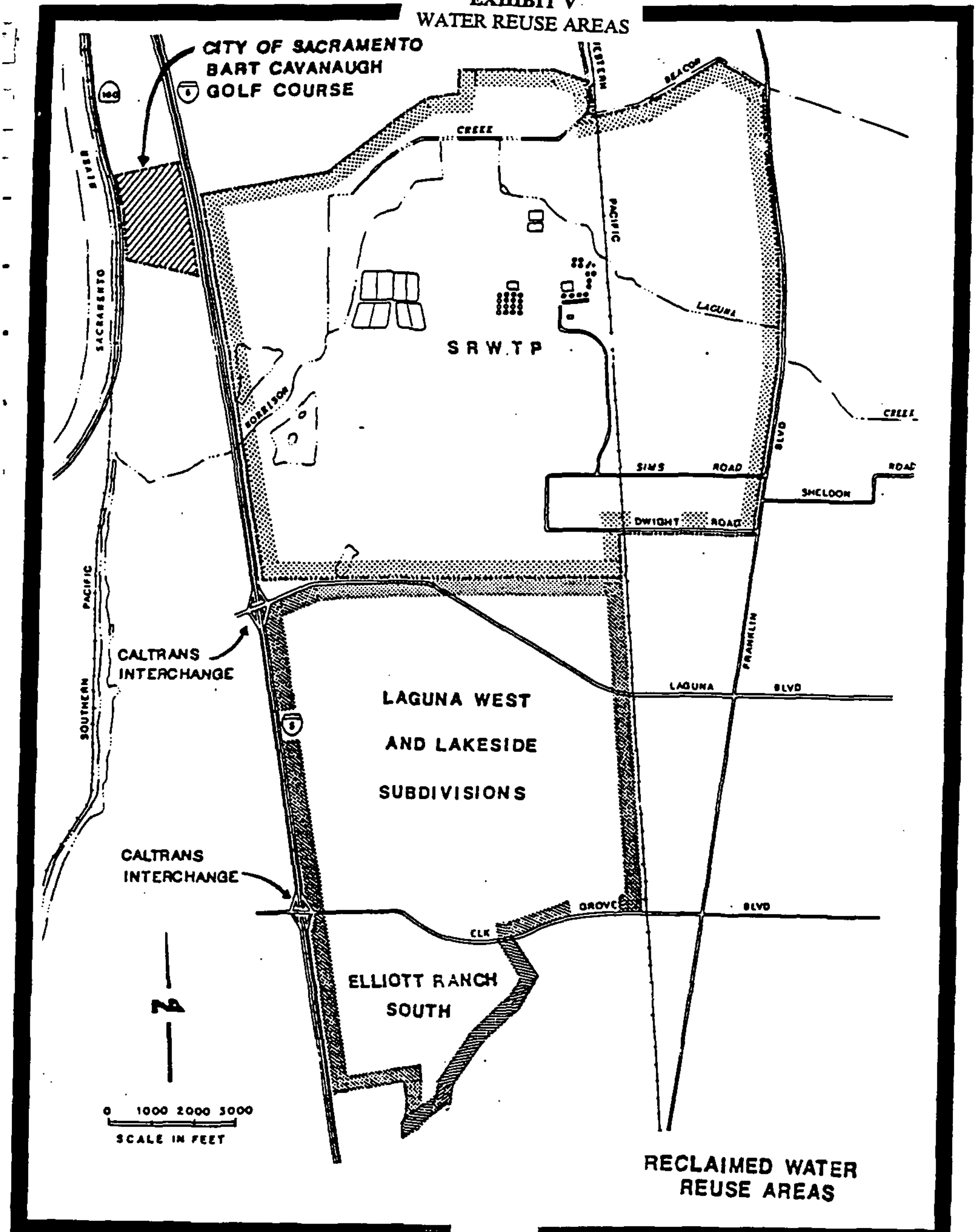
Landscape irrigation of the Laguna West, Lakeside, and Elliott Ranch South developments is predicted to use approximately 984 acre feet annually. This water would be utilized exclusively for landscape irrigation of parks, school grounds, and interchanges (552 ac/ft/yr); commercial property landscaping (144 ac/ft/yr); and landscape corridors (288 ac/ft/yr). Use of reclaimed water for landscape irrigation would vary depending upon the season. Maximum daily demands would occur during the peak month of July at a rate of approximately 2.30 mgd. Wet season demands for reclaimed water would be minimal.

The golf course would utilize reclaimed water for irrigation of fairways, greens and tee boxes. As proposed, the reclaimed water would be pumped into the golf course's lakes and then drawn into the irrigation system. The golf course is expected to demand approximately 204 acre feet annually, with a peak demand of 0.39 mgd.

SRWTP non-potable water demands would be approximately 903 ·e feet annually, with a peak of 1.40 mgd. According to the Nolte/HYA report, 1992 ꞁ ·k water requirements would range between 0.64 and ·.40 mgd, depending upon the equipment being utilized. The average annual daily flow would be 0.8 mgd. The reclaimed water would be used in various processes including: influent/effluent pump building, primary treatment structure, carbonaceous structure, solids processing, chemical handling, service air cooling, utility stations, and CO tank gas dome sprays. According to SRCSD staff (C. Jensen), the non-potable water use at the SRWTP would be relatively constant throughout a given year.

In addition to the plant process water, irrigation of the SRWTP Bufferlands was also considered. Assuming irrigation of 86 acres (at turf rates), the projected maximum month demand would be 0.84 mgd (Nolte/HYA, 1992). The annual demand under this usage would be 413 acre feet. Because the Bufferlands do not support turf, the water allocated to it would more likely be utilized for irrigation of restoration plantings, flooding of wetland cells or

EXHIBIT V
WATER REUSE AREAS



other habitat enhancements. A 10-inch waterline would be constructed to the Trail of Trees tree planting project located along the eastern perimeter of the Bufferlands. Staff (C. Jensen) also indicated that a portion of this water may be used for demonstration agriculture or irrigation of existing SRWTP landscaping.

Table 1 summarizes the estimated reclaimed water demands projected for the 5 mgd project. As shown, the total annual demand for reclaimed water is estimated to be 2,504 acre feet per year. Peak daily demand (expressed in mgd) is estimated to be 5.0 mgd during the peak water use month (July). Demands for the plant, if it is expanded to 10 mgd, are unknown at this time. Table 2 shows the monthly water production of the 5 mgd phase of the project.

Table 2
Water Reclamation Plant Production Schedule (5mgd)

Month	Quantity (mgd)
October	1.97
November	0.64
December	0.64
January	0.64
February	0.64
March	1.38
April	2.36
May	3.45
June	4.90
July	5.00
August	4.46
September	3.74

Source: Water Reclamation Plant, Preliminary Design Report, December 1992 (Nolte/HYA)

The SRCSD has provided an Impacts Evaluation Report that addresses the project's potential hydrology, water quality and fisheries impacts on the Sacramento River and Delta (Appendix A). The conclusions of this report (paraphrased) have been incorporated into this section and the following sections on Water Quality and Biological Resources (fisheries).

From a hydrology standpoint the report analyzes the effects of the expected effluent flow reductions on the Sacramento River and the Delta, including potential effects on the Central Valley Project (CVP) and State Water Pro_ :ct (SWP) operations.

As stated previously, the water demands of the project require an initial 5 mgd (7.6 cfs), and a potential future 10 mgd (15.5 cfs), treatment capacity. For the purpose of the analysis, the maximum potential discharge reduction was assumed to be 10 mgd (15 cfs), less that portion at the capacity used for the SRWTP process and returned to the river as effluent (903 acre feet/year or 0.8 mgd). Thus the maximum potential discharge reduction would be 9.2 mgd (14.2 cfs). It is noted that this maximum potential reduction represents a peak month (July) daily reduction.

Table 3 compares the potential effluent discharge reduction attributable to water reclamation with the historical flow records of the Sacramento River and total Delta inflow for the months of June, July and August. Based on these data, the maximum potential reduction in flow (14.2 cfs), relative to the historic range of average daily Sacramento River and Delta flows, represents approximately 0.05 percent and 0.17 percent of the maximum and minimum average daily Sacramento River flows, and 0.04 percent and 0.16 percent of the respective maximum and minimum Delta inflows. These minute flow reductions would be virtually imperceptible, falling well within the range of normal daily and annual discharge fluctuations that already occur naturally and as a result of CVP/SWP water management.

Table 3

Potential peak flow reductions due to the project relative to historical (1985 - 1993) maximum and minimum average daily flow in the Sacramento River and the Delta (June, July and August).

	Potential Peak Month Reduction In Flow (CFS)	Historical Average Daily Flow (CFS) (June)	Histc -ical Average Daily Flow (CFS) (July)	Historical Average Daily Flow (CFS) (August)
Maximum Sacramento River Flow	14.2	30,468	19,857	21,077
Minimum Sacramento River Flow	14.2	8,503	8,310	8,717
Maximum Total Delta Inflow	14.2	34,468	22,671	24,167
Minimum Total Delta Inflow	14.2	9,260	8,994	9,416

Similarly, the proposed project would not result in any long-term volumetric water supply losses due to the hydraulic connections between the surface water and groundwater supplies in the region. In the absence of the reclaimed water supply, water demands of the identified consumptive users would be met through the use of groundwater, surface water or a combination of the two supplies. Meeting the reclaimed water demand with surface supplies would, in effect, deplete the Sacramento River by the same amount that would be depleted from the effluent stream for reclamation. Likewise, groundwater use would also deplete the Sacramento River or other hydraulically connected surface waters through the river's recharge of the groundwater aquifer in response to groundwater pumping. This recharging process would result in essentially the same net amount of river flow depletion as surface water use or water reclamation, but would occur slower due to the inherently slow movement of groundwater. (C. Abney, Water Resources Division).

Under any of these non-reclaimed water use scenarios the Sacramento River and Delta would be affected to essentially the same degree as that attributed to water reclamation.

The potential impacts on the Sacramento River, Delta and CVP and SWP operations are considered less than significant due to the extremely nominal amounts of potential flow reduction, and the hydrological connection between water supplies in the region.

Sacramento River and Delta Water Quality

The Impacts Evaluation Report (Appendix A) provided by the SRCSD analyzes potential water quality impacts to the Sacramento River and Delta. The following section incorporates and summarizes the conclusions of that analysis.

The SRWTP discharge is a combination of treated domestic wastewater, industrial wastewater, and combined wastewater and urban runoff. The SRWTP monitors the effluent and receiving water at an upstream location on the Sacramento River to measure and ensure compliance with its National Pollutant Discharge Elimination System (NPDES) effluent limitations, and the effectiveness of its industrial pretreatment program. The NPDES effluent limitations (for biochemical oxygen demand, total suspended solids, settleable matter, residual chlorine, total coliforms, oil and grease, total chlorinated phenols, and pH) are established at levels to protect the beneficial uses in the Sacramento River from adverse impacts of the SRWTP discharge. Monitoring for the industrial pretreatment program is limited to priority pollutant metals and organic compounds. The SRWTP consistently meets its NPDES effluent limitations. The SRWTP has also conducted or participated in several studies that have focused principally on metals and whether the metals in the SRWTP discharge have affected the Sacramento River with respect to exceeding the former Inland Surface Waters Plan (ISWP) objectives.

Several previous studies have evaluated the effect of effluent discharge from the SRWTP on water quality in the Sacramento River. Three of the four studies focused on an evaluation of the effects of metals in the effluent discharge. The fourth study focused on contaminants of concern to drinking water. These studies provide background information and a frame of reference for evaluating potential impacts to water quality in the Sacramento River resulting from reduced effluent discharge associated with the proposed project. They include the Wet Weather Local Effects Monitoring Program (WWLEMP), the Effluent and Receiving Water Quality Assessment (ERWQA), the Ambient Monitoring Program (AMP), and the Study of Drinking Water Quality in Delta Tributaries. A summary of each of these studies is included within the Impacts Evaluation Report, Pages 27 - 29 (Appendix A). In general, these studies conclude that few measurable changes in the water quality of the Sacramento River or the Delta can be attributable to the SRWTP discharge. In fact, few differences in constituent concentration exist between the river and the effluent itself. (See Appendix A, Tables 1-1 and 1-2 of the Impacts Evaluation Report).

As stated previously, the maximum 14.2 cfs effluent discharge reduction would represent approximately 0.17 and 0.16 percent of the total minimum Sacramento River flow and Delta inflow, respectively. This very minor flow reduction could only affect water quality if the difference between the effluent and the river was extremely high, which is not the case. Based on this minute reduction of the flow in the river, and the similar water quality of the effluent and the river, no measurable change in water quality of the river or the Delta would be expected to occur as a result of the reduction in the effluent discharge. The above-referenced studies support this conclusion, in that few measurable changes in water quality in the river have been evidenced due to discharge from the SRWTP.

Biological Resources

The project impact area includes the WRP site itself and two water transmission main corridors. The following section describes the biological resources found within each of these areas.

Water Reclamation Plant Site.

As described in the "Environmental Setting", the water reclamation plant area has been previously graded and is currently used as a contractor storage/staging area. The site does not support any significant biological resources.

Laguna Transmission Main Corridor.

This corridor extends from the WRP, to Laguna Boulevard south of the southern SRWTP property boundary, a total distance of approximately 12,500 feet (2.37 miles). Exhibits C through M show this proposed route.

Beginning at the WRP, the Laguna transmission main and a potable watermain would extend easterly to the SMUD co-generation facility (Carson Ice Plant), a distance of approximately 2,300 feet. At the SMUD facility the potable line terminates at an existing potable water line. The transmission main continues beyond the co-generation facility to Laguna Station Road (approximately 1,200 feet). These pipeline routes have been previously graded and disturbed as part of the construction of that the SMUD co-generation facility. No significant biological resources exist within these areas.

At Laguna Station Road, the transmission main alignment turns south to parallel the roadway and the Union Pacific Railroad tracks down to Sims Road (a distance of approximately 2,400 feet.). These roadside areas are either devoid of vegetation or support a thin cover of annual grasses or other ruderal vegetation (see Exhibits F & G).

Approximately 50 feet north of Sims Road a 10-inch pipeline, approximately 725 feet long branches off the transmission main to the Trail of Trees project to the east (see Exhibit H). This line would parallel the north side of Sims Road, crossing the Union Pacific Railroad tracks and two drainage ditches on either side of the tracks. The pipeline crossing of the railroad tracks and ditches would be "jacked and bored" to avoid interruption of the railroad and disturbance of the ditches. Disturbance of a third ditch located on the north side of Sims Road would also be avoided through jacking and boring.

Although these ditches would not be considered jurisdictional wetlands (because they are man-made features excavated on uplands), the ditches are considered potential habitat for the federally-listed freshwater shrimp species described later in this section under "Special Status Species". The proposal to avoid disturbance of the ditches would reduce potential impacts to these species to a less than significant level.

On the south side of Sims Road the main would cross a narrow blackberry (*Rubus discolor*) thicket and continue across an agricultural crop field to Dwight Road a distance of about 1,300 feet. At Dwight Road the alignment would cross a second blackberry thicket and then arc to the southwest, following the alignment of the future Dwight Road extension to the southern SRWTP property boundary. This area supports a homogenous ruderal plant community dominated by virgate tarweed (*Holocarpha virgata var. virgata*). At the property boundary the alignment would turn west, parallel to the property line, and continue across ruderal grasslands for approximately 1,100 feet. From this point the transmission main would turn 90 degrees to the south (off SRWTP property) terminating at its point of connection in Laguna Boulevard, approximately 1,000 feet to the south. Exhibits J through L depict these areas. En route, this alignment would cross a large man-made canal just south of the SRWTP property boundary. The canal bottom supports jurisdictional wetlands dominated by umbrella sedge (*Cyperus sp.*). Cattail (*Typha latifolia*) and peppergrass (*Lepidium sp.*) also occur here. The upper banks and all remaining areas to the south support a disturbed annual grassland community. Given its vegetation and configuration, this channel also has the potential to support the giant garter snake, see the mitigation measures at the end of this section.

Bartley Cavanaugh Golf Course Transmission Main Corridor.

This transmission main corridor extends westerly from the WRP to the Bartley Cavanaugh Golf Course, a distance of approximately 9,000 feet (1.7± miles).

Initially, the transmission main alignment extends from the proposed WRP to the southwest corner of the SSB Battery 1, a distance of approximately 3,300 feet (see Exhibits K, L and M). This portion of the alignment lies within existing dirt or paved service roads, and is devoid of significant vegetation. From the battery, the pipeline alignment turns north and continues for approximately 1,800 feet along an unmaintained dirt service road that lies between SSB Battery 1 and the dense riparian corridor of Laguna Creek (Exhibit P). Immediately north of the SSB battery the pipeline turns west, crosses the Laguna Creek riparian corridor and enters the wetland and grassland habitats of Upper Beach Lake (described below).

The portion of the transmission main alignment that passes through the bufferlands has been reviewed by Bufferlands Management Staff (BMS) biologists. Their recommendations for impact avoidance and restoration of the pipeline alignment are included as Appendix C. Exhibits O, P, Q and R depict the proposed fencing and flagging of "environmentally sensitive areas."

Laguna Creek Riparian Corridor: The narrow riparian corridor of Laguna Creek supports a number of native tree species including valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*) and various willows (*Salix sp.*), and an understory of poison oak (*Toxicodendron diversiloba*), wild grape (*Vitis vitis*) and other common riparian species.

Approximately 1,800 feet of the pipeline would be constructed immediately adjacent to the riparian corridor. In order to avoid incidental impacts to this area of the corridor, the SRCSD has proposed to flag the corridor with printed yellow flagging tape and prohibit contractor access to that area, see Exhibits P and Q.

Construction of the pipeline across the corridor would require removal of exotic (introduced) annual grasses and weedy forbs (e.g., star thistle (*Centaurea solstitialis*) and black mustard (*Brassica nigra*)), and a small group of sandbar willow trees. The SRCSD has proposed to preserve and protect a small valley oak tree, and patches of poison oak, wild grape and a native perennial grass (*Leymus triticoides*) located at the outer edge of the construction corridor. These species would be protected through fencing or flagging prior to beginning project construction (Exhibit Q).

Revegetation of the corridor after construction is not proposed due to the aggressive nature of the species being impacted. The BMS has recommended ripping and discing of the soil over the completed pipeline in order to alleviate soil compaction and encourage the return of the dominant vegetation.

Upper Beach Lake Corridor: Upper Beach Lake is a large (50 to 100 acres) seasonal lake dominated by perennial smartweed (*Polygonum amphibium*) and watergrass (*Echinochloa crusi-gali*). According to the BMS, the proposed pipe alignment would cross approximately 1,300 feet of this wetland community (see Exhibit R). Based on a 25 foot construction corridor width, the project would disturb (temporarily fill or excavate) approximately 32,500 square feet (0.75 acre) of wetlands. Regulation of wetlands is discussed below under "Regulatory Considerations".

The BMS has recommended soil ripping and discing of the trench area to relieve compaction and blend in topsoil, and reseeding of the disturbed area with watergrass seed.

Grassland Corridor: The final portion of the alignment within the bufferlands would pass between Morrison Creek and the west levee, a distance of approximately 2,100 feet (see Exhibits S). This portion of the bufferlands currently supports a grassland community dominated by annual (exotic) grasses, and weedy dicots. The district seeded the area with a perennial grass seed mixture in 1989 and is currently implementing a program to suppress exotics and encourage native species.

Consistent with these efforts, BMS has recommended reseeding of the disturbed areas with native grasses, preceded by the aforementioned soil ripping and discing prescription.

Special Status Species.

Giant Garter Snake: The giant garter snake (*Thamnophis gigas*) is a state and federally-listed Threatened species. A highly aquatic species, the giant garter snake is found in slow moving waterways (marshes, sloughs, canals, etc.) of the California Central Valley from Butte County south to Fresno County. The species has several habitat requirements, including aquatic habitat, preferably with emergent vegetation, during its active season (summer); vegetated banks for basking; and high ground wintering habitat (refugia) for hibernation.

Construction of the project across the bufferlands would impact potential giant garter snake summer and winter habitats. The summer habitat would include the channel of Laguna Creek and the wetland habitats of Upper Beach Lake. The winter habitat would include the levee running parallel to Laguna Creek and SSB Battery 1 and the west levee located parallel to I-5 at the western edge of the bufferlands. These levees provide high ground and their rock slope armoring provides hibernation sites. Disturbance of the summer habitats would consists of direct removal of vegetation and dewatering of Laguna Creek. Winter habitat impacts would consist of levee cuts that would require temporary removal of the rock slope protection.

Two factors would offset potential impacts to this species. Currently the Upper Beach Lake corridor is under restoration. Over the past three construction seasons much of the basin has been subject to ongoing grading and disturbance associated with the construction of levees, berms, new channels and water control structures. Given this level of activity, it is unlikely that the species would be impacted by the comparatively minor construction associated with the pipeline installation. Secondly, the proposed levee excavations would occur during the non-hibernating season and would therefore not impact hibernating snakes, if present.

Notwithstanding the above factors, the project could still potentially impact the species through either direct impact during construction or removal of winter refugia. Mitigation measures to protect this species are included at the end of this section.

<u>Swainson's hawk and other Birds of Prey (Raptors)</u>: The Swainson's hawk (*Buteo swainsoni*) is a state listed Threatened species known to occur within the project area. The proposed construction through, and adjacent to, the riparian corridor of Laguna Creek would have the potential to impact this species and several other raptor species (e.g., Red tailed hawk, Cooper's hawk, sharp shinned hawk, white-tailed kite and long-eared owl), through disturbance of nesting habitat. All birds of prey are protected according to the Fish and Game Code of California (Section 3503.5). Mitigation measures that address the Swainson's hawk and other raptorial bird species are included at the end of this section.

Impacts to raptor species not directly dependent on riparian habitat for nesting (e.g., peregrine falcon, prairie falcon, merlin, northern harrier, ferriginous hawk, short-eared owl and burrowing owl) were considered less than significant due to the limited amount foraging habitat impacted and the proposed revegetation of all disturbed areas. Regarding burrowing owls, it is noted that the project impact area does not include any known burrowing owl nests.

<u>Freshwater Shrimp</u>: Two species of federally-listed freshwater shrimp that occur in vernal pools and other seasonal wetlands (*Branchinecta lynchi* and *Lepidurus packardi*) are known to occur at the SRWTP. The project would not impact vernal pools and would avoid the drainage ditches at the UPRR tracks that may support the species. No mitigation measures are required.

Other Special Status Species.

Several other special status species (listed Threatened or Endangered, Candidates, Protected Raptors, Species of Special Concern, etc.) are also known to occur within the vicinity of the project. Impacts to these species were determined to be less than significant due to the defined spacial and temporal limits of the project, an absence of appropriate habitat, or the proposed revegetation and habitat protections included in the project description.

Plants: The majority of the special status plant species known to occur in the Sacramento area are restricted to vernal pools. Since the project impact area does not support vernal pools, these species were not considered further. Other species not restricted to vernal pools, including Sanford's arrowhead (*Sagittaria sanfordii*) and Northern California black walnut (*Juglans californica* var. *hindsii*), were not observed during surveys of the project impact area.

Invertebrates: In addition to the above discussed freshwater shrimp species, the SRWTP supports elderberry shrubs, the habitat for the federally-listed (Threatened) valley elderberry longhorn beetle (VELB), (*Desmocerus californicus dimorphis*). This species utilizes elderberry plants for its entire life cycle. No elderberry plants exist within the project impact area. Lacking this essential habitat, the beetle would not be present or impacted by project construction.

Fish: The project would require by-passing of Laguna Creek stream flows around the pipeline crossing during construction. This factor would avoid impacts to any resident fish populations in the creek. Laguna Creek is not known to support any special status fish species. Sacramento and Delta fisheries are discussed below.

Amphibians: Two special status amphibian species, the tiger salamander (*Ambystoma californiense*), a federally-listed candidate species and a California Species of Special Concern, and the western spadefoot toad (*Scaphiopus hammondi*) a California Species of Special Concern, are known to occur in the project vicinity. No appropriate habitat for these species, either vernal pools with rodent burrows (tiger salamander) or grasslands with shallow temporary pools (spadefoot toad), exists within the project impact area.

Reptiles: In addition to the giant garter snake, the project vicinity is known to support the southwestern pond turtle (*Clemmys marmorata*), a federally-listed candidate species and a California Species of Special Concern. Portions of Laguna Creek provide appropriate habitat for this species, especially those areas with in-water snags or other resting areas. Given the small area of disturbance proposed by the project and the species' ability to retreat from disturbance (the project would be constructed during non-hibernation season), potential impacts to the southwestern pond turtle are considered less than significant.

Birds: As discussed previously, the project has the potential to disturb spring and summer nesting raptors (birds of prey). Mitigation measures to avoid these impacts have been identified. In addition to the raptor species, the project area is also known to support other special status bird species (e.g., tricolored blackbird (*Agelaius tricolor*), purple martin (*Progne subis*), loggerhead shrike (*Lanius ludovicianus*), double-crested cormorant (*Phalocrocorax auriatus*).

Potentially adverse impacts to these species would be offset by one or more of the following factors: the absence of appropriate nesting or forage habitat, the limited space and time of the project, and the proposed revegetation of the impact areas. No further mitigation is proposed.

Sacramento River and Delta Fisheries.

According to the Impacts Evaluation Report (Appendix A of this document):

> "The reclaimed water project could reduce flow levels in the Sacramento River below the SRWTP by up to 14.2 cfs. Considering recent historic flows (1985-1993), the project could reduce flows in the Sacramento River, downstream of the SRWTP, by a maximum of about 0.17 percent. This small change would not substantially change the extent of physical habitat available to fish in the Sacramento River. Also a 14.2 cfs reduction in flows would not perceptibly alter in-river migratory cues used by adult and juvenile anadromous fishes. Therefore, fisheries resources in the Sacramento River would not be adversely affected by the reclamation project."

Regarding the Delta, the report indicates that:

> "The small reduction (in flows) would not substantially affect transport flows within the Delta nor would the extent of physical habitat change substantially. In addition, no change is expected to CVP and SWP operations, which must be operated in compliance with flow and operational requirements established to benefit fisheries resources in the Delta. Therefore, fisheries resources in the Delta would not be adversely affected by the reclamation project."

Regulatory Considerations.

The U.S. Army Corps of Engineers regulates all discharges of fill into "Waters of the United States", including wetlands, pursuant to Section 404 of the Clean Water Act.

Two areas of the project would impact wetlands: the crossings of Laguna Creek, Morrison Creek and Upper Beach Lake; and the crossing of the large canal at the southern SRWTP property boundary. In both instances these proposed activities could be authorized under Nationwide Permit 12 (utility line backfill and bedding) provided the activity met the criteria for this specific permit.

Additionally, the California Department of Fish and Game (CDFG) has regulatory authority of all activities that would alter the flow, bed, channel or bank of streams and lakes (Sections 1600-1607 of the California Fish and Game Code). The project applicant will be required to execute a Streambed Alteration Agreement with the CDFG, prior to beginning project construction, in order to legally cross Laguna and Morrison Creeks, Upper Beach Lake and the man-made canal.

It shall be responsibility of the SRCSD to obtain any necessary permits or agreements necessary to construct the proposed project. See the mitigation measures at the end of this section.

Mitigation Measures:

Implementation of the following mitigation measures would reduce impacts to biological resources to less than significant levels.

A. Prior to beginning project construction all designated "Environmentally Sensitive Areas" (riparian habitats) shall be fenced or flagged as shown on the proposed plans (Exhibits O, P ,Q and R of the EIR). All fencing and flagging shall be performed by, or under the supervision of, a Bufferlands Management Staff (BMS) biologist or other qualified biologist.

B. Upon completion of the pipeline installation, all disturbed habitats within the SRWTP bufferlands shall be restored/revegetated as described in Appendix C of the EIR. All restoration/revegetation shall be performed by, or under the direct supervision of, a BMS biologist or other qualified biologist.

C. In order to avoid potentially adverse impacts to giant garter snake (*Thamnophis gigas*), the following measures shall apply:

1. A qualified biologist shall be present during all clearing and grubbing operations within Laguna Creek, Morrison Creek, Upper Beach Lake and the man-made canal along the southern SRWTP boundary. Any snakes found on the project site must be avoided and left uninjured and alive. If any snake becomes trapped or retreats into an area subject to construction, all work shall stop and the County Department of Environmental Review and Assessment shall be immediately notified in order to determine the proper course of action (i.e., avoidance, relocation, etc.).

2. No removal of rock slope protection from levees shall occur between October 1 and May 1.

3. Upon completion of the project, all rock slope protection shall be replaced on the levee faces where construction occurred.

D. In order to determine the presence of Swainson's hawk and other raptors, a pre-construction survey of the riparian corridor adjacent to the pipe alignment shall be performed by a qualified raptor biologist during the period of late-April through mid-May.

If an active Swainson's hawk nest is found within the riparian corridor, intensive monitoring as directed by the Department of Fish and Game shall be undertaken by a qualified raptor biologist (subject to Department of Fish and Game approval) during all construction. Exact implementation of this measure will be based upon specific on-site conditions, as determined by the Department of Fish and Game. If during monitoring it is determined that project construction is significantly disturbing the birds, all construction shall be halted until September 15 or fledging.

If other raptor species are found to be nesting in the riparian corridor, a 500 foot no construction (buffer) zone shall be established and maintained throughout construction. The buffer zone may be modified or eliminated only if approved by the Department of Fish and Game.

E. Any/all applicable permits/agreements from the California Department of Fish and Game (CDFG) and/or the U.S. Army Corps of Engineers (Corps) shall be secured <u>prior</u> to beginning construction of the project. Copies of the permits/agreements (or correspondence indicating that permits/agreements are not required) shall be submitted to the Department of Environmental Review and Assessment prior to beginning construction.

Flooding

The golf course transmission line construction would require cutting of the levee that runs east of, and parallel to Interstate 5. The State Reclamation Board, which has jurisdiction over all levees and floodplains within Sacramento County, has specific requirements for installing pipelines within levees. According to Reclamation Board staff (K. Scribner) pipelines installed within levees must be two (2) feet below the crown and one (1) foot into the side slopes. If steel pipe is used it must be lined and butt welded. If polyethylene pipe is used it must be fuse welded. Plastic pipe is not acceptable. All work is required to be done between April 15 and November 1.

A Reclamation Board Permit will be required for this work.

The proposed levee cutting, if done as specified above, would not result in any significant flooding impacts because the levee cutting would occur outside the flood season and within the freeboard of the levee. No mitigation measures are required.

Erosion Control

Project construction would require excavation of the man-made ditch banks along the southern SRWTP property line. Disturbed soils left on these slopes could be vulnerable to erosion and thus represents a possible source of water quality degradation. County of Sacramento Standard Specification SS6-02 addresses erosion control in such instances and will be required in order to reduce potential water quality impacts, see Mitigation Measure below.

Mitigation Measure:

A. In order to prevent erosion all exposed soils generated by crossing man-made channel along the southern SRWTP property boundary shall be hydroseeded upon completion of the channel crossing. All hydroseeding shall be done prior to October 1 the year of project construction. Hydroseeding shall be done in accordance with Sacramento County Standard Construction Specification SS6-02.

Cultural Resources

The Sacramento Valley region was populated by indigenous people for thousands of years prior to the influx of European settlers in the mid-1800s. Statewide archaeological evidence confirms that the initial occupation of California occurred prior to 8,000 years ago. The earliest inhabitants were apparently transient hunters and gatherers who exploited the various ecological zones on a seasonal rotation. As time progressed, more permanent settlements were established. Within the later prehistoric and protohistoric periods was the development of the Valley Nisenan (Maidu) and Plains Miwok ethnic groups. The Valley Nisenan occupied the northern portion of the County, adjacent to and north of the American River, while the Plains Miwok occupied the southern portion of the County, with large settlements located along the Cosumnes and Sacramento Rivers. The basic political unit within both the Plains Miwok and Valley Nisenan cultures was the "tribelet", consisting of one primary and several satellite villages under the authority of a "headman". Permanent villages, composed of 15 to several hundred persons, were situated on elevated ground adjacent to streams or above marshy floodplains.

The initial Euro-American settlement of Sacramento county occurred with the arrival of John Sutter. On the 15th day of August, 1839, Sutter arrived at the confluence of the Sacramento and American Rivers. Several weeks later he established himself at what would become Sutter's Fort. The establishment of the outpost brought with it an increase in Euro-American trappers, hunters and settlers to the area. After the arrival of Sutter, several individuals obtained large Mexican Land Grants in the area. By January 1847, California was under American rule. One year later, gold was discovered at Sutter's Mill in Coloma. These events hastened the settlement of the area and the development of Sacramento as an economic and transportation center. The designation of Sacramento as the state capital in 1854 also resulted in the area's increase in socio-political importance.

In the later half of the 19th century many of the large land grants in Sacramento were sold off in smaller parcels to various individuals. Major transportation corridors, such as Auburn Road, Jackson Road, Upper and Lower Stockton Roads and several railroad lines, were established at this time. In turn, small communities, public houses and homesteads developed along these corridors. Over the last century, Sacramento has continued to grow in population, commerce and ethnic diversity. Distinct communities such as Fair Oaks, Elk Grove, Orangevale, Citrus Heights, Rio Linda and the Delta have evolved within the unincorporated areas of the County.

Various field investigations of the SRWTP site and adjacent areas have been conducted over the last two decades. A comprehensive overview of the prehistoric and historic setting and previous research in the area has been provided in a recent study conducted by PAR Environmental Services, Inc. Their report, entitled "Cultural Resources Investigations of the Sacramento Regional Wastewater Treatment Plant Master Plan Project, Sacramento County, California (November 1994)" includes a list of previous investigations in the area. The list (Table 3 of their report) is included as Appendix B of this EIR. During the course of these earlier field surveys, several prehistoric, Native American sites have been identified within and adjacent to the SRWTP boundaries. In addition, a number of historic complexes and features have been recorded in the area. However, the transmission lines currently proposed will not directly impact any of the previously identified cultural resources.

Given the relatively high sensitivity of the site and the nature of the current project, there is the potential to unearth previously unidentified cultural remains. Previous investigations consisted primarily of the reconnaissance of the ground surface do not preclude the existence of important subsurface remains. Caution should, therefore, be exercised during future construction activities. Appendix K of the California Environmental Quality Act outlines methods to mitigate impacts to cultural resources which result from projects. Included is the following:

> IX. As part of the objectives, criteria, and procedures required by Section 21082 or as part of conditions imposed for mitigation, a Lead Agency should make provisions for archaeological sites accidentally discovered during construction. These provisions should include an immediate evaluation of the find. If the find is determined to be an important archaeological resource, contingency funding and a time allotment sufficient to allow recovering an archaeological sample or to employ one of the avoidance measures should be available. Construction work could continue on other parts of the site while archaeological mitigation takes place.

It shall be necessary for the project proponent to notify the Department of Environmental Review and Assessment should any cultural resources be encountered during future development activities. If cultural resources are encountered, the Department of Environmental Review and Assessment shall coordinate an investigation of the find with appropriate specialists, as needed. After investigation of the find, the proponent may be required to implement additional mitigation for the preservation or protection of the cultural resources. In addition, should any human remains be discovered at any time, all work is to stop and the County Coroner must also be immediately notified pursuant to the State Health and Safety Code, Section 7050.5 and the State Public Resources Code, Section 5097.98. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission shall be adhered to in the treatment and disposition of the remains.

SUMMARY OF IMPACTS AND THEIR DEPOSITION

Growth-Inducing Impacts Of The Proposed Action

Initially, the proposed project (5 mgd) would provide reclaimed water to the Laguna West, Lakeside and Elliott Ranch South developments; the Bartley Cavanaugh Golf Course and the SRWTP non-potable and Bufferlands irrigation demands. These existing areas of development currently utilize ground water and surface water for their non-potable (and potable) needs. Specific areas of use of the 10 mgd phase of the project have not been identified, although a portion of this water may be used by the Elk Grove Community Services District. The proposed water reclamation plant, operating at its maximum output of 10 mgd, could conceivably provide approximately 11,000 acre feet of water, annually.

Sacramento County depends upon both groundwater and surface water for its domestic and agricultural needs. Future build out of Sacramento County, consistent with the General Plan, will require continued use of groundwater supplies and increased use of surface water supplies. According to Water Resources staff (C. Abney), adequate supplies of ground and surface water are available to provide for full build out of Zone 40 and surface water entitlements are being diligently pursued by the SCWA. However, it is unclear what proportions of groundwater and surface water will be used. This uncertainty is due not to a water resource shortage, but the cost to secure and deliver these resources.
Because the project would not increase the physical quantities of water available to the region, the proposed project would not remove a barrier to growth in the area.

Significant Environmental Effects That Cannot Be Avoided If The Proposal Is Implemented

No significant impacts have been identified that cannot be avoided if the proposal is implemented.

ENVIRONMENTAL IMPACT REPORT/ACKNOWLEDGMENTS

DEPARTMENT OF ENVIRONMENTAL REVIEW AND ASSESSMENT

EIR PREPARERS

Environmental Coordinator:	**Dennis E. Yeast**
Assistant Environmental Coordinator:	**Joyce Horizumi**
Division Manager:	**Robert Caikoski**
Project Leader:	**Douglas Bryceson**
Cultural Resources:	**Laurie Warner**

SUPPORT STAFF

Office Manager:	**Linda Quinday**
Office Assistant:	**Marilyn Weaver**

BIBLIOGRAPHY

Personal Communications:

Abney, Cort. Engineer, Water Resources Division, Sacramento County Public Works Agency, personal communication.

Creson, Cheryl. Engineer, Water Quality Division, SRWTP, Sacramento County Public Works Agency, telephone conversation.

Faith, Tristen. Biologist, SRWTP Bufferlands Management Staff, Sacramento County Public Works Agency, personal communication.

Kyotani, Vick. Engineer, Water Quality Division, SRWTP, Sacramento County Public Works Agency, personal communication.

Jensen, Cecilia. Engineer, Water Quality Division, SRWTP, Sacramento County Public Works Agency, personal communication/telephone conversation.

Nelson, Roy. SRWTP Bufferlands Manager, Sacramento County Public Works Agency, telephone conversation.

Roscoe, Terry. Wildlife Biologist, California Department of Fish and Game, Region 2, telephone conversation.

Scribner, Ken. Reclamation Board, State of California, telephone conversation.

Printed References:

Beak Consultants Incorporated, in association with Daniel B. Steiner, Consulting Engineer, and Archibald & Wallberg Consultants, *Impacts Evaluation Report for the Sacramento Regional Wastewater Treatment Plant Wastewater Reclamation Project*, June 6, 1995.

Cylinder, Paul, D., Kenneth M. Bogdon, Ellyn Miller Davis, and Albert I.Herson 1995. *Wetlands Regulation: A Complete Guide to Federal and California Programs.* Solano Press Books, Point Arena, California.

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Nolte and Associates, Inc., and HYA Consulting Engineers, December 1992. *Water Reclamation Plant-Phase I, Preliminary Design Report, Volume I.* Prepared for the Sacramento Regional County Sanitation District.

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Sacramento County Planning and Community Development Department, 1993. Sacramento County General Plan.

INITIAL STUDY CHECKLIST

SACRAMENTO COUNTY DEPARTMENT OF ENVIRONMENTAL REVIEW AND ASSESSMENT
CONTROL NO 94-PWE-0460

Could/Would the project:	YES	MAYBE	NO	
1) significantly affect Regional air quality?			X	Project would not impact regional emissions due to small scale.
2) significantly affect local air quality?			X	Project construction would produce CO and PM10 emissions; no nearby receptors.
3) contribute to the removal of a significant amount of prime agricultural land from agricultural production?			X	Project is not located on prime agricultural lands.
4) create the potential for property damage following the completion of the project due to existing or altered soil and/or slope conditions?			X	Revegetation of disturbed areas is proposed.
5) be adversely affected by other geologic or seismic hazards?			X	No known hazards in project area; buildings would meet seismic standards.
6) cause erosion or siltation resulting in severe water quality impacts or damage to adjacent properties?			X	See #4 above.
7) have a substantial effect on the supply or consumption of a mineral resource?			X	Small quantities of mineral resources such as aggregates and metals would be used.
8) significantly affect ground or surface water supply or quality?			X	Project would have the capacity to reclaim up to 10 million gallons per day of wastewater which is currently discharged into the Sacramento River.
9) substantially affect, or be affected by, flooding?			X	Some project areas are subject to flooding; proposed treatment plant is outside 100-year floodplain.
10) adversely affect populations of unique, rare or endangered plants or animals, or their habitats			X	See "Biological Resources" section of the Initial Study text.
11) significantly affect resident or migratory wildlife or their habitat?			X	See "Biological Resources" section of the Initial Study text.
12) affect or result in the removal of critical habitat, such as riparian and wetland plant associations?	X			Wetland impacts would occur due to watermain installation. No permanent wetland losses would occur.
13) affect or result in the removal of prominent, heritage or landmark trees, or otherwise aesthetically important plant forms?		X		Watermain construction could adversely impact trees along Laguna Creek and along the outfall alignment; mitigation measures proposed.
14) affect sites of archaeological or historical importance?		X		Known prehistoric sites are located in the project area; see "Cultural Resources" section of the Initial Study text.

	YES	MAYBE	NO	
15) be in conflict with adopted General, Community, or specific plans of Sacramento County?			X	The project is consistent with the draft SWRIP master plan.
16) conflict with adopted plans of agencies or jurisdictions other than Sacramento County?			X	Water quality would meet the requirements of Title 22, Division 4 of the California Code of Regulations.
17) require major modification of, or adversely affect, public facilities?			X	Minor modifications to water distribution systems are anticipated.
18) have a substantial effect upon transportation facilities?			X	Transportation systems would not be affected; pipeline would cross Interstate 5 via an existing conduit.
19) have a substantial effect on energy demands?			X	Small amounts of fossil fuels would be used; treatment process would utilize electricity.
20) substantially affect the quantity of open space in an area, or severely and adversely change the visual character of the project site?			X	Treatment plant would be in process area; pipelines would be buried.
21) generate average or peak noise levels that would seriously affect the health or general well-being of any nearby people?			X	No nearby receivers.
22) expose future residents or site users to existing or future noise levels that could seriously affect their health or general well-being?			X	See #21 above.
23) cause significant shifts in employment or income characteristics of the community?			X	Project would be confined to SRWTP property. Water reclamation would not affect employment or income characteristics.
24) have a substantial and demonstrable negative aesthetic effect?			X	See #20 above.
25) breach published national, state, or local standards relating to solid waste or litter control?			X	All solid wastes generated by the plant would be disposed of properly.
26) induce substantial growth or concentration of population?			X	Project would serve existing development.
27) displace a large number of people, or disrupt or divide an established community?			X	See #23 and 26 above.
28) involve a risk of an explosion or the release of hazardous substances in the event of an accident or upset conditions?			X	Proposed plant would be incorporated into SRWTP Plant Safety Manual, including Chlorine/Sulfur Dioxide Leak Response Procedure contained therein.
29) involve possible interference with an emergency response plan or an emergency evacuation plan?			X	See #29 above.
30) result in creation of any health hazard or potential health hazard, or expose people to potential health hazards?			X	The proposed treatment plant would produce Title 22, Class 1 water (Disinfected Textiary Reclaimed Water).

Comment Received from Jeffery Pulverman, Chief Office of Transportation Planning - Metropolitan, California Department of Transportation, February 26, 1996.

Comment:

An encroachment permit from Caltrans will be required for the construction of the pipeline within our right of way. This is a discretionary permit. Please list Caltrans as a responsible agency for this portion of the project and address any impacts to I-5 attributable to this project. This information will allow Caltrans to use this document for the environmental assessment of the portion of the project for which it is responsible.

Response:

The pipeline serving the Bartley Cavanaugh Golf Course would cross Interstate 5 via an existing conduit beneath the roadway. No disturbance of Interstate 5 is anticipated. The text of the Final EIR (Land Use/Master Plan Consistency section) describes this element of the project.

Comments received from Wayne Hubbard, Environmental Services Unit, State Water Resources Control Board, March 19, 1996.

Comment 1:

Thank you for the opportunity to review the above document. The State Water Resources Control Board (SWRCB), Division of Clean Water Programs is responsible for administering low interest loans for eligible wastewater treatment projects. If Sacramento County will be seeking a loan from the SWRCB for the above project, the SWRCB will be a responsible agency pursuant to the California Environmental Quality Act (CEQA) and must consider the information in the Final CEQA document prepared for the project when deciding whether to approve a loan for the project. If this is the case, please send a copy of the Final EIR with comments and responses, the resolution certifying the EIR and making CEQA findings, the adopted mitigation monitoring plan, and the Notice of Determination filed with the Governor's Office of Planning and Research when they become available. In addition, we would appreciate notices of any meetings or hearings scheduled regarding the document and project approval.

If the project will involve a State Revolving Fund (SRF) loan, which is partially funded by the EPA and administered by the SWRCB, additional "NEPA-like" environmental documentation and review will be required. For SRF loans, we are required to consult directly with agencies responsible for implementing federal environmental laws and regulations. If you will be seeking an SRF loan, please provide us with eight copies of the EIR so that we may initiate federal consultation. In addition, while CEQA itself does not require formal public hearings at any stage of the environmental review process, at least one public hearing is required for an SRF loan project. Notices need to be distributed 30 days in advance and a copy should be sent to us.

Response:

According to Sacramento Regional County Sanitation District (SRCSD) staff (C. Jensen), the District will not be seeking loans from the SWRCB or the SRF.

Comment 2:

Pursuant to Water Code Section 1210 et seq., the County may need to file a petition to change the point of discharge, place, and purpose of use of the treated wastewater.

Response:

The SRCSD has filed a petition (application number WW-28) with the SWRCB. Approval of this application is pending at this time.

Comment 3:

If an SRF project may affect a federally listed species, consultation with the U.S. Fish and Wildlife Service needs to be initiated for compliance with Section 7 of the federal Threatened and Endangered Species Act. Please contact me if this is the case.

Response:

The project would not utilize SRF funds. All potential impacts to special status species have been reduced to less than significant levels, see Biological Resources section.

Comment 5:

Pursuant to C A case law, the EIR alternatives analysis must provide a comparative environmental a..alysis of the proposed project, the "no projec alternative", and at least one other alternative. We do not believe that your inclusion of the proposed project without mitigation mea ires as separate alternative is legitimate. Were alternative pipeline alignments cons ered?

Response:

The purpose of the alternatives analysis is to describe a range of reasonable alternatives to the project, or the location of the project, which could feasibly attain the basic objectives of the project. This analysis is required to focus on those alternatives capable of eliminating any significant adverse environmental affects or reducing them to a level of insignificance. (CEQA Guidelines, Section 15126(d)).

In this case, all adverse environmental impacts were reduced to less than significant levels through mitigation measures. Consequently, the so-called "Mitigated Project Alternative" (i.e., the proposed project with the mitigation measures identified in the EIR) was identified as the environmentally superior alternative. No other reasonable or feasible alternatives were identified.

Constructing the project off-site was not considered feasible because the SRWTP is the source of wastewater for reclamation, and the identified reclaimed water users lie immediately outside the SRWTP boundaries. Underground distribution lines for reclaimed water have already been installed in the place of use consistent with previously approved development plans. Thus, the only potential site-specific physical impacts associated with the project involves constructing the water reclamation plant and the reclaimed water mains to the place of use. SRWTP staff endeavored to locate these mains to minimize impact on natural resources located in the buffer lands that border the plant site. Additional mitigation was also identified by the preparers of the EIR to ensure that the project's impact was minimal. Constructing the water reclamation plant and pipelines away from the water source would require additional infrastructure (pipelines, etc.) and increased energy usage for pumping the wastewater to the plant. Off-site alternatives would not reduce or eliminate any impacts identified in the EIR, nor would they be reasonable or practicable.

STATE OF CALIFORNIA-BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 3, SACRAMENTO AREA OFFICE - MS 41
P.O. BOX 942874
SACRAMENTO, CA 94274-0001
TDD Telephone (916) 741-4509
FAX (916) 323-7669
Telephone (916) 327-3859

February 26, 1996

HSAC030
Sacramento Regional Wastewater
Treatment Plan Reclaimed Water Project
DEIR
03-SAC-5 PM 15.5

Mr. Douglas Bryceson
County of Sacramento
Department of Environmental Review
and Assessment
827 Seventh Street, Room 220
Sacramento, CA 95814

Dear Mr. Bryceson:

We have reviewed the Draft Environmental Impact Report for the Reclaimed Water Project and have the following comments:

An encroachment permit from Caltrans will be required for the construction of the pipeline within our right of way. This is a discretionary permit. Please list Caltrans as a responsible agency for this portion of the project and address any impacts to I-5 attributable to this project. This information will allow Caltrans to use this document for the environmental assessment of the portion of the project for which it is responsible.

Please provide our office with a copy of the Final Environmental Impact Report and staff report to the Planning Commission.

If you have any questions or concerns, please contact Tom Meyers at (916) 323-0543.

Sincerely,

JEFFREY PULVERMAN, Chief
Office of Transportation
Planning - Metropolitan

STATE OF CALIFORNIA PETE WILSON, Governor

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF CLEAN WATER PROGRAMS
2014 T STREET, SUITE 130
P.O. BOX 944212
SACRAMENTO, CA 94244-2120
(916) 227-4480
(916) 227-4349 FAX

COUNTY OF SACRAMENTO

MAR 21 1996

ENVIRONMENTAL REVIEW

MAR 1 9 1996

Mr. Dennis Yeast
Sacramento County
827 7th Street, Room 220
Sacramento, CA 95814

Dear Mr. Yeast:

ENVIRONMENTAL IMPACT REPORT (EIR) FOR SACRAMENTO COUNTY SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT RECLAIMED WATER PROJECT (SCH# 95022025)

Thank you for the opportunity to review the above document. The State Water Resources Control Board (SWRCB), Division of Clean Water Programs is responsible for administering low interest loans for eligible wastewater treatment projects. If Sacramento County will be seeking a loan from the SWRCB for the above project, the SWRCB will be a responsible agency pursuant to the California Environmental Quality Act (CEQA)and must consider the information in the Final CEQA document prepared for the project when deciding whether to approve a loan for the project. If this is the case, please send a copy of the Final EIR with comments and responses, the resolution certifying the EIR and making CEQA findings, the adopted mitigation monitoring plan, and the Notice of Determination filed with the Governor's Office of Planning and Research when they become available. In addition, we would appreciate notices of any meetings or hearings scheduled regarding the document and project approval.

If the project will involve a State Revolving Fund (SRF) loan, which is partially funded by the EPA and administered by the SWRCB, additional "NEPA-like" environmental documentation and review will be required. For SRF loans, we are required to consult directly with agencies responsible for implementing federal environmental laws and regulations. If you will be seeking an SRF loan, please provide us with eight copies of the EIR so that we may initiate federal consultation. In addition, while CEQA itself does not require formal public hearings at any stage of the environmental review process, at least one public hearing is required for an SRF loan project. Notices need to be distributed 30 days in advance and a copy should be sent to us.

If you wish to pursue potential SRF funding for the subject project, please contact Mr. Gus Atkins at (916) 227-4475 regarding the Statewide Priority List.

Pursuant to Water Code Section 1210 et seq., the County may need to file a petition to change the point of discharge place, and purpose of use of the treated wastewater. Contact the SWRCB, Division of Water Rights, Application Unit at (916) 657-1926, for more information on this requirement.

If an SRF project may affect a federally listed species, consultation with the U.S. Fish and Wildlife Service needs to be initiated for compliance with Section 7 of the federal Threatened and Endangered Species Act. Please contact me if this is the case.

Pursuant to CEQA case law, the EIR alternatives analysis must provide a comparative environmental analysis of the proposed project, the "no project alternative", and at least one other alternative. We do not believe that your inclusion of the proposed project without mitigation measures as separate alternative is legitimate. Were alternative pipeline alignments considered?

Please call me at (916) 227-4480 if you have any questions.

Sincerely,

Wayne Hubbard
Environmental Services Unit

cc: State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

Regional Water Quality Control Board
Central Valley Region (5)
3443 Routier Road
Sacramento, CA 95827-3098

APPENDIX A

SACRAMENTO RIVER/DELTA WATER SUPPLY AND WATER QUALITY IMPACTS EVALUATION REPORT

Final

IMPACTS EVALUATION REPORT

For the Sacramento Regional Wastewater Treatment Plant - Wastewater Reclamation Project

Prepared for:

Sacramento Regional County Sanitation District

Prepared by:

beak consultants incorporated

In Association with:

Daniel B. Steiner, Consulting Engineer
and
Archibald & Wallberg Consultants

June 6, 1995

<u>Final</u>

Impacts Evaluation Report

For the Sacramento Regional Wastewater Treatment Plant Wastewater Reclamation Project

Prepared for:

Sacramento Regional County Sanitation District
8521 Laguna Station Road
Elk Grove, California 95758-9550

Prepared by:

beak consultants incorporated

4600 Northgate Boulevard, Suite 215
Sacramento, California 95834

In Association with:

Daniel B. Steiner, Consulting Engineer
and
Archibald & Wallberg Consultants

June 6, 1995

1.0 AFFECTED ENVIRONME.:T

1.1 PROJECT DESCRIPTION

The Sacramento Regional Wastewater Treatment Plant (SRWTP), which became operational in 1982, is located on 900 acres of a 3,400 acre site between Interstate 5 and Franklin Boulevard, south of Meadowview Road. The remaining 2,500 acres are bufferlands to insulate the plant from nearby residential areas. The SRWTP provides secondary wastewater treatment for about 1 million residents in the urbanized area of Sacramento County. Inflow to the SRWTP includes both sanitary and storm water discharges. Wastewater discharges to the Sacramento River currently average approximately 140 mgd (215 cfs).

The project involves the construction of a 5 mgd (7.7 cfs) water reclamation plant within the property of the SRWTP. The plant is currently being designed, and will have the capability to be expanded to 10 mgd (15.5 cfs). The water reclamation plant will process SRWTP secondary effluent through additional treatment steps. Secondary effluent will be pumped from the secondary effluent channel for chemical conditioning, flocculation, filtration and chlorination. A covered storage tank and reclaimed water distribution pump station will comprise the remainder of the reclamation plant. Reclaimed water will be delivered to users through transmission mains connected to reclaimed water distribution systems. The reclaimed water distribution systems will be completely separate from the able water distribution systems. Users will receive reclaimed water through separate metere. service connections, similar to a potable water system.

1.1.1 Reclaimed Water Users and Demands

The project will provide reclaimed water to users in the immediate vicinity of the SRWTP. Anticipated reclaimed water users/areas to be served include the City of Sacramento's Bart Cavanaugh Golf Course near Freeport, the SRWTP for plant process and irrigation needs, the Laguna West, Lakeside, and Elliott Ranch South developments for irrigation of parks, schools, streetscape, greenbelts, and commercial properties, and for irrigation of the interchanges at Interstate 5 with Laguna and Elk Grove Boulevards.

The initial project will deliver approximately 2,500 acre-feet per year of reclaimed water with a peak monthly daily demand of 5 mgd (7.7 cfs). Table 1 summarizes the estimated water deliveries for each of the anticipated use s/areas. However, the project will be able to be expanded to 10 mgd (15.5 cfs) in the future. Specific areas for use of additional reclaimed water have not been identified; however, use of this additional reclaimed water would be expected to be similar to that in the Laguna West development.

Table 1[a]. Estimated reclaimed water deliveries to anticipated water users for the proposed 5 mgd project.

User/Area	Acres	Annual Demand Rate (ft/yr)	Annual Demand (Ac-ft)	Peak Month Daily Demand (mgd)	Peak Month Daily Demand (cfs)
Laguna West, Lakeside, Elliot Ranch South					
Parks, Schools, Interchanges, Levees	138	4.0	552	1.29	2.0
Commercial	36	4.0	144	0.34	0.5
Landscape Corridor	72	4.0	288	0.67	1.0
Subtotal	246		984	2.30	3.6
Bartley W. Cavanaugh Golf Course	68	3.0	204	0.39	0.6
SRWTP Non-Potable Process	--	--	903	1.40	2.2
SRWTP Landscape Buffer	86	4.8	413	0.84	1.3
TOTAL	400		2,504	4.93	7.6

[a]Developed from Table 1 Water Reclamation Project, Estimated Reclaimed Water Deliveries, County of Sacramento Water Reclamation Project, Project Description

1.2 AREA POTENTIALLY AFFECTED BY THE PROJECT

The project is designed to treat and deliver SRWTP effluent to non-potable, consumptive and non-consumptive uses which are currently, or potentially served from regional water supplies. The source of the water is SRWTP effluent that would otherwise be discharged to the Sacramento River. The project would, therefore, affect the amount of SRWTP effluent discharged to the Sacramento River, and thereby, potentially reduce flow volumes in the Sacramento River.

The discussion of the affected environment is restricted to the hydrology and associated water quality and fisheries resources of waterways in the immediate vicinity of the wastewater reclamation plant and downstream. Reduced flow volume in the Sacramento River could potentially influence the hydrology and water quality in the Sacramento River downstream from the water reclamation plant and in the Sacramento-San Joaquin Delta (Delta) which receives water from the Sacramento River. The discussion of the affected environment focuses on the facilities and operations dependent on, involved in or potentially affected by changes in the availability of water within the Sacramento River below Freeport or the Delta as a result of this action. The operations and descriptions of facilities outside of this defined region are included only to the extent that operation of specific facilities outside the region are necessary for complying with regulatory requirements for the Delta. Water quality and fisheries resources in the Sacramento River and Delta potentially affected by the project will also be addressed.

1.3 PHYSICAL AND BIOLOGICAL ENVIRONMENT

1.3.1 Hydrology

Sacramento Regional Water Treatment Plant

The rate of inflow to the SRWTP averages 150 mgd (230 cfs). Storm runoff can double the daily amount of inflow to the plant. The inflow to the SRWTP has averaged 160 mgd (248 cfs) over the last three years.

Average daily effluent discharges to the Sacramento River are normally less than average daily inflow to the plant. This is due to a variety of reasons including variations in equipment calibration, water use within the process train (i.e., wash down, spraying, etc.), and water that is diverted to emergency storage basins due to plant process shutdown during maintenance, permit discharge limitations, or during the rainy season when the plant is unable to directly handle the increased inflows. Discharges to the Sacramento River have averaged 140 mgd (215 cfs) over the last three years. **Figures 1a, 1b, 1c, and 1d** illustrate the daily average inflow and Sacramento River discharge of the SRWTP for the period 1985 through 1994. **Figure 2** illustrates the range of daily discharges that have occurred over the last ten years. Storm events have created daily releases in excess of 291 mgd (450 cfs) while a minimum daily discharge of

65 mgd (100 cfs) occurs during a year. Figure 3 illustrates the monthly distribution of discharges to the Sacramento River over the last three years. Discharges during the summer months occur relatively constant (between months and on a daily basis), while the range of discharges during winter months varies due to storm events.

Sacramento River

Flows in the Sacramento River at and downstream from the proposed project are largely determined by the operation of upstream reservoirs (e.g., Shasta, Oroville, and Folsom reservoirs) and the timing and rates of diversions from the Sacramento River and tributary streams. Upstream reservoirs are operated to fulfill a variety of functions, including flood control, water supply, fisheries and wildlife benefits, power generation, and to meet water quality and flow requirements in the Delta. Diversions from the Sacramento River and tributary streams also influence seasonal flow levels in the project area by reducing overall flow volumes in the river.

According to the Sacramento River Basin Four Rivers Index, unimpaired flows (i.e., flows that would exist in the absence of upstream impoundments and diversions) in the Sacramento River at Freeport are characteristically high from January through May and low in July to September (State Water Resources Control Board (SWRCB) 1995). The natural flow pattern has since been altered due to a variety of river flow control facilities. Flows have since been reduced during the wetter months due to upstream storage and diversions. However, flows are also typically higher during the drier months due to the requirements to set flows at levels capable of meeting water quality objectives and water delivery obligations.

The flow of the Sacramento River can significantly vary from year-to-year and within a year. Flow in the Sacramento River can be either specifically caused (controlled) by operations of the Central Valley Project (CVP) and State Water Project (SWP), or be somewhat irrespective of these operations, such as during times of significant uncontrolled runoff during storm events. Figure 4 illustrates the variance in average monthly flow in the Sacramento River at Freeport for the period 1985 through 1993. The data for Figure 4 are presented in Table 2. This period of record encompasses a few wet years along with the recent 6-year drought during which Sacramento River flows were extremely low.

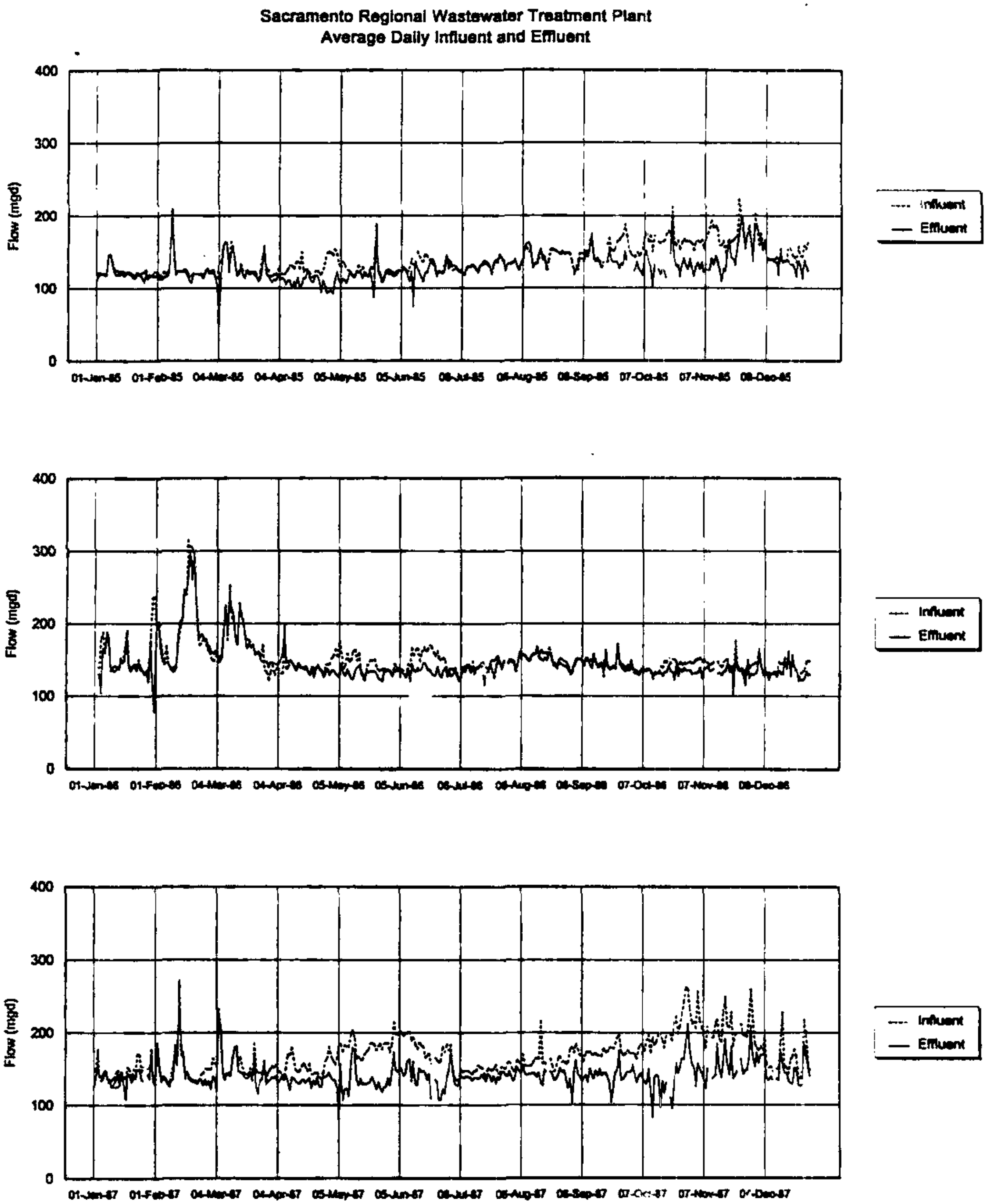


Figure 1a. Average daily influent and effluent (mgd) at the Sacramento Regional Wastewater Treatment Plant during 1985, 1986, and 1987.

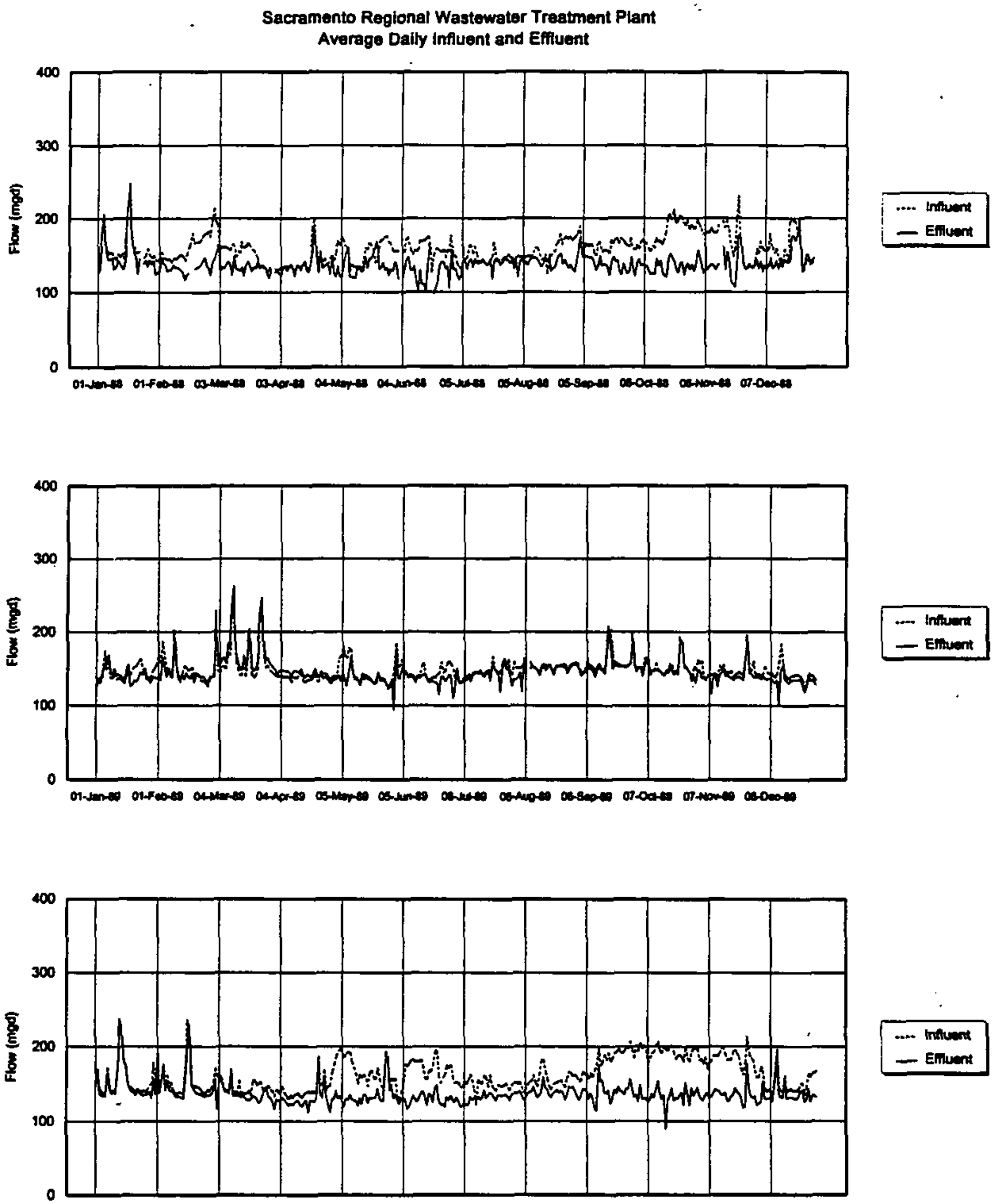


Figure 1b. Average daily influent and effluent (mgd) at the Sacramento Regional Wastewater Treatment Plant during 1988, 1989, and 1990.

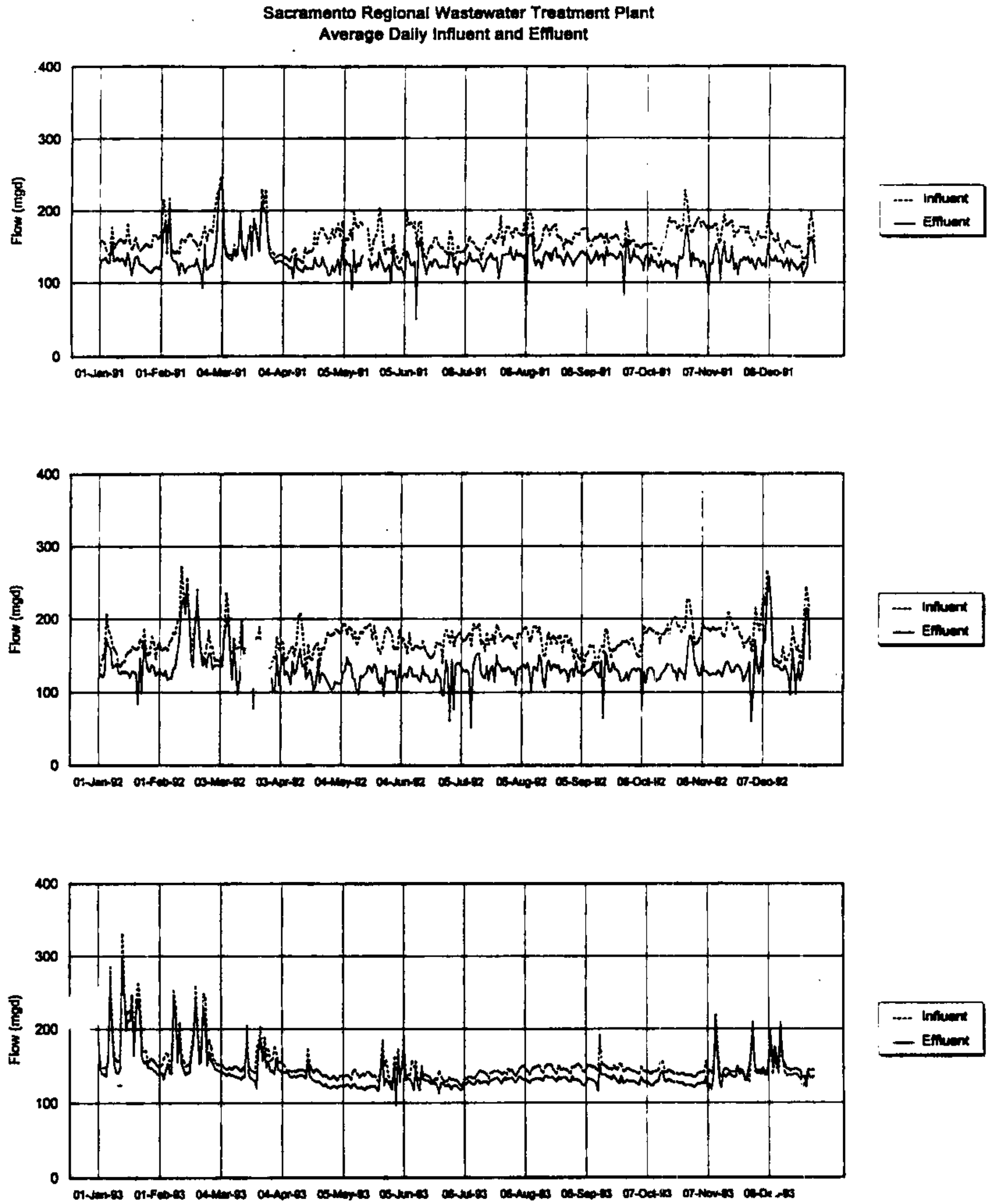


Figure 1c. Average daily influent and effluent (mgd) at the Sacramento Regional Wastewater Treatment Plant during 1991, 1992, and 1993.

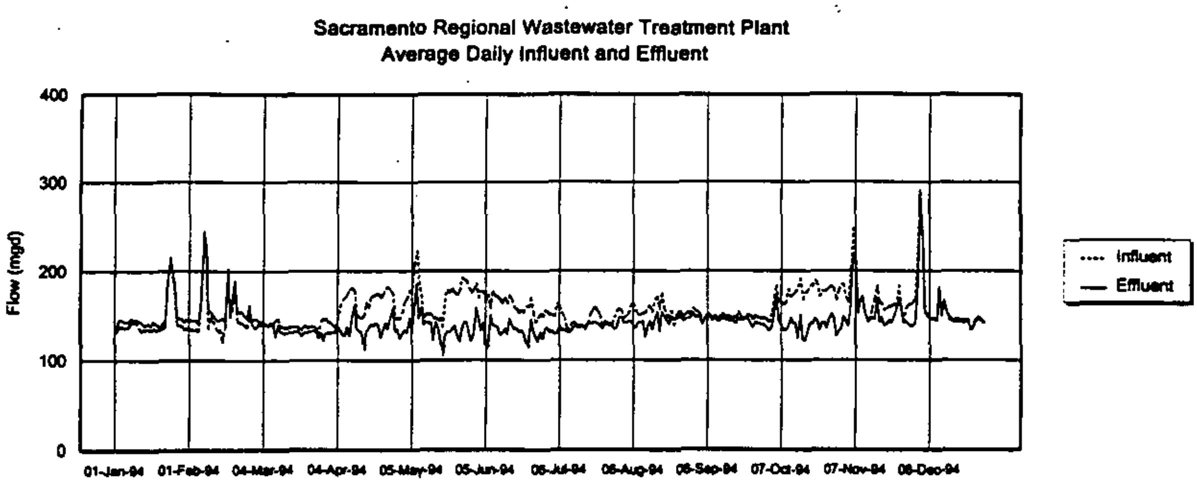


Figure 1d. Average daily influent and effluent (mgd) at the Sacramento Regional Wastewater Treatment Plant during 1994.

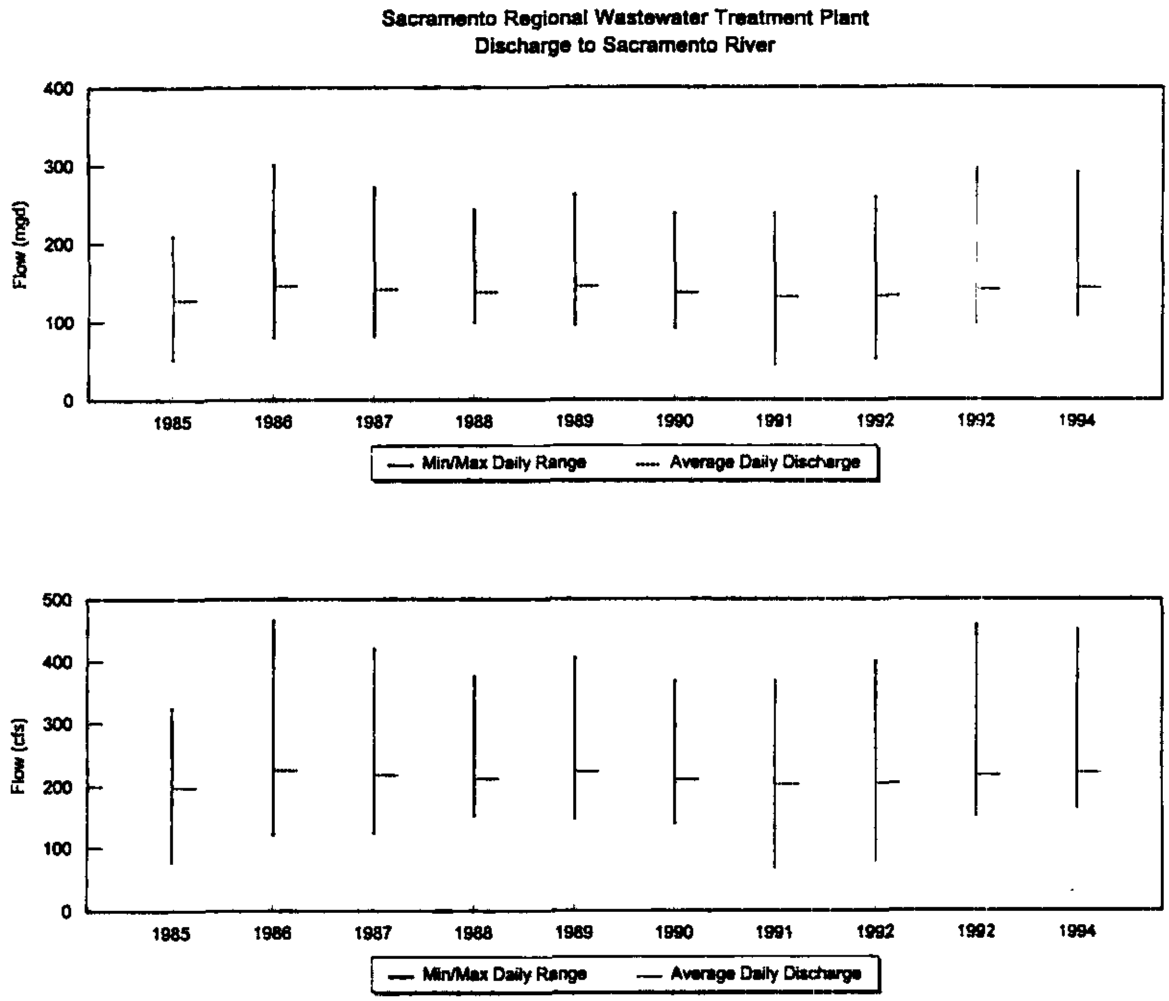
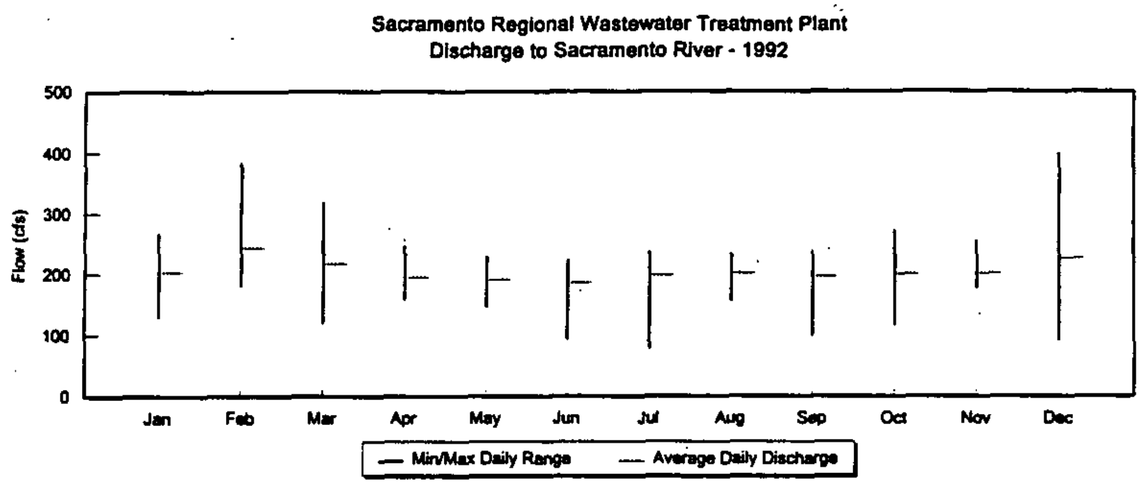
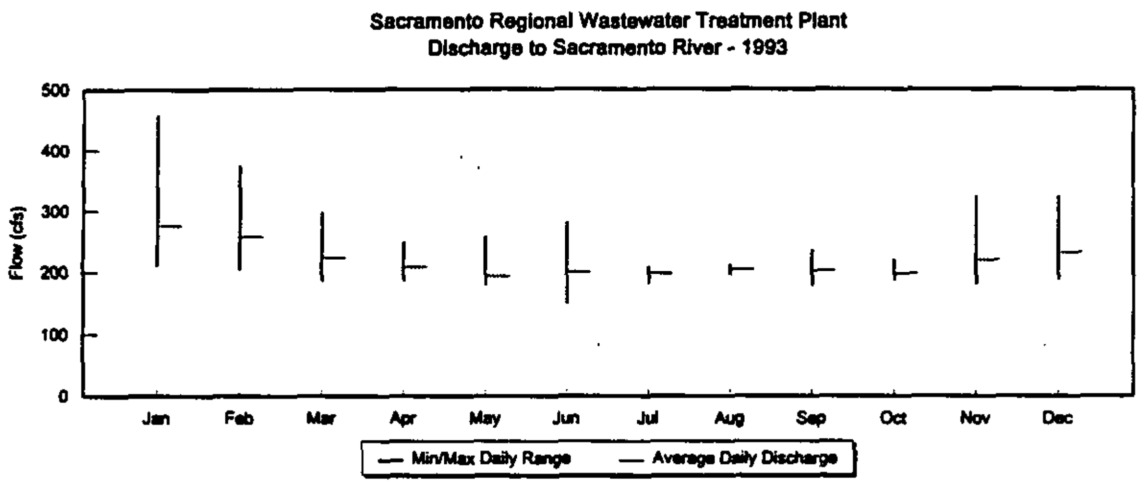


Figure 2. Average, minimum and maximum daily discharge from the Sacramento Regional Wastewater Treatment Plant expressed as mgd and cfs during 1985 through 1994.





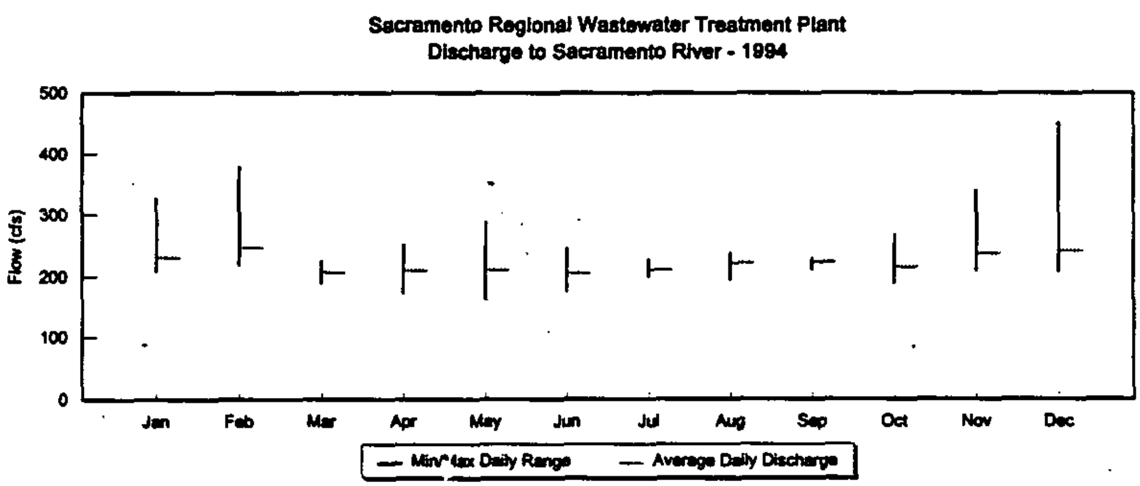


Figure 3. Average, minimum and maximum daily discharge (cfs) from the Sacramento Regional Wastewater Treatment Plant for each month during 1992, 1993, and 1994.

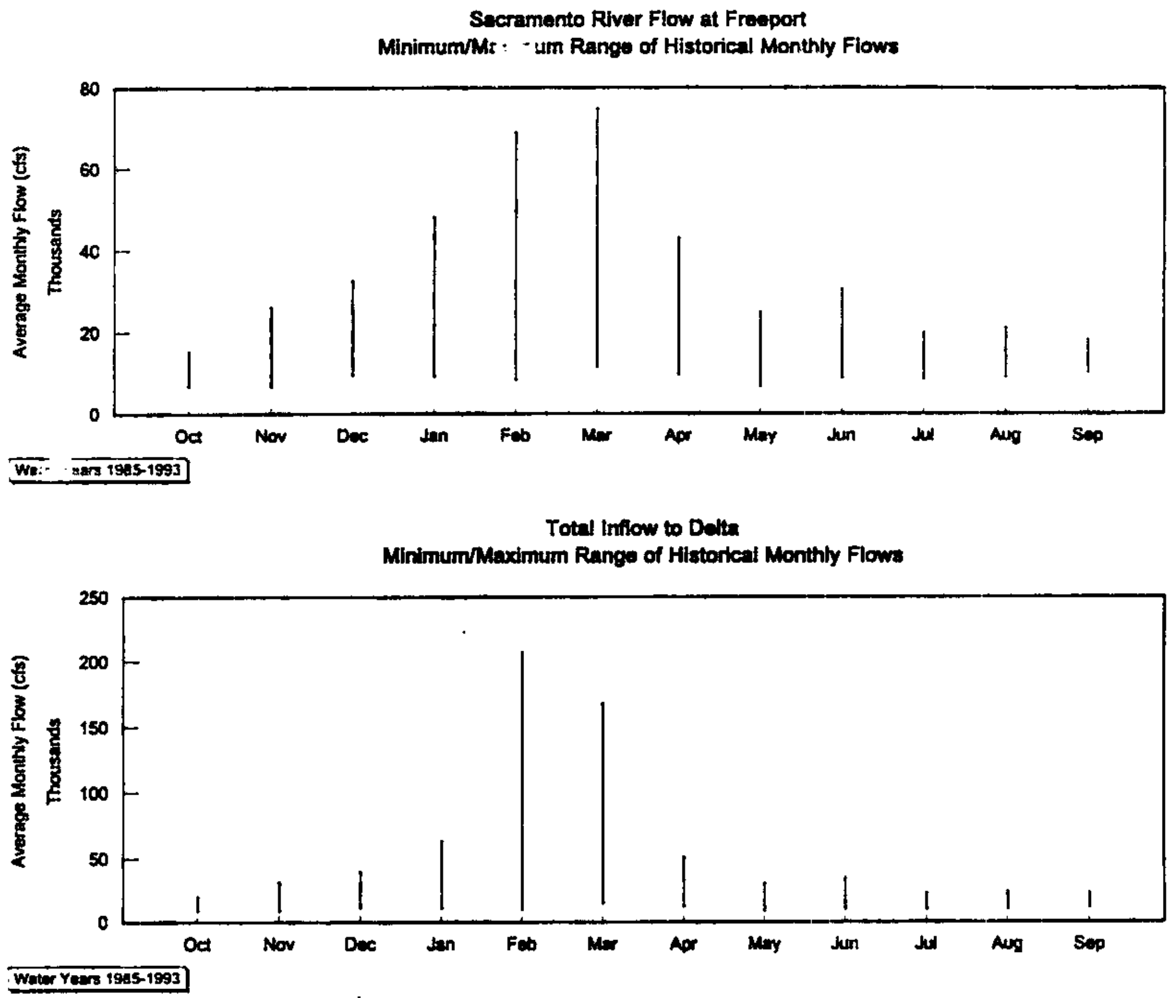


Figure 4. Minimum and maximum average monthly flow (cfs) in the Sacramento River at Freeport and minimum and maximum average monthly total Delta inflow for the period 1985 through 1993.

Table 2*. Average daily flows (cfs) in the Sacramento River and total Delta inflow for each month during the period 1985 through 1993.

Sacramento River at Freeport												
Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1985	13238	26284	32559	16784	18276	14312	12503	13433	13310	16036	13450	12184
1986	9709	10419	16101	19971	68890	74990	25830	12767	11814	16881	15109	18133
1987	15450	12688	13108	13173	17412	21581	11831	10002	10066	15141	14442	11629
1988	9514	8134	15743	25403	12622	11352	16889	10978	10571	14637	13287	11528
1989	9319	11360	12393	12832	12064	43374	21276	13791	13293	18768	18312	16469
1990	14279	14822	15401	18914	13810	12864	15276	10408	10520	13498	13840	10033
1991	7627	7730	10815	8977	8139	25761	10873	7335	8924	9514	9514	9949
1992	9400	6957	9254	10441	26991	20329	9445	6408	8503	8310	8717	9814
1993	6652	6386	12441	48253	48597	49343	43206	24948	30468	19857	21077	15831
Max	15450	26284	32559	48253	68890	74990	43206	24948	30468	19857	21077	18133
Min	6652	6386	9254	8977	8139	11352	9445	6408	8503	8310	8717	9814

Total Delta Inflow												
Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1985	18052	31812	39731	21386	22687	18003	15831	16036	15293	18751	16214	14352
1986	12019	12688	19093	23321	207822	168601	50080	23533	19141	20313	18865	23023
1987	20053	16284	17402	15987	20148	26314	15158	12588	12419	17125	16442	13495
1988	11026	9814	17206	28786	14261	13873	19377	12994	12537	16231	15043	13142
1989	10522	12738	13889	14230	13504	47293	23897	16133	15074	20215	19662	17982
1990	15808	16503	16946	20362	15467	15141	16973	12002	11898	14718	15076	11108
1991	8863	9058	11823	9888	8985	29648	12604	8896	9814	10327	10246	10755
1992	10360	8386	10392	11644	31582	22882	11310	7611	9260	8994	9416	10604
1993	7709	7596	13840	64077	61111	67704	51323	30494	34468	22671	24167	19024
Max	20053	31812	39731	64077	207822	168601	51323	30494	34468	22671	24167	23023
Min	7709	7596	10392	9888	8985	13873	11310	7611	9260	8994	9416	10604

* Data derived from DWR DAYFLOW.

Even among drought years, the flow in the Sacramento River can vary significantly as the result of CVP and SWP operational objectives. During periods of drought, the Delta export objectives of the CVP and SWP will largely influence Sacramento River flow rates. For instance, in July of 1992 the projects had a Delta export of about 1,500 cfs which required a Sacramento River flow of about 8,300 cfs. To support a Delta export of about 8,000 cfs during July of 1988, the projects needed to provide a Sacramento River flow of about 14,600 cfs - a comparable increase of flow and exports of about 6,500 cfs.

Delta

Freshwater flows into the Delta principally through the Sacramento and San Joaquin rivers. The Sacramento River contributes the greatest amount of water to Delta inflow, about 80 percent as compared to the San Joaquin River which delivers about 15 percent of total Delta inflow. Other streams (e.g., the Mokelumne and Cosumnes rivers) carry about five percent of total Delta inflow.

The total annual volume of freshwater inflow to the Delta is highly variable, fluctuating with precipitation patterns and upstream water development, primarily storage reservoirs and diversions (San Francisco Estuary Project (SFEP) 1992). During the past 70 years, annual inflow has averaged 21 million acre-feet (MAF) but has varied substantially (SFEP 1992). For example, in 1977, a year of extraordinary drought, Delta inflow totaled only 5.9 MAF, while for 1983, ar ceptionally wet year, total Delta inflow was about 70 MAF. Seasonal variation is also high. Average natural flow to the Delta varies by a factor of more than ten between the month of highest flow in winter or spring and the lowest month in fall (SWRCB 1995). Figure 4 and Table 2 illustrate the variance in average monthly Delta inflow for period 1985 through 1993.

Of the water entering the Delta, some is diverted for use within the Delta or exported for water users in other parts of California. Outflow from the Delta can therefore, be considerably less than Delta inflow. During normal water years, about ten percent of the water reaching the Delta would be withdrawn for local use, 30 percent would be withdrawn for export by the CVP and SWP, 20 percent would be needed for salinity control, and the remaining 40 percent would become Delta outflow in excess of minimum requirements.

1.3.2 Water Quality

Sacramento River

Water quality parameters of interest include: salinity, temperature, dissolved oxygen, nutrients, and other pollutants, including metals. Significant seasonal variation is present for a number of water quality parameters. Salinity is generally low in the Sacramento River, less than 2 ppt (parts per thousand), but does vary seasonally and among years depending on flow levels (SFEP 1992). Levels of most trace metals, total suspended solids, and organic carbon vary with flow. Dissolved oxygen levels, temperature, pH, hardness, and conductivity, however, generally vary independently of flow (Larry Walker Associates and Brown and Caldwell 1995). Despite the seasonal variability, a recent study revealed that water quality parameters in the vicinity of the proposed wastewater reclamation plant were found to be almost always within water quality objectives specified in the former Inland Surface Waters Plan (ISWP), except for some metals (Larry Walker and Associates 1994). This study was based on water quality data collected over the period from September, 1991 through December, 1993. Water quality data collected at Freeport Marina, near the proposed project, are provided in Appendix A.

Ambient concentrations of several metals in the Sacramento River approach or exceed criteria specified in the U.S. Environmental Protection Agency's (EPA) Ambient Water Quality Criteria and former ISWP, primarily due to discharges from abandoned mines in the watershed. Lead concentrations in excess of guidelines for the protection of aquatic life and mercury concentration in excess of guidelines based upon human health protection have been recorded (Larry Walker and Associates 1994). Because ambient concentrations affect allowable discharge limits, there has been concern as to whether wastewater dischargers would be able to meet water quality objectives for metals.

Delta

The Delta's water quality (salinity, temperature, nutrients, dissolved oxygen, and other pollutants) can show considerable geographic and seasonal variation (SFEP 1992). Water quality in the Delta is heavily influenced by a combination of environmental and institutional variables, including water export and diversions within and upstream from the Delta and agricultural activities in the Delta.

Saltwater intrusion into the Delta from the Pacific Ocean is controlled by freshwater flows into the Delta from the Sacramento, San Joaquin, Mokelumne, Calaveras and Cosumnes rivers. Water development facilities upstream and within the Delta reduce winter and spring flows resulting in higher salinity levels than would have occurred naturally. Water development facilities also augment the natural flows into the Delta during the summer and fall months resulting in lower salinity levels than would have occurred naturally, and have eliminated the severe salinity level intrusions that once occurred every summer - sometimes moving upstream as far as the City of Sacramento on the Sacramento River, and Stockton on the San Joaquin River. An additional source of salt is upstream agricultural discharges to the San Joaquin River, which can sometimes create elevated salinity levels in portions of the south Delta.

The temperature of the Delta water is determined by a wide variety of factors because of the slow velocity and high volume of water present in the Delta. Tributary inflow volume and temperature, climate and weather, extent of agricultural withdrawal or return water contributions, and riparian vegetation all affect Delta water temperatures. Water temperature in the Delta ranges from about 57 to 75°F throughout the year. Summer temperatures often exceed 70°F which is a concern for fishery resources (SFEP 1992).

Nutrients in the Delta (nitrogen, phosphate, and silicate) are derived from several sources including river inflow, ocean water, sewage treatment plants, runoff, wetlands, and atmospheric fallout (rain and dust). Nutrient concentrations vary seasonally. In the northern reach, where river flow provides most of the nutrient load, nutrient concentrations are highest in winter and lowest in summer (SFEP 1992).

In portions of the Delta, primarily along the lower San Joaquin River and in certain localized areas, dissolved oxygen can seasonally fall below minimum levels for fishery resources. Dissolved oxygen problems are most acute during late summer months when water temperatures are high and flow levels are low (SWRCB 1995). Low levels of dissolved oxygen generally occur in areas of the Delta receiving wastewater discharges, but which have little freshwater flow (SWRCB 1995). In some portions of the Delta, low dissolved oxygen levels can inhibit movement of anadromous and resident fish species.

Pollutants enter the Delta through several avenues, including agricultural runoff, municipal and industrial wastewater discharge, urban runoff, river inflow, and atmospheric deposition (SFEP 1992). The concentrations of pollutants in the Delta such as metals, pesticides and petroleum hydrocarbons vary among locations in the Delta as well as seasonally. Pesticides from agricultural runoff are of particular concern, as biologically significant concentrations have been recorded in portions of the Delta (SFEP 1992). Toxic effects of pollutants can vary with flow levels, as water flowing into and through the Delta acts to dilute concentrations of toxicants.

1.3.3 Fisheries Resources

Winter-run chinook salmon, delta smelt and Sacramento splittail are considered the primary species of concern in the development of operations and flow requirements for the Sacramento River and Delta. Winter-run chinook salmon are listed as an endangered species and delta smelt are listed as a threatened species under the federal Endangered Species Act (Act). Sacramento splittail has been proposed for listing as a threatened species under the Act.

Sacramento River

More than 30 species of native and introduced fish species use the Sacramento River. Anadromous species including chinook salmon, steelhead trout, green and white sturgeon, American shad and striped bass use the Sacramento River as an upstream and downstream migration corridor between the ocean where they reside as adults and upstream spawning areas. Other fish are considered resident species, and complete their life cycle entirely in freshwater, often in a lo-- ized area. The resident fishes can be divided into warmwater game fish (e.g., largemouth . sunfishes, and catfish), coldwater game fish (rainbow trout and brown trout) and nongame fishes (e.g., squawfish, carp and suckers). Several fish species occurring in the Sacramento River are federally or state listed, classified as candidates for federal listing, or are considered species of special concern by the California Department of Fish and Game (Table 3).

Flow levels in the Sacramento River affect fish in the river through influencing the amount of physical habitat available, providing transport flows and altering water quality parameters. Relationships between the amount of physical ha ' available at various flow levels, however, have not been determined for resident species in . e lower Sacramento River. For chinook

Table 3.* Fish species occurring the Sacramento River or Delta which are federally or state listed, federal candidate or state species of special concern.	
Species Common Name *Scientific Name*	Status
Winter-run chinook salmon *Oncorhynchus tshawytscha*	Federal - Endangered State - Endangered
Delta smelt *Hypomesus transpacificus*	Federal - Threatened State - Threatened
Sacramento splittail *Pogonichthys macrolepidotus*	Federal - Proposed Threatened State - Species of Special Concern
Spring-run chinook salmon *Oncorhynchus tshawytscha*	Federal - No Status State - Species of Special Concern
Late fall-run chinook salmon *Oncorhynchus tshawytscha*	Federal - No Status State - Species of Special Concern
Green sturgeon *Acipenser medirostros*	Federal - No Status State - Species of Special Concern
Pink salmon *Oncoryhynchus gorbuscha*	Federal - No Status State - Species of Special Concern
River lamprey *Lampetra ayresi*	Federal - No status State - Species of Special Concern
Sacramento perch *Archoplites interruptus*	Federal - Candidate 2 State - No status
Coho salmon *Oncorhynchus kisutch*	Federal - No Status State - Species of Special Concern
Hardhead *Mylopharodon conocephalus*	Federal - No Status State - Species of Special Concern
Summer steelhead trout *Oncorhynchus mykiss gairdneri*	Federal - Sensitive Species State - No status
Longfin smelt *Spirinichus thaleichthys*	Federal - No Status State - Species of Special Concern

Endangered - listed as an endangered species by under the Federal or California State Endangered Species Acts
Threatened - listed as a threatened species by under the Federal or California State Endangered Species Acts
Candidate 2 - May warrant listing under the Federal Endangered Species Act but additional biological information is needed
Species of Special Concern - considered a species of special concern by California Department of Fish and Game
Sensitive Species - considered a federal sensitive species by the U.S. Bureau of Land Management or U.S. Forest Service

* California Department of Fish and Game, Natural Diversity Data Base, Special Animals List, August 1994.

salmon, an anadromous species, the flow level in the Sacramento River is [illegible] for providing attraction flows as migratory cues during upstream migrations. Flow [illegible] in the Sacramento River are also important for facilitating the movement of downstream [illegible] chinook salmon smolts to the ocean (U.S. Fish and Wildlife Service (USFWS) 1992).

Winter-run Chinook Salmon. Winter-run chinook salmon are listed as a federally [illegible] species. As an anadromous species, winter-run chinook salmon spend their adult life in the ocean but return to freshwater streams to spawn. Spawning grounds for winter-run chinook [illegible] present in the upper reaches of the Sacramento River. Winter-run chinook salmon [illegible] present in the Sacramento River in the vicinity of the proposed project only [illegible] upstream and downstream migrations. Upstream migrants pass through the lower [illegible] Sacramento River from mid-December through April. Smolts migrate downstream through the lower Sacramento River during the period January through April.

Sacramento splittail. Sacramento splittail are proposed for listing as a federally [illegible] species. They occur throughout the Delta and in tributaries to the Delta, [illegible] Sacramento River as far upstream as Princeton (Department of Water Resources (DWR) and U.S. Bureau of Reclamation (Reclamation) 1994). Sacramento splittail generally [illegible] moving sections of rivers and sloughs. They are usually a freshwater species, [illegible] salinities up to 10-18 ppt. Splittail spawn over flooded vegetation in tidal [illegible] oligohaline habitats of estuarine marshes and sloughs and slow-moving reaches of [illegible]. Peak spawning occurs from March through May, but records of spawning exist for [illegible] to early July (DWR and Reclamation 1994). Although they are at least seasonally [illegible] project area, their relative abundance and habitat requirements have not been [illegible].

Delta

At least 55 species of fish have been recorded in the Delta, 28 of them native ([illegible] Native Fishes Recovery Team 1994). The Delta, which is primarily a freshwater environment, [illegible] as a migratory route for anadromous species, including chinook salmon, steelhead [illegible] bass, American shad and green and white sturgeon. Striped bass and chinook salmon [illegible] also rear in portions of the Delta. Resident fish species of the Delta are similar to [illegible] Sacramento River. Some fishes, however, are primarily found in the Delta (e.g., [illegible] smelt, and longfin smelt) (Delta Native Fishes Recovery Team 1994). Several fish [illegible] the Delta for some portion of their life history are federally or state listed, [illegible] candidates for federal listing, or are considered species of special concern by [illegible] Department of Fish and Game (Table 3).

Seasonal flows through the Delta affect the migration and transport of various life stages of resident and anadromous fishes using the Delta (SFEP 1992). Some Delta fish [illegible] upstream areas and depend on currents to carry their eggs and larvae to downstream [illegible] areas (SWRCB 1995). For anadromous species, flows through the Delta are important for providing upstream attraction flows and facilitating the downstream movement of juveniles.

Winter-run Chinook Salmon. Winter-run chinook salmon occur in the Delta only during their upstream and downstream migrations. Adult winter-run chinook salmon migrate upstream through the Delta during the period mid-December to April. Smolts pass downstream through the Delta along the Sacramento River from January through April.

Delta Smelt. Delta smelt is a federally threatened species. They occur throughout the Delta and have been found as far upstream in the Sacramento River as the mouth of the American River (DWR and Reclamation 1994). Proposed critical habitat corresponds to the legally-defined Delta.

When not spawning, Delta smelt tend to concentrate near the entrapment zone, preferring shallow water habitats if available (DWR and Reclamation 1994). Adults migrate in winter and spring from brackish water to upstream areas to spawn. Spawning occurs in shallow, fresh or slightly brackish water habitats in the Delta. The timing of spawning varies from year to year, but may occur from December to July. Peak spawning generally occurs in April and early May. Spawning has been documented in the Sacramento River, north of Suisun Bay in Montezuma and Suisun Sloughs, and their tributaries. Newly hatched larvae are planktonic and drift downstream near the surface in inshore and channel areas to the upper end of the entrapment zone where they continue to rear and mature (DWR and Reclamation 1994).

Delta outflow is believed important for delta smelt for transporting larvae from upstream spawning areas through the Delta and into rearing habitats in Suisun Bay. In addition, it has been suggested that delta smelt benefit from moderately high Delta outflows, which place the primary nursery area in Suisun Bay (Moyle and Herbold 1989). Stevens and Miller (1983) did not find a statistically significant relationship between delta smelt abundance and Delta outflow. Moyle and Herbold (1989), however, found that lowest delta smelt numbers occurred either in years of low or extremely high outflow, but there was no outflow-abundance relationship at intermediate outflows. These results suggest that if outflow does affect delta smelt abundance, the influence may be small relative to other factors in some or all years (DWR and Reclamation 1994).

Sacramento splittail. Sacramento splittail spawn in portions of the Delta. The quantity of Delta inflow and outflow during the peak spawning period (March through May) may be an important contributor to splittail reproductive success as the abundance of young-of-the-year splittail was found to be significantly positively correlated to Delta outflow (DWR and Reclamation 1994). It has been suggested that young-of-the-year abundance is related to Delta outflow because at very high outflow levels substantially more flooded habitat is available for spawning (DWR and Reclamation 1994). Delta outflow may also facilitate the movement of juveniles into rearing habitats downstream from the Delta (DWR and Reclamation 1994).

1.4 STRUCTURAL AND OPERATIONAL ENVIRONMENT

Two major interbasin water delivery systems, the SWP and the federal CVP, significantly influence the hydrology of the Sacramento River and Delta. Both projects include major reservoirs north of the Delta, and transport water released from storage to areas south and west of the Delta. The Sacramento River and Delta are used by the CVP and SWP to convey water from northern storage facilities to central and southern California.

Other water development facilities also influence flows in the Sacramento River and Delta. However, currently these projects do not have direct responsibility for the control of water quality conditions within the Delta. This analysis focuses on the operational effects to the CVP and SWP as a result of modified flows in the Sacramento River.

1.4.1 Central Valley Project Facilities and Operations

The CVP, operated by Reclamation, is a water storage and transport system designed to capture, store and deliver excess winter flows. The primary purpose of the CVP is to provide water for irrigation throughout the Central Valley. However, the CVP is also operated for other purposes including, urb. water supply, water quality, flood control, power generation, recreation, and fish and wildlife habitat enhancement. The CVP stores and controls waters of the Sacramento, Trinity and American river basins in the northern part of the Central Valley basin for use in the Sacramento River basin and the water deficient San Joaquin Valley (SWRCB 1995). The CVP includes 20 reservoirs, 500 miles of canals, including the Delta-Mendota Canal and other facilities.

Tracy Pumping Plant and San Luis Reservoir

The CVP operates the Tracy Pumping Plant in the south Delta, about five miles north of Tracy. The Tracy Pumping Plant lifts CVP water into the Delta-Mendota Canal for delivery in the San Joaquin Valley and San Felipe Service Area. The water originates from upstream CVP reservoirs and tributaries to the Sacramento River, the San Joaquin River and the Delta. The nominal capacity of the Tracy Pumping Plant is 4,600 cfs. During winter months the plant is constrained to approximately 4,200 cfs due to limited canal capacity in the upper reaches of the Delta-Mendota Canal.

San Luis Reservoir is used by the CVP and SWP to store water during the winter and early spring when the pumping plants can generally export more water than is needed fo. .irect deliveries. This water is used to meet contractual obligations throughout the summer months. Operations of the Tracy and Banks pumping plants (see Section 1.4.2) are clos. y coordinated with each other and with operations of San Luis Reservoir. During the fall, the CVP and SWP transfer water stored north of the Delta from Shasta, Clair Engle, Folsom and Oroville reservoirs to San Luis Reservoir. During the winter, the Tracy and Banks pumping plants export a combination of uncontrolled river flows and upstream reservoir releases for storage in San Luis Reservoir. Beginning in May and continuing through summer, water is released from San Luis Reservoir to satisfy requests from downstream water contractors because irrigation and urban requirements are substantially larger than allowable Delta pumping or plant capacity.

Contra Costa Canal

CVP water is delivered through the Contra Costa Canal (CCC) to the Contra Costa Water District (CCWD) which delivers water throughout eastern Contra Costa County, including a portion of the district in the San Joaquin River region. The CCC originates at Rock Slough. Historically, pumping has ranged from about 50 to 250 cfs, and varies seasonally. Most of the CCWD's demands are met through direct diversions from the Delta through the CCC (SWRCB 1995).

Other CVP Facilities

The major CVP facilities upstream from the Delta are Shasta and Keswick reservoirs, Clair Engle and Lewiston lakes, and Folsom Reservoir. Water from the Trinity River is delivered to the Sacramento River via Clair Engle and Lewiston Lakes. Shasta Dam and Lake Shasta on the Sacramento River control floodwater and store surplus winter runoff. Water from these reservoirs is delivered for irrigation use in the Sacramento and San Joaquin valleys and provides maintenance of navigation flows and conservation of fish in the Sacramento River, protection of the Delta from intrusion of saline ocean water, water for municipal and industrial uses, and generation of hydroelectric energy (Reclamation 1992). Folsom Reservoir is operated to meet similar needs. These reservoirs are a primary source of CVP water delivered through the Delta to water users in southern and central California. Operation of these facilities also contribute to the achievement and maintenance of Delta flow and water quality standards.

1.4.2 State Water Project Facilities and Operations

The main purpose of the SWP is to store and distribute water to urban and agricultural areas in northern California, the San Francisco Bay Area, the San Joaquin Valley, and southern California. Like the CVP, the SWP stores runoff from the Sacramento Valley basin, releases stored water to the Sacramento River and the Delta, and pumps water out of the southern Delta for delivery to water users to the south and west of the Delta. Other project functions include flood control, water quality maintenance, power generation, recreation, and fish and wildlife enhancement. The SWP includes 14 reservoirs, the North Bay and South Bay aqueducts, the California Aqueduct including the East, West, and Coastal branches, and power and pumping plants (SWRCB 1995).

Harvey O. Banks Delta Pumping Plant

Banks Pumping Plant, about 12 miles northwest of Tracy, provides the initial lift of water to the California Aqueduct. Water entering the aqueduc flows to Bethany Reservoir, from which South Bay Aqueduct diverts water. Most of the water continues south by gravity to O'Neill Forebay, where it is pumped into San Luis Reservoir or conveyed to water users in the San Joaquin Valley and southern California. Like the CVP's pumping plant at Tracy, water pumped at Banks Pumping Plant originates from upstream storage facilities and tributaries to the Delta. The maximum diversion rate of Banks Pumping Plant is 10,300 cfs, the nominal capacity of the California Aqueduct. However, most of the year average daily diversions are limited to 6,680 cfs, as set forth by the U.S. Army Corps of Engineers criteria dated October 13, 1981.

North Bay Aqueduct

In 1987, the SWP began pumping from Barker Slough through the North Bay Aqueduct to meet SWP entitlements in Napa and Solano counties. Maximum pumping capacity is about 175 cfs (pipeline capacity). However, daily pumping rates have ranged between zero and 90 cfs with an average annual pumping rate of 35 cfs. Pumping rates could increase by 30 to 50 cfs in dry years when additional water may be needed to help meet new water quality standards in western Suisun Marsh (DWR and Reclamation 1994).

1.4.3 Coordinated Operations Agreement

The CVP and SWP use the Sacramento River and Delta as common conveyance facilities. Reservoir releases and exports from the SWP and CVP pumping plants must be coordinated to ensure that each of the projects retains its portion of the shared water and bears its share of the obligation to protect beneficial uses. The Coordinated Operation Agreement between Reclamation and DWR, which became effective in November 1986, defines the rights and responsibilities of the CVP and SWP regarding Sacramento Valley and Delta water needs and provides a means to measure and account for those responsibilities.

During portions of a year, regulated and unregulated flows to the Delta may be greater than the estimated minimum amount of flow necessary to meet CVP and SWP delivery requirements and Delta water quality objectives. This circumstance is referred to as an "excess condition" in the Delta. During excess conditions, surplus water in excess of flows necessary to maintain water quality standards occurs. A "balanced condition" occurs in the Delta when the CVP and SWP take specific actions to balance reservoir releases with exports and Delta outflow to maintain water quality conditions in the Delta.

1.5 REGULATORY ENVIRONMENT

Flow levels and water quality requirements for the Sacramento River and Delta are regulated under several state and federal policies and plans. These policies and plans include the following.

1) Water Rights Decision 1485 (D-1485) ordered the CVP and SWP to provide certain conditions for water quality protection for agricultural, municipal and industrial, and fish and wildlife uses. Each project is obligated to ensure that water is available for these uses, with the level of protection dependent on hydrologic conditions;

2) Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (currently being finalized);

3) Delta Smelt Biological Opinion; and,

4) Sacramento River Winter-run Chinook Salmon Biological Opinion.

The requirements of these plans with relevance to the proposed water reclamation project are described below.

1.5.1 Decision 1485 and the draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary

During May 1995, the SWRCB issued a revised, proposed water quality control plan for the San Francisco Bay and Sacramento-San Joaquin Delta. This plan will amend the 1978 Delta Plan and 1991 Bay-Delta Plan. The plan provides the component of a comprehensive management package for the protection of the Bay/Delta's beneficial uses that involves salinity (from saltwater intrusion and agricultural drainage) and water project operations (flows and diversions), as well as a dissolved oxygen objective. Relevant flow and water quality requirements under the SWRCB's Draft Water Quality Control Plan are provided in **Appendix B**.

The SWRCB will initiate a water right proceeding following adoption of this water quality control plan. The water right proceeding will address changes in implementation of the water supply-related objectives in this plan through the amendment of water rights under the authority of the SWRCB. The water supply related objectives include those for Delta outflow, river flows, export limits, the Delta Cross Channel gates, salinity control for the protection of municipal and industrial supply, agricultural supply, and fish and wildlife. The water right decision, which is anticipated before June 1998, will allocate responsibility for meeting the objectives among water right holders in the Bay-Delta Estuary watershed and establish terms and conditions in appropriate water rights permits.

During the interim period until the water rights process has been completed, the SWRCB plans to implement the revised water quality control plan, in part, through modification of the water rights permits of the SWP and CVP pertaining to D1485. Additionally, the SWP and CVP will meet other compliance actions that are required by the Biological Opinions for delta smelt and winter-run chinook salmon.

1.5.2 Recent Other Changes to Existing Regul ry Environment

On December 15, 1994, the state and federal governments and numerous urban, agricultural and environmental interests agreed to the implementation of a Bay-Delta protection plan. The plan and the institutional agreements to implement the plan are described in the document titled, "Principles for Agreement on Bay-Delta Standards between the State of California and the Federal Government." The CVP and SWP are presently operating in accordance with those Principles, and the SWRCB is currently implementing this Delta accord through the Draft Water Quality Control Plan and water rights processes described above.

Currently the CVP and SWP are operating under the guidance of Biological Opinions for delta smelt and winter-run chinook salmon. The reasonable and prudent alternatives (RPA) contained in the Biological Opinions for winter-run chinook salmon and delta smelt include operational flow requirements for the Delta which are consistent with the water quality control plan and the Delta accord reached on December 15, 1994.

1.5.3 Applicable Water Quality Standards

The Draft Water Quality Control Plan for the Sacramento River, Delta, and San Joaquin River (Basin Plan) developed by the Central Valley Regional Water Quality Control Board, contains water quality objectives to maintain designated beneficial uses. The designated beneficial uses include municipal, industrial, agricultural, navigational, and recreational uses as well as environmental uses for aquatic life and wildlife habitat. Objectives for biostimulatory substances, colo- floating substances, and oil and grease are provided in narrative form; numerical objec.ives are specified for turbidity, dissolved oxygen, and bacteria (for water bodies subject to recreational use). Numerical objectives are also established for several metals, trace elements, and cyanide in specific bodies of water.

The anticipated Water Quality Control Plan for the San Francisco Bay and Sacramento-San Joaquin Delta also contains water quality standards for the protection of municipal and industrial, and agricultural beneficial uses. The water quality standards of this plan supplement other regional water quality control plans and SWRCB policies for water control relevant to the Delta. Water quality objectives for municipal and industrial, and agricultural beneficial uses focus on sa -v intrusion.

Pursuant to the Basin Plan, the State Water Resources Control Board adopted the California Inland Surface Waters Plan (ISWP) and the California Enclosed Bays and Estuary Plan (EBEP) in 1991. These plans, which were based largely on the U.S. Environmental Protection Agency's (EPA) Ambient Water Quality Criteria for aquatic life (the federal "Gold Book" standards), specified water quality objectives for toxic substances which might interfere with beneficial uses. The ISWP objectives applied to freshwater rivers including the Sacramento River and the EBEP objectives applied to Bay/Delta waters.

In 1994, the ISWP and EBEP were declared invalid in court. The court ruling stemmed from the considerations that economic factors and the California Environmental Quality Act procedures were not taken into account during promulgation of the ISWP. Currently, the State Board is working to rewrite these plans in a consensus type approach with the regulated community.

2.0 ENVIRONMENTAL CONSEQUENCES

2.1 HYDROLOGY

The water demands of the project require an initial 5 mgd (7.7 cfs) and future 10 mgd (15.5 cfs) of treatment capacity. The depletion of the effluent stream, however, may be less than the project design capacity where reclaimed water is used for SRWTP processes (903 acre-feet) and retured to the effluent stream. It is acknowledged that where this occurs, the potential reduction in Sacramento River discharge may be as low as 3.6 mgd (5.6 cfs), and for the expanded project 8.6 mgd (13.3 cfs).

For purposes of this environmental analysis, however, a maximum potential reduction of 10 mgd (15.5 cfs) in Sacramento River discharge will be evaluated as the maximum potential impact to Sacramento River flows and operations to maintain Delta inflow. The Sacramento River flow and Delta inflow conditions for the period 1985 through 1993 will be used as the basis to evaluate the potential flow impacts of the reclamation project. Although Delta water quality and flow standards have changed from the standards which are reflected by the historical record, the historical record provides a reasonable basis for the evaluation of the minimum potential flows that may occur in the future. The current draft Delta standards generally increase the amount of Delta inflow from those levels that historically occurred, and the analysis presented here is regarded as a "worst case" scenario.

2.1.1 Sacramento River

The project would result in a relatively immediate, but insignificant reduction in flows to the Sacramento River. The greatest potential hydrologic impact to Sacramento River flow due to the reclamation project would likely occur during July, the peak month of reclaimed water use. Peak usage during July (resulting in a potential reduction in effluent discharge to the Sacramento River) is estimated to be 10 mgd (15.5 cfs). Table 4 compares the potential reduction in Sacramento River discharge to the historical record of Sacramento River flow for the months of June, July and August.

Table 4*. Potential peak reduction in flow (cfs) due to the project relative to historical (1985 through 1993) maximum and minimum average daily flow (cfs) in the Sacramento River and Delta inflow for June, July, and August.

	Potential Peak Month Reduction in Flow	Historical Average Daily Flow June	Historical Average Daily Flow July	Historical Average Daily Flow August
Maximum Sacramento River Flow	15.5	30,468	19,857	21,077
Minimum Sacramento River Flow	15.5	8,503	8,310	8,717
Maximum Total Delta Inflow	15.5	34,468	22,671	24,167
Minimum Total Delta Inflow	15.5	9,260	8,994	9,416

* Historical average daily flows from DWR DAYFLOW.

As shown in Table 4, the maximum potential effluent discharge reduction is insignificant relative to the historic range of average daily Sacramento River flows accounting for about 0.05 percent and 0.19 percent of the maximum and minimum of these average daily flows, respectively. During months other than the peak month of reclaimed water use, the proportionate impact to Sacramento River flow would be even less.

The actual impact to Sacramento River flows may even be less than 15.5 cfs. The consumptive uses to be served with reclaimed water would otherwise be served with (1) surface water diversions or (2) groundwater which would be substantially replenished with percolation of streamflow. The water demand at Bart Cavanaugh Golf Course will be served with either treated water from the City of Sacramento or non-potable groundwater if reclaimed water is not utilized. Similarly, the consumptive water demands at the SRWTP and within the SCWA Zone 40 service area will be met with a combination of surface (currently assumed to be available through the water supply contracts with Reclamation as authorized by Public Law 101-514) and groundwater supplies, if reclaimed water is not utilized.

Meeting the identified reclaimed water use demand by surface supplies would, in effect, deplete the Sacramento River by the same amount that will be depleted from the effluent discharge to the Sacramento River. If met by groundwater, the result would be the same although the additional depletion of the stream for groundwater aquifer stabilization will not be immediate.

2.1.2 Delta

The Sacramento River is the main contributor to Delta inflows and, therefore, reductions in Sacramento River flows could potentially affect Delta inflow. The project would result in a minute reduction in Sacramento River flows downstream from the project. As discussed in the previous section, the maximum potential reduction in discharge to the Sacramento River would be insignificant relative to average daily flows. This potential reduction in Sacramento River flows would likewise be insignificant relative to Delta inflows (Table 4) accounting for about 0.04 percent and 0.17 percent of the maximum and minimum average daily flows, respectively.

Arguably, the project would not affect the overall water balance within the region or the Delta. On first inspection, the project appears to deplete the amount of water discharged to the Sacramento River. Given that at times flow to the Delta is maintained by the CVP and SWP (balanced conditions), this depletion could impact CVP/SWP operations, and any entities that may in the future be responsible for inflow to the Delta. However, from a perspective that the water supplies that will be used to serve the project's water demands will otherwise be provided from regional water supplies that are hydraulically connected to the Delta, no net change will occur to the long-term amount of water that would otherwise arrive at the Delta.

During periods when the Delta is in excess conditions, the depletion of the river discharge would reduce the amount of excess flow existing in the Delta. Again, the amount of river flow reduction is insignificant in comparison to Delta outflows that occur during excess conditions.

2.1.3 CVP and SWP Operations

No change to any operation of the CVP or SWP is expected due to the reclamation project. River operations established by the two projects is normally measured in terms of hundreds of cfs of flow, not in the tens of units. Further, the anticipated maximum potential effluent discharge reduction is well within the normal daily and annual fluctuation of discharge that already occurs. Thus, the CVP and SWP will likely not modify their operations in response to the reclamation project. As explained previously, there will be no long-term volumetric loss in water supply to other entities due to the hydraulic connection between surface and groundwater supplies in the region.

2.2 WATER QUALITY

The SRWTP discharge is a combination of treated domestic wastewater, industrial wastewater, and combined wastewater and urban runoff. The SRWTP monitors the effluent and receiving water at an upstream location on the Sacramento River to measure and ensure compliance with its National Pollutant Discharge Elimination System (NPDES) effluent limitations, and the effectiveness of its industrial pretreatment program. The NPDES effluent limitations (for biochemical oxygen demand, total suspended solids, settleable matter, residual chlorine, total coliforms, oil and grease, total chlorinated phenols, and pH) are established at levels to protect the eficial uses in the Sacramento River from adverse impacts of the SRWTP discharge. Mo ring f he industrial pretreatment program is limited to priority pollutant metals and organic compounds. The SRWTP consistently meets its NPDES effluent limitations. The SRWTP has also conducted or participated in several studies which have focused principally on metals and whether the metals in the SRWTP discharge have affected the Sacramento River with respect to exceedances of former ISWP objectives.

2.2.1 Sacramento River

Several previous studies have evaluated the effect of effluent discharge from the SRWTP on water quality in the Sacramento River. Three of the four studies focused on an evaluation of the effects of metals in the effluent discharge. The fourth study focused on contaminants of concern to drinking water. These studies provide background information and a frame of reference for evaluating potential impacts to water quality in the Sacramento River resulting from reduced effluent discharge under the proposed project. A summary of these studies is provided below followed by an evaluation of the potential effects of the proposed wastewater reclamation project on Sacramento River water quality.

Studies of the Effect of the Entire Discharge on Sacramento River Water Quality

Wet Weather Local Effects Monitoring Program (WWLEMP). The WWLEMP study evaluated the combined effects of the Sacramento area's major discharges to the Sacramento River (Sacramento Regional County Sanitation District (SRCSD) and the City of Sacramento, 1993). The major discharges are urban runoff, discharges from the combined sewer system in downtown Sacramento, and the effluent discharge from the SRWTP. Water quality samples were collected from all three discharges and along the length of the Sacramento River from the I-5 Bridge (upstream from the Sacramento urban area) to Cliff's Marina (downstream from the SRWTP). Samples collected during two storm events in the 1991/1992 rain season were analyzed for conventional constituents, metals, organic compounds, and bacteria.

The evaluation of the data focused on the metals, and the other constituents were evaluated to a lesser degree. The evaluation consisted of a comparison to ISWP objectives and a visual examination of the data displayed in three dimensional graphs. Moreover, to determine the individual contribution of the SRWTP discharge, the dilution ratio of discharge to river flow was examined.

The study concluded that the upstream load of constituents greatly exceeds the combined impacts of the three major discharges studied. No increases in metals were observed temporally (during the course of the storm) or spatially (from upstream to downstream). Discharge from the SRWTP was not found to be a major contributor to water quality constituents in the Sacramento River based on the evaluation of discharge ratios. A dilution ratio of 14:1 is required for the SRWTP to discharge effluent to the river, however the SRWTP can, in extremely rare circumstances, discharge at dilution ratios as low as 9:1 provided specific conditions are met. Effluent is diverted into emergency storage basins when discharge to the river is not permitted. The individual analysis of the SRWTP effluent impact reasoned that the required 14:1 dilution ratio is sufficient to preclude the SRWTP from having a measurable impact on the river unless the effluent concentrations were many times higher than the river concentrations, which was not the case for the metals evaluated. During the two storm events, the dilution ratio averaged 31:1, well above the 14:1 threshold.

Effluent and Receiving Water Quality Assessment (ERWCA). The ERWQA study was conducted to assess whether the SRWTP effluent discharge contributed to exceedances of former ISWP water quality objectives for metals in the Sacramento River (Larry Walker Associates 1993). Water samples were collected from the discharge and from the Sacramento River at locations upstream and downstream of the discharge during 48 sampling events from September, 1991 through August, 1993. The samples were analyzed for total suspended solids, [illegible], and trace metals.

Monte Carlo simulation methods were used to estimate the probability of exceedances of the former ISWP water quality objectives for metals in the river, and to estimate the impact of the SRWTP effluent on metal concentrations in the river. The analysis concluded that the probability of the river exceeding the former ISWP objectives was less than 1 percent except for chromium (3.7 percent), copper (16 percent), lead (12 percent), and mercury (62 percent). Of these four metals, the probability that the SRWTP effluent was responsible for causing or contributing to any exceedance was estimated at 0.01 percent for chromium, 2.7 percent for copper, 2.[illegible] percent for lead, and 50 percent for mercury. Subsequent continued investigation of mercury [illegible] concern that the sampling and analytical methods contaminated samples and overestimated the amount of mercury present in the SRWTP discharge.

Ambient Monitoring Program (AMP). The AMP is conducted under the auspices of the Coordinated Monitoring Program (CMP) which is a program jointly funded by the [illegible], the SCWA, and the City of Sacramento, to coordinate water quality monitoring activities in the Sacramento area, characterize long term ambient water quality through implementation of the AMP, and study and advise the agencies on regulatory issues pertaining to their discharges. Through the AMP, water samples are collected on the Sacramento River at Alamar Marina (upstream from the Sacramento urban area) and River Mile 44 (downstream from the SRWTP). Analyses are conducted for twelve trace metals and nine conventional constituents.

The data evaluation conducted for the CMP 1993 Annual Report had several objectives (Larry Walker Associates and Brown and Caldwell 1995). The comparison of water quality at locations upstream (Alamar Marina) and downstream (River Mile 44) from the SRWTP [illegible] to addressing potential impacts of the proposed wastewater reclamation project. Levels of [illegible], pH, temperature, dissolved oxygen, electrical conductivity, total suspended solids and trace metals were compared between upstream and downstream sites. Concentrations of dissolved copper and total recoverable zinc were higher at River Mile 44 than at Alamar Marina. Concentrations of total and dissolved mercury, temperature, and total suspended solids [illegible] from Alamar Marina to River Mile 44. Although these changes were statistically significant, they were small in magnitude.

Study of Drinking Water Quality in Delta Tributaries. The study of Drinking Water Quality in Delta Tributaries examined the drinking water quality of the principal Delta tributaries (the Sacramento and San Joaquin rivers) to determine if control of certain contaminant sources would result in improvements in drinking water quality in the rivers and the Delta (Brown and Caldwell 1995). The SRWTP was one of the contaminant sources examined in the Sacramento River watershed.

The evaluation of the contaminant sources used existing water quality and flow data from the contaminant sources and the rivers to estimate the proportion of the river load contributed by each contaminant source. The constituents evaluated were those of particular concern to drinking water quality, rather than aquatic life or wildlife habitat. For the SRWTP, the evaluation included load estimates of organic carbon, total dissolved solids, ammonia, nitrate plus nitrite, and total phosphorus.

The study results indicated that the SRWTP contributes approximately two to nine percent of the total organic carbon load in the Sacramento River at Greene's Landing, and two to eight percent of the total dissolved solids load. The proportional contribution of nutrients is higher with an estimated contribution of 43 to 53 percent of the ammonia, 10 to 29 percent of the nitrate plus nitrite, and 41 to 61 percent of the total phosphorus. The study concluded that although the SRWTP contributes a significant proportion of the ammonia and phosphorus in the river, removing the discharge entirely would not substantially improve the drinking water quality of the river because nutrient concentrations are relatively low.

Effect of the Discharge Reduction

As stated previously, the SRWTP effluent discharges to the Sacramento River have averaged 140 mgd (215 cfs) over the last three years. The largest percent reduction in the effluent discharge volume from the wastewater reclamation project will occur during the summer months when the demand for the reclaimed water will be highest. Reduction in the effluent discharge due to reclaimed water use during the months of June, July, and August may reach 15.5 cfs. The summer season is also the time period when river flows approach their lowest level, ranging from about 8,310 cfs to 30,468 cfs (1985 to 1993 minimum and maximum average daily flows for June, July, and August). At 15.5 cfs, the reduction in the effluent discharge due to the reclaimed wastewater project in June, July, and August would be a maximum of 0.19 percent of the daily flow in the Sacramento River. The small reduction would only affect water quality if the difference in concentration between the effluent and the river water quality was extraordinarily high, which is not the case (see Table 1-1 in Appendix A). Therefore, based on the percent of the flow reduction in the river, and the water quality of the effluent and the river, no measurable change in water quality of the river would be expected to occur as a result of the reduction in the effluent discharge. The above-referenced studies support this conclusion, in that few measurable changes in water quality in the river have been evidenced due to discharge from the SRWTP.

2.2.2 Delta

The above analysis and reasoning applies to the Delta as well. Thus, there would be no expected change in water quality in the Delta due to a reduction in the SRWTP discharge, and therefore, no expected environmental consequence resulting from a water quality change. At 15.5 cfs, the reduction in volume of the total Delta inflow from the reclaimed wastewater project in the months of June, July, and August would be a maximum of 0.17 percent. This is based on an average daily total Delta inflow ranging from 8,994 cfs to 34,469 cfs as measured during these months for the period 1985 to 1993. Water quality in the Delta generally shows higher levels of constituent concentrations than in the Sacramento Piver. These higher concentrations reflect the input of San Joaquin River water which is high in dissolved salts and trace elements, Delta agricultural discha:ges which are high in organic matter, and seawater intrusion. Delta concentrations, however, are not sufficiently ' ver than the SRWTP effluent concentrations to result in a change in receiving water quality cc entrations when the reclamation project reduces the SRWTP discharge.

2.3 FISHERIES RESOURCES

2.3.1 Sacramento River

Fisheries resources in the Sacramento River could be adversely affected by a significant reduction in flow levels which reduce the . nount of physical habitat ava. able. Anadromous species could also be adversely affected by flow reductions during their upstream and downstream migrations.

The reclaimed water project could reduce flow levels in the Sacramento River below the SRWTP by up to 15.5 cfs. Considering recent historic flows (1985-1993), the project could reduce flows in the Sacra: ento River, downstream of the SRWTP, by a maximum of about 0.19 percent. This small change would not substantially change the e ent of physical habitat available to fish in the Sacramento River. Also, a 15.5 cfs re. ction in flows would not perceptibly alter in-river migratory cues used by adult and juvenile anadromous fishes. Therefore, fisheries resources in the Sacrar nto River would not be adversely affected by the reclamation project.

2.3.2 Delta

Fisheries resources in the Delta could be adversely affected by a significant reduction in the amount of Delta inflow. The quantity of Delta inflow and outflow is believed to be important for Delta fisheries resources for providing transport flows through the Delta and spawning and rearing habitat.

The reclaimed water project could reduce Delta inflow levels by up to 15.5 cfs. Considering recent historic inflows (1985-1993), the project could reduce Delta inflows by a maximum of about 0.17 percent. This small reduction would not substantially affect transport flows within the Delta nor would the extent of physical habitat change substantially. In addition, no change is expected to CVP and SWP operations, which must be operated in compliance with flow and operational requirements established to benefit fisheries resources in the Delta. Therefore, fisheries resources in the Delta would not be adversely affected by the reclamation project.

2.3.3 Cumulative Impacts

Potential cumulative impacts resulting from the proposed project are limited to potential effects on operations of the CVP and SWP. The anticipated Water Quality Control Plan for the Sacramento-San Joaquin Delta Estuary establishes flow standards for the Sacramento River at Rio Vista and for total Delta outflow. Because the reduction in flows to the Sacramento River and Delta from the proposed project are so small, the proposed project should not require modification of actual CVP and SWP reservoir operations. Theoretically, additional releases from upstream reservoirs to meet downstream water quality standards could result in lower carry-over storages. However, as discussed in the hydrology impacts section of this report, project releases are measured on a much larger scale than the expected reduction in Sacramento River flows resulting from the proposed project. In summary, the magnitude of the potential reduction in river flows is within the range of "background" variation experienced in the Sacramento River and Delta and would not require additional accounting or releases from upstream reservoirs to satisfy downstream objectives.

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APPENDIX A

Measurements of Water Quality Parameters in the Sacramento River at Freeport Marina

From: Larry Walker and Associates. 1994. NPDES effluent and receiving water quality study and NPDES effluent and receiving water quality assessment: Feasibility Study and Final Draft Report. Prepared by Larry Walker and Associates for the Sacramento Regional County Sanitation District. April 1, 1994.

Table 1-1. Constituent Screening - Water Quality Objectives for the Protection of Aquatic Life

All values in µg/l		R-1 Freeport Marina				SRWTP Effluent			
Constituent	Objective (1)	Max	Min	Number of Samples	Number Detected	Max (2)	Min	Number of Samples	Number Detected
Arsenic, dissolved	181	1.5	<0.56	48	22	3.2	<0.81	48	39
Arsenic, total recoverable	190	2.7	<0.56	48	37	3.2	<0.81	48	39
Cadmium, dissolved	0.59	<0.12	<0.12	48	0	1.4	<0.13	48	11
Cadmium, total recoverable	0.7	0.7	<0.12	48	9	1.4	<0.13	48	11
Chlordane	0.0043	<0.05	<0.05	9	0	<2.5	<0.05	10	0
Chromium (III) (3)	119	14	<0.7	47	37	7.6	<0.71	48	47
Chromium (VI) (3)	11	14	<0.7	47	37	7.6	<0.71	48	47
Copper, dissolved	5.9	3.1	<0.4	47	43	9.2	1.8	48	48
Copper, total recoverable	7	14.5	0.42	48	48	9.2	1.8	48	48
Cyanide	5.2	3	<3	13	1	<5	<3	12	0
DDT	0.001	<0.385	<0.05	9	0	<2.5	<0.05	10	0
Dieldrin	0.0019	<0.14	<0.05	9	0	<2.5	<0.05	10	0
Endosulfan	0.056	<0.27	<0.07	9	0	<3.5	<0.07	10	0
Endrin	0.0023	<0.175	<0.06	9	0	<3	<0.06	10	0
Heptachlor	0.0038	<0.28	<0.02	9	0	<1	<0.02	10	0
gamma-BHC (Lindane)	0.08	<0.2	<0.01	9	0	0.11	<0.01	10	4
Lead, dissolved	0.36	1.3	<0.2	48	4	4.75	<0.2	46	29
Lead, total recoverable	1.45	4.9	<0.2	48	15	4.75	<0.2	46	29
Mercury, total	2.4	0.19	<0.01	47	22	0.31	<0.005	46	30
Nickel, dissolved	79.6	8.9	<1.7	48	8	23	<1.7	47	45
Nickel, total recoverable	93.6	19.5	<1.7	47	34	23	<1.7	47	45
PCBs	0.014	<1.4	<1.4	9	0	<70	<1.4	10	0
Pentachlorophenol	8.6	<10	<4	12	0	<10	<4	13	0
Selenium, total	5	<0.87	<0.87	48	0	16	<1.1	48	1
Silver, dissolved	1.2	0.05	<0.012	48	1	0.83	<0.11	48	45
Silver, total recoverable	1.4	0.36	<0.012	47	6	0.83	<0.11	48	45
Toxaphene	0.0002	<0.5	<0.5	9	0	<25	<0.5	10	0
Tributyltin	0.02					0.004	0.004	1	1
Zinc, dissolved	53.5	7.5	<1.5	46	27	71	20	48	48
Zinc, total recoverable	62.9	30	<1.5	48	42	71	20	48	48

Table continues on following page.

Notes:

(1) The median hardness of the Sacramento River between 9/92 and 8/93 (54 mg/L as CaCO3) was used to calculate hardness-based objectives. Dissolved objectives were calculated from total recoverable objectives using recommended percent dissolved values used in toxicity tests (Prothro, 1993).

(2) Assumes total-dissolved metals translator equals 1.

(3) Measurements are for total recoverable chromium.

Table 1-1. Constituent Screening - Water Quality Objectives for the Protection of Aquatic Life

All values in µg/l		Worst Case Analysis				
Constituent	Objective (1)	Max in River	Max in Effluent (2)	Max Down-stream	Potential Exceedance?	Notes
Arsenic, dissolved	181	1.5	3.2	1.6	NO	
Arsenic, total recoverable	190	2.7	3.2	2.7	NO	
Cadmium, dissolved	0.59	<0.12	1.4	< 0.2[illegible]	NO	
Cadmium, total recoverable	0.7	0.7	1.4	0.75	YES	
Chlordane	0.0043	<0.05	<2.5	< 0.21	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Chromium (III) (3)	119	14	7.6	13.6	NO	
Chromium (VI) (3)	11	14	7.6	13.6	NO	Maximum effluent concentration is below objective.
Copper, dissolved	5.9	3.1	9.2	3.5	NO	
Copper, total recoverable	7	14.5	9.2	14.2	YES	
Cyanide	5.2	3	<5	<3.1	NO	
DDT	0.001	<0.385	<2.5	<0.52	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Dieldrin	0.0019	<0.14	<2.5	< 0.29	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Endosulfan	0.056	<0.27	<3.5	<0.48	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Endrin	0.0023	<0.175	<3	<0.36	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Heptachlor	0.0038	<0.28	<1	<0.33	UNKNOWN	Not detected in river or effluent. (Objective < DL)
gamma-BHC (Lindane)	0.08	<0.2	0.11	<0.194	UNKNOWN	Maximum effluent concentration exceeds objective.
Lead, dissolved	0.36	1.3	4.75	1.5	YES	
Lead, total recoverable	1.45	4.9	4.75	4.9	YES	
Mercury, total	2.4	0.19	0.31	0.20	NO	
Nickel, dissolved	79.6	8.9	23	9.8	NO	
Nickel, total recoverable	93.6	19.5	23	19.7	NO	
PCBs	0.014	<1.4	<70	<5.9	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Pentachlorophenol	8.6	<10	<10	<10	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Selenium, total	5	<0.87	16	<1.9	NO	
Silver, dissolved	1.2	0.05	0.83	0.1	NO	
Silver, total recoverable	1.4	0.36	0.83	0.4	NO	
Toxaphene	0.0002	<0.5	<25	<2.1	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Tributyltin	0.02		0.004		NO	Maximum effluent concentration is below objective.
Zinc, dissolved	53.5	7.5	71	11.7	NO	
Zinc, total recoverable	62.9	30	71	32.7	NO	

Notes:

(1) The median hardness of the Sacramento River between 9/92 and 8/93 (54 mg/L as CaCO3) was used to calculate hardness-based objectives. Dissolved objectives were calculated from total recoverable objectives using recommended percent dissolved values used in toxicity tests (Prothro, 1993).

(2) Assumes total-dissolved metals translator equals 1.

(3) Measurements are for total recoverable chromium.

Table 1-2a. Constituent Screening - Water Quality Objectives for Protection of Human Health - Noncarcinogens

All values in µg/l		R-1 Freeport Marina				SRWTP Effluent			
Constituent	Objective	Max	Min	Number of Samples	Number Detected	Max	Min	Number of Samples	Number Detected.
Acrolein	320	<10	<10	1	0	<10	<10	1	0
Antimony (1)	14	<5	<1	13	0	<5	<1	7	0
Bis(2-chloroisopropyl)ether	1400	<10	<10	9	0	<10	<10	9	0
Cadmium (1)	10	0.7	<0.12	48	9	1.4	<0.13	48	11
Chlorobenzene	20	<0.5	<0.5	13	0	<0.5	<0.5	14	0
4-Chloro-3-methylphenol	3000	<10	<4	12	0	<10	<4	13	0
Chromium (III) (1)	33000	14	<0.7	47	37	7.6	<0.71	48	47
Chromium (VI) (1)	50	14	<0.7	47	37	7.6	<0.71	48	47
Copper (1)	1000	14.5	0.42	48	48	9.2	1.8	48	48
Cyanide (2)	700	3	<3	13	1	<5	<3	12	0
Di-n-butyl phthalate	2700	<10	<10	9	0	<10	<10	9	0
1,2-Dichlorobenzene	2700	<0.5	<0.5	13	0	<0.5	<0.5	14	0
1,3-Dichlorobenzene	400	<0.5	<0.5	13	0	1.6	<0.5	14	1
2,4-Dichlorophenol	0.3	<10	<4	12	0	<10	<4	13	0
Diethyl phthalate	23000	<10	<10	9	0	<10	<10	9	0
2,4-Dimethylphenol	400	<10	<4	12	0	<10	<4	13	0
Dimethyl phthalate	310000	<10	<10	9	0	<10	<10	9	0
4,6-Dinitro-2-methylphenol	13	<10	<4	12	0	<10	<4	13	0
2,4-Dinitrophenol	70	<10	<4	12	0	<10	<4	13	0
Endosulfan	0.9	<0.27	<0.07	9	0	<3.5	<0.07	10	0
Endrin	0.8	<0.175	<0.06	9	0	<3	<0.06	10	0
Ethylbenzene	680	<0.5	<0.5	8	0	<0.5	<0.5	9	0
Fluoranthene	42	<10	<0.9	12	0	<10	<0.25	13	0
Hexachlorocyclopentadiene	1	<5	<0.4	9	0	<10	<0.4	10	0
Lead (1)	50	4.9	<0.2	48	15	4.75	<0.2	46	29
Mercury (2)	0.012	0.19	<0.01	47	22	0.31	<0.005	46	30
Nickel (1)	600	19.5	<1.7	47	34	23	<1.7	47	45
Nitrobenzene	17	<10	<10	9	0	<10	<10	9	0
Phenol	300	<10	<4	12	0	<10	<4	13	0
Selenium (2)	10	<0.87	<0.87	48	0	16	<1.1	48	1
Silver (1)	50	0.36	<0.012	47	6	0.83	<0.11	48	45
Thallium (1)	1.7	1.3	<1	16	1	<1	<1	7	0
Toluene	10000	<0.5	<0.5	8	0	2.6	<0.5	9	3
1,1,1-Trichloroethane	200	<0.5	<0.5	13	0	2.3	<0.5	14	6
Zinc (1)	5000	30	<1.5	48	42	71	20	48	48

Table continues on following page.

Notes:
(1) Measurements are for total recoverable.
(2) Measurements are for total.

Table 1-2a. Constituent Screening - Water Quality Objectives for Protection of Human Health - Noncarcinogens

All values in µg/l		Worst Case Analysis				
Constituent	Objective	Max in River	Max in Effluent	Max Down-stream	Potential Exceedance?	Notes
Acrolein	320	<10	<10	<10	NO	
Antimony (1)	14	<5	<5	<5	NO	
Bis(2-chloroisopropyl)ether	1400	<10	<10	<10	NO	
Cadmium (1)	10	0.7	1.4	0.75	NO	
Chlorobenzene	20	<0.5	<0.5	< 0.5	NO	
4-Chloro-3-methylphenol	3000	<10	<10	<10	NO	
Chromium (III) (1)	33000	14	7.6	13.6	NO	
Chromium (VI) (1)	50	14	7.6	13.6	NO	
Copper (1)	1000	14.5	9.2	14.2	NO	
Cyanide (2)	700	3	<5	< 3.1	NO	
Di-n-butyl phthalate	2700	<10	<10	<10	NO	
1,2-Dichlorobenzene	2700	<0.5	<0.5	<0.50	NO	
1,3-Dichlorobenzene	400	<0.5	1.6	<0.57	NO	
2,4-Dichlorophenol	0.3	<10	<10	<10	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Diethyl phthalate	23000	<10	<10	<10	NO	
2,4-Dimethylphenol	400	<10	<10	<10	NO	
Dimethyl phthalate	310000	<10	<10	<10	NO	
4,6-Dinitro-2-methylphenol	13	<10	<10	<10	NO	
2,4-Dinitrophenol	70	<10	<10	<10	NO	
Endosulfan	0.9	<0.27	<3.5	<0.5	NO	
Endrin	0.8	<0.175	<3	<0.4	NO	
Ethylbenzene	680	<0.5	<0.5	<0.5	NO	
Fluoranthene	42	<10	<10	<10	NO	
Hexachlorocyclopentadiene	1	<5	<10	<5.3	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Lead (1)	50	4.9	4.75	4.9	NO	
Mercury (2)	0.012	0.19	0.31	0.2	YES	
Nickel (1)	600	19.5	23	19.7	NO	
Nitrobenzene	17	<10	<10	<10	NO	
Phenol	300	<10	<10	<10	NO	
Selenium (2)	10	<0.87	16	<1.9	NO	
Silver (1)	50	0.36	0.83	0.4	NO	
Thallium (1)	1.7	1.3	<1	<1.3	NO	
Toluene	10000	<0.5	2.6	<0.6	NO	
1,1,1-Trichloroethane	200	<0.5	2.3	<0.6	NO	
Zinc (1)	5000	30	71	32.7	NO	

Notes:
(1) Measurements are for total recoverable.
(2) Measurements are for total.

Table 1-2b. Constituent Screening - Water Quality Objectives for Protection of Human Health - Carcinogens

All values in µg/l unless noted otherwise		R-1 Freeport Marina				SRWTP Effluent			
Constituent	Objective	Max	Min	Number of Samples	Number Detected	Max	Min	Number of Samples	Number Detected
Acrylonitrile	0.032	<10	<10	1	0	<10	<10	1	0
Aldrin	0.00013	<0.28	<0.01	9	0	0.18	<0.01	10	1
Arsenic (1)	5	2.7	<0.56	48	37	3.2	<0.81	48	39
Asbestos (millions of fibers/L)	7			0		<0.19	<0.19	1	0
Benzene	0.34	<0.5	<0.5	8	0	<0.5	<0.5	9	0
Benzidine	0.0001	<100	<5	9	0	<100	<5	9	0
Beryllium (1)	0.008	<1	<1	6	0	<10	<1	7	0
Bis(2-chloroethyl)ether	0.014	<10	<10	9	0	<10	<10	9	0
Bis(2-ethylhexyl)phthalate	2.9	48	<10	9	1	39	<10	9	3
Carbon Tetrachloride	0.22	<0.5	<0.5	13	0	<0.5	<0.5	14	0
Chlordane	0.00008	<0.05	<0.05	9	0	<2.5	<0.05	10	0
Chloroform	100	22	<0.5	13	1	24	<0.5	14	13
DDT	0.00059	<0.385	<0.05	9	0	<2.5	<0.05	10	0
1,4-Dichlorobenzene	9.9	22	<0.5	13	1	3.9	<0.5	14	13
3,3'-Dichlorobenzidine	0.014	<100	<5	9	0	<100	<5	9	0
1,2-Dichloroethane	0.5	<0.5	<0.5	13	0	<0.5	<0.5	14	0
1,1-Dichloroethylene	0.057	<0.2	<0.2	13	0	<0.5	<0.2	14	0
Dichloromethane	4.6	3	<1	13	4	12	<1	14	12
1,3-Dichloropropene	0.19	<1	<1	13	0	<1	<1	14	0
Dieldrin	0.00014	<0.14	<0.05	9	0	<2.5	<0.05	10	0
2,4-Dinitrotoluene	0.11	<10	<10	9	0	<10	<10	9	0
1,2-Diphenylhydrazine	0.04	<10	<10	6	0	<10	<10	7	0
Halomethanes	100	<4.1	<2	13	1	<7.35	<2.5	14	12
Heptachlor	0.00016	<0.28	<0.02	9	0	<1	<0.02	10	0
Heptachlor epoxide	0.00007	<0.18	<0.1	9	0	<5	<0.1	10	0
Hexachlorobenzene	0.00066	<5	<0.05	9	0	<10	<0.05	10	0
Hexachlorobutadiene	0.44	<2	<0.3	9	0	0.58	<0.3	10	1
alpha-BHC	0.0039	<0.22	<0.01	9	0	<0.5	<0.01	10	0
beta-BHC	0.014	<0.18	<0.05	9	0	0.1	<0.05	10	1
gamma-BHC (Lindane)	0.019	<0.2	<0.01	9	0	0.11	<0.01	10	4
Hexachloroethane	1.9	<10	<0.03	9	0	<10	<0.03	10	0
Isophorone	8.6	<10	<10	9	0	<10	<10	9	0
N-Nitrosodimethylamine	0.0022	<10	<10	9	0	<10	<10	9	0
N-Nitrosodiphenylamine	2.7	<10	<10	9	0	<10	<10	9	0
PAHs	0.0028	<130	<6.3	12	0	<130	<4.59	13	3
PCBs	0.00007	<1.4	<1.4	9	0	<70	<1.4	10	0
Pentachlorophenol	0.28	<10	<4	12	0	<10	<4	13	0
TCDD equivalents (pg/L)	0.013			0		<3.82	<3.82	1	0
1,1,2,2-Tetrachloroethane	0.17	<0.5	<0.5	13	0	<0.5	<0.5	14	0
Tetrachloroethylene	0.62	<0.5	<0.5	13	0	11	<0.5	14	12
Toxaphene	0.00067	<0.5	<0.5	9	0	<25	<0.5	10	0
1,1,2-Trichloroethane	0.6	<0.5	<0.5	13	0	<0.5	<0.5	14	0
Trichloroethylene	3.1	<0.5	<0.5	13	0	0.62	<0.5	14	1
2,4,6-Trichlorophenol	0.34	<10	<4	12	0	<10	<4	13	0
Vinyl Chloride	0.13	<1	<1	13	0	<1	<1	14	0

Table continues on following page.

Notes:

(1) Measurements are for total recoverable.

APPENDIX B

Water Quality Objectives for Municipal and Industrial, Agricultural, and Fish and Wildlife Beneficial Uses

From: State Water Resources Control Board. 1995. Draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. May 1995.

TABLE 3	WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENEFICIAL USES

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DISSOLVED OXYGEN						
San Joaquin River between Turner Cut & Stockton	*(RSAN050-RSAN061)*	*Dissolved Oxygen (DO)*	*Minimum DO (mg/l)*	*All*	*Sep-Nov*	*6.0 [4]*
SALMON PROTECTION						
			narrative	*Water quality conditions shall be maintained, together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law.*		
SAN JOAQUIN RIVER SALINITY						
San Joaquin River at and between Jersey Point and Prisoners Point [5]	*D-15 (RSAN018) -and- D-29 (RSAN038)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*	*W,AN,BN,D*	*Apr-May*	*0.44 [6]*
EASTERN SUISUN MARSH SALINITY						
Sacramento River at Collinsville -and- Montezuma Slough at National Steel -and- Montezuma Slough near Beldon Landing	*C-2 (RSAC081) S-64 (SLMZU25) S-49 (SLMZU11)*	*Electrical Conductivity (EC)*	*Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location.*	*All*	*Oct* *Nov-Dec* *Jan* *Feb-Mar* *Apr-May*	*19.0* *15.5* *12.5* *8.0* *11.0*
WESTERN SUISUN MARSH SALINITY						
Chadbourne Slough at Chadbourne Road -and- Suisun Slough, 300 feet south of Volanti Slough -and- Cordelia Slough at Cordelia Goodyear Ditch -and- Goodyear Slough at Morrow Island Clubhouse -and- Water supply intakes for waterfowl management areas on Van Sickle and Chipps islands	*S-21 [7] (SLCBN1) S-42 [7] (SLSUS12) S-97 [8] (SLCRD06) S-35 [8] (SLGYR03) No locations specified*	*Electrical Conductivity (EC)*	*Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location.*	*All but deficiency period*	*Oct* *Nov* *Dec* *Jan* *Feb-Mar* *Apr-May*	*19.0* *16.5* *15.5* *12.5* *8.0* *11.0*
				Deficiency period [9]	*Oct* *Nov* *Dec-Mar* *Apr* *May*	*19.0* *16.5* *15.6* *14.0* *12.5*
BRACKISH TIDAL MARSHES OF SUISUN BAY						
			narrative			*[10]*

TABLE 3 WATER QUALITY OBJECTIVES FO' FISH AND WILDLIFE BENEFICIAL USES (continued)

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DELTA OUTFLOW						
		Net Delta Outflow Index (NDOI) [11]	*Minimum monthly average [12] NDOI (cfs)*	*All*	*Jan*	*4,500 [13]*
				All	*Feb-Jun*	*[14]*
				W,AN	*Jul*	*8,000*
				BN		*6,500*
				D		*5,000*
				C		*4,000*
				W,AN,BN	*Aug*	*4,000*
				D		*3,500*
				C		*3,000*
				All	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nov-Dec*	*4,500*
				C		*3,500*
RIVER FLOWS						
Sacramento River at Rio Vista	*D-24 (RSAC101)*	*Flow rate*	*Minimum monthly average [15] flow rate (cfs)*	*All*	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nov-Dec*	*4,500*
				C		*3,500*
San Joaquin River at Airport Way Bridge, Vernalis	*C-10 (RSAN112)*	*Flow rate*	*Minimum monthly average [16] flow rate (cfs) [17]*	*W,AN*	*Feb-Apr 14 and May 16-Jun*	*2,130 or 3,420*
				BN,D		*1,420 or 2,280*
				C		*710 or 1,140*
				W	*Apr 15-May 15 [18]*	*7,330 or 8,620*
				AN		*5,730 or 7,020*
				BN		*4,620 or 5,480*
				D		*4,020 or 4,880*
				C		*3,110 or 3,540*
				All	*Oct*	*1,000 [19]*
EXPORT LIMITS						
		Combined export rate [20]	*Maximum 3-day running average (cfs)*	*All*	*Apr 15-May 15 [21]*	*[22]*
			Maximum percent of Delta inflow diverted [23] [24]	*All*	*Feb-Jun*	*35% Delta inflow [25]*
				All	*Jul-Jan*	*65% Delta inflow*
DELTA CROSS CHANNEL GATES CLOSURE						
Delta Cross Channel at Walnut Grove	—	*Closure of gates*	*Close gates*	*All*	*Nov-Jan*	*[26]*
					Feb-May 20	—
					May 21-Jun 15	*[27]*

Table 3 Footnotes

[1] River Kilometer Index station number.

[2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.

[3] The Sacramento Valley 40-30-30 Water Year Hydrologic Classification Index (see page 23) applies unless otherwise specified.

[4] If it is infeasible for a waste discharger to meet this objective immediately, a time extension or schedule of compliance may be granted, but this objective must be met no later than September 1, 2005.

[5] Compliance will be determined at Jersey Point (station D15) and Prisoners Point (station D29).

[6] This standard does not apply in May when the best available May estimate of the Sacramento River Index for the water year is less than 8.1 MAF at the 90% exceedence level. [Note: The Sacramento River Index refers to the sum of the unimpaired runoff in the water year as published in the DWR Bulletin 120 for the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total unimpaired inflow to Oroville Reservoir; Yuba River at Smartville; and American River, total unimpaired inflow to Folsom Reservoir.]

[7] The effective date for objectives for this station is October 1, 1995.

[8] The effective date for objectives for this station is October 1, 1997.

[9] A deficiency period is: (1) the second consecutive dry water year following a critical year; (2) a dry water year following a year in which the Sacramento River Index (described in footnote 6) was less than 11.35; or (3) a critical water year following a dry or critical water year.

[10] Water quality conditions sufficient to support a natural gradient in species composition and wildlife habitat characteristic of a brackish marsh throughout all elevations of the tidal marshes bordering Suisun Bay shall be maintained. Water quality conditions shall be maintained so that none of the following occurs: (a) loss of diversity; (b) conversion of brackish marsh to salt marsh; (c) for animals, decreased population abundance of those species vulnerable to increased mortality and loss of habitat from increased water salinity; or (d) for plants, significant reduction in stature or percent cover from increased water or soil salinity or other water quality parameters.

[11] Net Delta Outflow Index (NDOI) is defined on page 25.

[12] For the May-January objectives, if the value is less than or equal to 5,000 cfs, the 7-day running average shall not be less than 1,000 cfs below the value; if the value is greater than 5,000 cfs, the 7-day running average shall not be less than 80% of the value.

[13] The objective is increased to 6,000 cfs if the best available estimate of the Eight River Index for December is greater than 800 TAF. [Note: The Eight River Index refers to the sum of the unimpaired runoff as published in the DWR Bulletin 120 for the following locations: Sacramento River flow at Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River flow at Smartville; American River, total inflow to Folsom Reservoir; Stanislaus River, total inflow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total inflow to Exchequer Reservoir; and San Joaquin River, total inflow to Millerton Lake.]

[14] The minimum daily Delt· ·utflow shall be 7,100 cfs for this period, calculated as a 3-day running average This requirement is alsc ·t if either the daily average or 14-day running average EC at the confluence of the Sacramento and the ·ı Joaquin rivers is less than or equal to 2.64 mmhos/cm (Collinsville station C2). If the best availab.. .stimate of the Eight River Index (described in footnote 13) for January is more than 900 TAF, the daily average or 14-day running average EC at station C2 shall be less than or equal to 2.64 mmhos/cm for at least one day between February 1 and February 14; however, if the best available estimate of the Eight River Index for January is between 650 TAF and 900 TAF, the operations group established under the Framework Agreement shall decide whether this requirement will apply, with any disputes resolved by the CALFED policy group. If the best available estimate of the Eight River Index for February is less than 500 TAF, the standard may be further relaxed in March upon the recommendation of the operations group established under the Framework Agreement, with any disputes resolved by the CALFED policy group. The standard does not apply in May and June if the best available May estimate of the Sacramento River Index (described in footnote 6) for the water year is less than 8.1 MAF at the 90% exceedence level. Under this circumstance, a minimum 14-day running average flow of 4,000 cfs is required in May and .·ne. Additional Delta outflow objectives are contained in Table A on page 26.

[15] The 7-day running average shall not be less than 1,000 cfs below the monthly objective.

[16] Partial months are averaged for that period. For example, the flow rate for April 1-14 would be averaged over 14 days. The 7-day running average shall not be less than 20% below the flow rate objective, with the exception of the April 15-May 15 pulse flow period when this restriction does not apply.

[17] The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley Water Year Hydrologic Classification (see page 24) at the 75% exceedence level. The higher flow objective applies when the 2 ppt isohaline (measured as 2.64 mmhos/cm surface salinity) is required to be at or west of Chipps Island.

[18] This time period may be varied based on real-time monitoring. One pulse, o· two separate pulses of combined duration equal to the single pulse, should be scheduled to coincid·. with fish migration in San Joaquin River tributaries and the Delta. The time period for this 31-day flow requirement will be determined by the operations group established under the Framework Agreement.

[19] Plus up to an additional 28 TAF pulse/attraction flow during all water year types. The amount of additional water ·.ill be limited to that amount necessary to provide a monthly average flow of 2,000 cfs. The additional 28 TAF is not requ··ed in a critical year following a critical year. The pulse flow will be scheduled by the operations group established under the Framework Agreement.

[20] Combined ..ort rate for this objective is defined as the Clifton Court Forebay inflow rate (minus actual Byron-Bethany Irrigation District diversions from Clifton Court Forebay) and the export rate ·. ·he Tracy pumping plant.

[21] This time period may be varied based on real-time monitoring and will coincide with the San Joaquin River pulse ·low described in footnote 18. The time period for this 31-day export limit will be determined by the operations group established under the Framework Agreement.

[22] Maximum export rate is 1,500 cfs or 100% of 3-day running average of San Joaquin River flow at Vernalis, whichever is greater. Variations to this maximum export rate are authorized if agreed to by the operations group established under the Framework Agreement. This flexibility is intended to result in no net water supply cost annually within the limits of the water quality and operational requirements of this plan. Variations may result from recommendations of agencies for protection of fish resources, including actions taken pursuant to the nd federal Endangered Speci· · Act. Disputes within the operations group will be resolved by the C/ olicy group. Any agreement ariations will be effective immediately and will be prese ·ed to th tive Director of the SWRCB. Executive Director does not object to the variations w ·ı 10 day. variations will remain in effect

[23] Percent of Delta inflow diverted is defined on page 25. For the calculation of maximum percent Delta inflow diverted, the export rate is a 3-day running average and the Delta inflow is a 14-day running average, except when the CVP or the SWP is making storage withdrawals for export, in which case both the export rate and the Delta inflow are 3-day running averages.

[24] The percent Delta inflow diverted values can be varied either up or down. Variations are authorized *subject to the process described in footnote 22.*

[25] If the best available estimate of the Eight River Index (described in footnote 13) for January is less than or equal to 1.0 MAF, the export limit for February is 45% of Delta inflow. If the best available estimate of the Eight River Index for January is greater than 1.5 MAF, the February export limit is 35% of Delta inflow. If the best available estimate of the Eight River Index for January is between 1.0 MAF and 1.5 MAF, the export limit for February will be set by the operations group established under the Framework Agreement within the range of 35% to 45%. Disputes within the operations group will be resolved by the CALFED policy group.

[26] For the November-January period, close Delta Cross Channel gates for up to a total of 45 days, as needed for the protection of fish. The timing of the gate closure will be determined by the operations group established under the Framework Agreement.

[27] For the May 21-June 15 period, close Delta Cross Channel gates for a total of 14 days. The timing of the gate closure shall be based on the need for the protection of fish and will be determined by the operations group established under the Framework Agreement.

FOOTNOTE 2 FOR TABLE 1 AND FOOTNOTE 3 FOR TABLES 2 AND 3

Sacramento Valley
Water Year Hydrologic Classification

Year classification shall be determined by computation of the following equation:

$$\text{INDEX} = 0.4 * X + 0.3 * Y + 0.3 * Z$$

Where: X = Current year's April – July Sacramento Valley unimpaired runoff

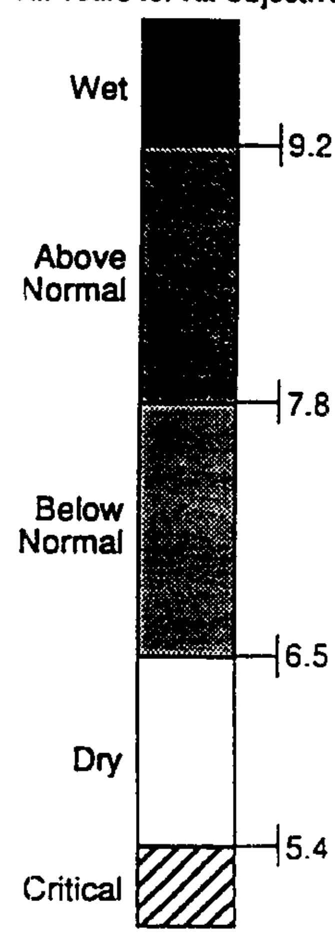
Y = Current October – March Sacramento Valley unimpaired runoff

Z = Previous year's index[1]

The Sacramento Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

Classification	Index Millions of Acre-Feet (MAF)
Wet	Equal to or greater than 9.2
Above Normal	Greater than 7.8 and less than 9.2
Below Normal	Equal to or less than 7.8 and greater than 6.5
Dry	Equal to or less than 6.5 and greater than 5.4
Critical	Equal to or less than 5.4

YEAR TYPE[2]
All Years for All Objectives



Index
Millions of Acre-Feet

1 A cap of 10.0 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years

2 The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

FOOTNOTE 17 FOR TABLE 3

San Joaquin Valley
Water Year Hydrologic Classification

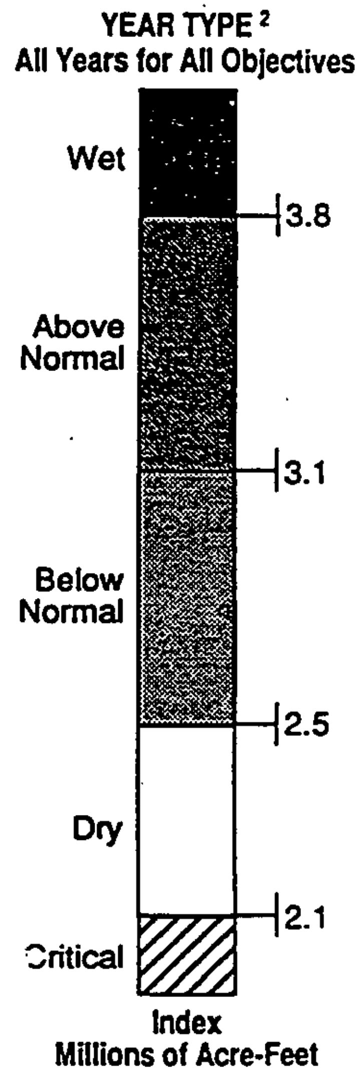
Year classification shall be determined by computation of the following equation:

$$\text{INDEX} = 0.6 * X + 0.2 * Y + 0.2 * Z$$

Where:
- X = Current year's April – July San Joaquin Valley unimpaired runoff
- Y = Current October – March San Joaquin Valley unimpaired runoff
- Z = Previous year's index [1]

The San Joaquin Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Stanislaus River, total flow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total flow to Exchequer Reservoir; San Joaquin River, total inflow to Millerton Lake. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

Classification	Index Millions of Acre-Feet (MAF)
Wet	Equal to or greater than 3.8
Above Normal	Greater than 3.1 and less than 3.8
Below Normal	Equal to or less than 3.1 and greater than 2.5
Dry	Equal to or less than 2.5 and greater than 2.1
Critical	Equal to or less than 2.1



[1] A cap of 4.5 MAF is placed on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

[2] The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

FOOTNOTES 11 AND 23 FOR TABLE 3

NDOI and PERCENT INFLOW DIVERTED [1]

The NDOI and the percent inflow diverted, as described in this footnote, shall be computed daily by the DWR and the USBR using the following formulas (all flows are in cfs):

NDOI = DELTA INFLOW - NET DELTA CONSUMPTIVE USE - DELTA EXPORTS

PERCENT INFLOW DIVERTED = (CCF + TPP) ÷ DELTA INFLOW

where *DELTA INFLOW = SAC + SRTP + YOLO + EAST + MISC + SJR*

SAC	=	Sacramento River at Freeport mean daily flow for the previous day; the 25-hour tidal cycle measurements from 12:00 midnight to 1:00 a.m. may be used instead.
SRTP	=	Sacramento Regional Treatment Plant average daily discharge for the previous week.
YOLO	=	Yolo Bypass mean daily flow for the previous day, which is equal to the flows from the Sacramento Weir, Fremont Weir, Cache Creek at Rumsey, and the South Fork of Putah Creek.
EAST	=	Eastside Streams mean daily flow for the previous day from the Mokelumne River at Woodbridge, Cosumnes River at Michigan Bar, and Calaveras River at Bellota.
MISC	=	Combined mean daily flow for the previous day of Bear Creek, Dry Creek, Stockton Diverting Canal, French Camp Slough, Marsh Creek, and Morrison Creek.
SJR	=	San Joaquin River flow at Vernalis, mean daily flow for the previous day.

where *NET DELTA CONSUMPTIVE USE = GDEPL - PREC*

GDEPL	=	Delta gross channel depletion for the previous day based on water year type using the DWR's latest Delta land use study.[2]
PREC	=	Real-time Delta precipitation runoff for the previous day estimated from stations within the Delta.

and where *DELTA EXPORTS* [3] = *CCF + TPP + CCC + NBA*

CCF	=	Clifton Court Forebay inflow for the current day.[4]
TPP	=	Tracy Pumping Plant pumping for the current day.
CCC	=	Contra Costa Canal pumping for the current day.
NBA	=	North Bay Aqueduct pumping for the current day.

1 Not all of the Delta tributary streams are gaged and telemetered. When appropriate, other methods of estimating stream flows, such as correlations with precipitation or runoff from nearby streams, may be used instead.

2 The DWR is currently developing new channel depletion estimates. If these new estimates are not available, DAYFLOW channel depletion estimates shall be used.

3 The term "Delta Exports" is used only to calculate the NDOI. It is not intended to distinguish among the listed diversions with respect to eligibility for protection under the area of origin provisions of the California Water Code.

4 Actual Byron-Bethany Irrigation District withdrawals from Clifton Court Forebay shall be subtracted from Clifton Court Forebay inflow (Byron-Bethany Irrigation District water use is incorporated into the GDEPL term.)

FOOTNOTE 14 FOR TABLE 3

TABLE A

Number of Days When Maximum Daily Average Electrical Conductivity of 2.64 mmhos/cm Must Be Maintained at Specified Location [a]

PMI [b] (TAF)	Chipps Island (Chipps Island Station D10)					PMI [b] (TAF)	Port Chicago (Port Chicago Station C14) [d]					PMI [b] (TAF)	Port Chicago (Port Chicago Station C14) [d]				
	FEB	MAR	APR	MAY	JUN		FEB	MAR	APR	MAY	JUN		FEB	MAR	APR	MAY	JUN
≤ 500	0	0	0	0	0	0	0	0	0	0	0	5250	27	29	25	26	6
750	0	0	0	0	0	250	1	0	0	0	0	5500	27	29	26	28	9
1000	28 [c]	12	2	0	0	500	4	1	0	0	0	5750	27	29	27	28	13
1250	28	31	6	0	0	750	8	2	0	0	0	6000	27	29	27	29	16
1500	28	31	13	0	0	1000	12	4	0	0	0	6250	27	30	27	29	19
1750	28	31	20	0	0	1250	15	6	1	0	0	6500	27	30	28	30	22
2000	28	31	25	1	0	1500	18	9	1	0	0	6750	27	30	28	30	24
2250	28	31	27	3	0	1750	20	12	2	0	0	7000	27	30	28	30	26
2500	28	31	29	11	1	2000	21	15	4	0	0	7250	27	30	28	30	27
2750	28	31	29	20	2	2250	22	17	5	1	0	7500	27	30	29	30	28
3000	28	31	30	27	4	2500	23	19	8	1	0	7750	27	30	29	31	28
3250	28	31	30	29	8	2750	24	21	10	2	0	8000	27	30	29	31	29
3500	28	31	30	30	13	3000	25	23	12	4	0	8250	28	30	29	31	29
3750	28	31	30	31	18	3250	25	24	14	6	0	8500	28	30	29	31	29
4000	28	31	30	31	23	3500	25	25	16	9	0	8750	28	30	29	31	30
4250	28	31	30	31	25	3750	26	26	18	12	0	9000	28	30	29	31	30
4500	28	31	30	31	27	4000	26	27	20	15	0	9250	28	30	29	31	30
4750	28	31	30	31	28	4250	26	27	21	18	1	9500	28	31	29	31	30
5000	28	31	30	31	29	4500	26	28	23	21	2	9750	28	31	29	31	30
5250	28	31	30	31	29	4750	27	28	24	23	3	10000	28	31	30	31	30
≥ 5500	28	31	30	31	30	5000	27	28	25	25	4	>10000	28	31	30	31	30

[a] The requirement for number of days the maximum daily average electrical conductivity (EC) of 2.64 mmhos per centimeter (mmhos/cm) must be maintained at Chipps Island and Port Chicago can also be met with maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average Delta outflows of 11,400 cfs and 29,200 cfs, respectively. If salinity/flow objectives are met for a greater number of days than the requirements for any month, the excess days shall be applied to meeting the requirements for the following month. The number of days for values of the PMI between those specified in this table shall be determined by linear interpolation.

[b] PMI is the best available estimate of the previous month's Eight River Index. (Refer to Footnote 13 for Table 3 for a description of the Eight River Index.)

[c] When the PMI is between 800 TAF and 1000 TAF, the number of days the maximum daily average EC of 2.64 mmhos/cm (or maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average Delta outflow of 11,400 cfs) must be maintained at Chipps Island in February is determined by linear interpolation between 0 and 28 days.

[d] This standard applies only in months when the average EC at Port Chicago during the 14 days immediately prior to the first day of the month is less than or equal to 2.64 mmhos/cm.

APPENDIX B

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS NEAR OR IN THE SRWTP

Table 3. Previous Archaeologic al Investigations Near or In SRWTP

Project Description (Report Title)	Repository	Firm	Date	Project Location	Methods	Results	Comments/ References
"Report on the First Phase of Archaeological Survey for the Proposed SMUD Gas Pipeline between V[illegible]s and Sacramento"	NCIC	Far Western Anthropological Research Group, Inc.	1993	Morrison Creek area along Sacramento City limits within SRWTP	Intensive/ Cursory	Ditches, historical complex, isolates	Waechter 1993
"Reconnaissance Archeological Survey of the Morrison Stream Group in Sacramento County, California"	NCIC Ref. No. 88	Archeological Study Center, CSUS	1974	Morrison Stream Group, drainages within SRWTP	Intensive Survey of 75-90 miles	Recorded 28 sites	Johnson 1974
"An Archeological Survey and Evaluation of the Proposed Unit Development ..."	NCIC Ref. No. 86a	Archeological Study Center, CSUS	1978	Freeport and NW portion of SRWTP	Intensive survey of 1000 miles	Isolate/ historic trash deposit	Russo 1978a
"Letter Report: Delta Shores Village EIR, City of Sacramento"	NCIC Ref. No. 86b	David Chavez and Associates	1982	NW corner of SRWTP	Intensive survey of 700 acres	None	Chavez 1982
"Delta Shores Village EIR, City of Sacramento"	NCIC Ref. No. 86c	David Chavez and Associates	1983	NW corner of SRWTP/ I-5	Intensive survey of 52 acres	None	Chavez 1983

Table 3. Previous Archaeologi cal Investigations Near or In SRWTP (continued)

Project Description (Report Title)	Repository	Firm	Date	Project Location	Methods	Results	Comments/ References
"Cultural Resource Assessment of the Proposed Solids Storage Basins of the Sacramento Sewage Treatment Plant"	NCIC Ref. No. 119a	Ann S. Peak & Associates	1977	Southern half of SRWTP between I-5 and railroad	Intensive survey of 1,000 acres	CA-SAC-83 and -202	Peak 1977
"Archeological Site Investigation - SBB EIR Sewage Sludge Management Program"	NCIC Ref. No. 119b	Archeological Study Center, CSUS	1978	Small mound east of Morrison Creek within SRWTP	Survey/ augering of CA-SAC-83	CA-SAC-83	Russo 1978b
"Archeological Survey of Three Selected Segments of the Buffer Zone around the SRWTP, Sacramento County, California"	NCIC Ref. No. 119	Archeological Study Center, CSUS	1982	Freeport, Morrison Creek, 1 segment within SRWTP	Intensive survey	CA-SAC-83, farm complexes	Decater 1982
"Archaeological Survey of the Interstate 5 Right-of-way from South Sacramento to the Mokelumne River"	NCIC	California Department of Transportation	1972	Linear corridor along I-5 within SRWTP	Intensive survey	None	Journey 1972
"Cultural Resources Survey of the Carson Ice-Gen Project, Sacramento County, California"	NCIC	Ebasco Environmental	1992	Both sides of Union Pacific RR from Dwight Road to Laguna Creek within SRWTP	Intensive survey of 27.5 acres	None	Ebasco 1992

Table 3. Previous Archaeologi cal Investigations Near or In SRWTP (continued)

roject Des~ription (Report Title)	Repository	Firm	Date	Project Location	Methods	Results	Comments/ References
"Letter Report: S.C.R.S.D. #1 Gas Well Monitoring"	NCIC	Ann S. Peck & Associates	1982	1.5 miles east of Morrison Creek/ Sacramento River confluence within SRWTP	Monitoring gas well drilling	None	Gerry 1982
"An Archaeological Reconnaissance of the Upper Beach Lake Wildlife Area Habitat Restoration Project"	NCIC	Sacramento County Department of Environmental Review and Assessment	1992	Upper Beach Lake area; NW portion of SRWTP	Intensive/ Cursory coverage	CA-SAC-83	Warner 1992
"Archeological Site Investigation - SSMP EIR Sewage Sludge Management Program - CA-SAC-202"	NCIC Ref.no.184	Archeological Study Center, CSUS	1978	South of ponds in west center of SRWTP	Intensive survey and augering	CA-SAC-202	Russo 1978c
"Cultural Resource Assessment of Proposed Route 148, Sacramento County, California"	NCIC	Ann S. Peck & Associates	1979	West of Franklin Blvd. across Western Pacific RR to Morrison Creek on norhern edge of SRWTP	Intensive survey	None	Peak 1979

Table 3. Previous Archaeologi cal Investigations Near or In SRWTP (continued)

Project Description (Report Title)	Repository	Firm	Date	Project Location	Methods	Results	Comments/ References
"A Cultural Resources Inventory of the Beach Lake Wetlands Mitigation Bank in Sacramento County, California"	NCIC	California Department of Transportation	1992	West side of I-5 adjacent to SRWTP	Intensive survey	CA-SAC-327	Offermann 1992
"Cultural Resource Assessment of Sacramento Municipal Utility District's Phase III Rancho Seco - Pocket Transmission Line Project, Sacramento County, California"	NCIC Ref. No. 514	Ann S. Peck & Associates	1980	Linear Corridor along U.P. RR tracks, bisects SRWTP	Intensive survey	None in SRWTP	Peak 1980
"Laguna Blvd Interchange and Elk Grove Blvd. Interchange Historic Property Survey Report"	NCIC	California Department of Transportation	1989	Proposed interchanges at I-5	Intensive survey	None	Caltrans 1989
"Archaelogical Surveys near Franklin, California, Campbell Soup Parcel"	NCIC	-	1978	North of Elliott Ranch Road just south of SRWTP	Intensive survey	None	D.L. True 1978
"Cultural Resources Investigation and Evaluation of Laguna Creek Ranch and Elliott Ranch Properties, Sacramento County, Californa"	NCIC	Public Anthropological Research	1985	North of Elliott Ranch Road to southern boundaries of SRWTP	Intensive/ Cursory Survey of 2,000 acres	Three home/ farm sites, isolated windmills	Maniery 1985

APPENDIX C

REVEGETATION/RESTORATION PLAN FOR RECLAIMED WATER PIPELINE ROUTE - SRWTP TO GOLF COURSE

REVEGETATION / RESTORATION FOLLOWING RECLAIMED WATER PIPELINE INSTALLATION FROM SRWWP TO GOLF COURSE

LAGUNA CREEK RIPARIAN CORRIDOR

The pipeline will buried in a 3 foot wide by 4 foot deep trench and necessitate an approximately 25 foot wide construction corridor. This corridor will follow the toe of the plant levee for about 2000 feet where it turns west and crosses Laguna Creek. The vegetation in this area is dominated *Brassica nigra*, *Centaurea solstitialis*, and several species of exotic annual grass. Due to the high seed productivity and subsequent large soil seed bank, as well as the invasive nature of these species, revegetation of the corridor can be limited to soil preparation conducive to natural regeneration. Ripping the soil to a depth of 8 inches at one foot spacings and making two passes with a drag stubble disc should relieve the corridor of any soil compaction that may impede the return of the dominant vegetation. The discing will also blend in top soil and soil seed bank over the three foot trench width, eliminating the need for stockpiling the top soil from the trench. Some less resilient native grass, shrub, and tree species are also encountered in this riparian portion of the construction zone. These species are [illegible] *Quercus lobata*, two patches of *Toxicodendron diversiloba*, one patch of *Vitis vitis*, [illegible] one patch of *Leymus triticoides*. However, these species lie on the outer edge of the construction corridor, and after being flagged or fenced by qualified biologists, these species can be avoided by the contractors. The only trees taken in the pipeline installation shall be a small group of trees in a dense grove of *Salix hindsiana*. This take should be limited to the fewest trees needed to allow pipeline installation. Because of the aggressive nature of *Salix hindsiana*, the gap left in this grove will be rapidly overgrown following the pipeline completion.

Three weeks prior to the pipeline installation start date, a qualified biologist should survey the entire construction corridor and adjacent areas for desirable [illegible] non-resilient vegetation and sites possibly occupied by sensitive wildlife that cannot tolerate the construction disturbance. These species and sites should then be flagged or fenced under the biologist's direction.

UPPER BEACH LAKE CORRIDOR

Between Laguna Creek and Morrison Creek, the construction corridor will cross approximately 1300 feet of Upper Beach Lake. The vegetation in this area is dominated by a perennial smartweed (*Polygonum amphibium*) and watergrass (*Echinochloa crus-galli*). The perennial smartweed is of a variety that produces very little seed for feeding waterfowl and it [illegible] many high food yielding wetland plant species. Watergrass is a large supplier of seed providing an important source of food to wintering waterfowl. Therefore, after installation the disturbed area should be reseeded with the more beneficial watergrass. Prior to reseeding, the area should be ripped to a depth of 8 inches at one foot spacings and twice disced with a drag stubble disc. This step will again relieve the corridor of soil compaction and blend in topsoil over the three foot trench width, as well as provide a good seed bed for the watergrass. The watergrass seeding and management to the point of watergrass establishment should be handled by a qualified wetlands restoration biologist.

The construction will also cut through two berms surrounding Upper Beach Lake. These berms must be reconstructed to their original height, slope, and integrity. The integrity requirement can be met with 90 percent compaction throughout the structure. To ensure compliance, the berm should be compacted for every 6 inches of back fill, during reconstruction.

Three weeks prior to the pipeline installation start date, a qualified biologist should survey the entire construction corridor and adjacent areas for desirable, non-resilient vegetation and sites possibly occupied by sensitive wildlife that cannot tolerate the construction disturbance. These species and sites should then be flagged or fenced under the biologist's direction.

GRASSLAND CORRIDOR

Between Morrison Creek and the west levee, the construction corridor will cross approximately 2100 feet of previously seeded native grassland. This area was seeded with a mixture of native grass in 1989 and presently contains a mixture of native grass and non-native grasses and dicots. The vegetation has become dominated by *Melilotus alba, Lactuca seriola,* and many exotic annual grasses, however the District is currently engaged in a program to suppress the exotic weeds and encourage the native species. Therefore, revegetation following the pipeline installation should consist of native grass reseeding. Prior to reseeding, the area should be ripped to a depth of 8 inches at one foot spacings and twice disced with a drag stubble disc. This step will again relieve the corridor of soil compaction, blend in topsoil over the three foot trench width, and provide a good seed bed for the native grasses. The seeding and management to the point of native grass establishment should be handled by a qualified native grasslands restoration specialist. The native grass seed mixture used by the specialist should include site specifically grown *Hordeum brachyantherum* and *Elymus glaucus,* two species currently found within the construction corridor, as well as with *Nasella pulchra* (formerly *Stipa pulchra*), a grass historically found in similar areas of the Central Valley.

Three weeks prior to the pipeline installation start date, a qualified biologist should survey the entire construction corridor and adjacent areas for desirable, non-resilient vegetation and sites possibly occupied by sensitive wildlife that cannot tolerate the construction disturbance. These species and sites should then be flagged or fenced under the biologist's direction.

Attachment D

Updated Environmental Document for WRF Phase II Expansion Project – Negative Declaration (2009)

SRCSD

10545 Armstrong Avenue
Mather, CA 95655
Tele: [916] 876-6000
Fax: [916] 876-6160
Website: www.srcsd.com

APPROVED
BOARD OF DIRECTORS
Resolution #SR-2513
SEP 23 2009
By Cyndi Lee
Clerk of the Board

2

DATE: September 23, 2009

TO: Honorable Board of Directors
Sacramento Regional County Sanitation District

FROM: Sacramento Regional County Sanitation District

SUBJECT: **Approval of Environmental Document for the Sacramento Regional Wastewater Treatment Plant Water Reclamation Facility Phase II Expansion Project - Negative Declaration (Control No. 2009-70058)**

RECOMMENDATION:

It is recommended that your Board adopt the attached Resolution approving the following actions associated with the environmental document for the Sacramento Regional Wastewater Treatment Plant (SRWTP) Water Reclamation Facility (WRF) Phase II Expansion Project:

1. Determine that the negative declaration is adequate and complete
2. Approve the proposed project
3. Adopt the Mitigation Monitoring and Reporting Program (MMRP)

BACKGROUND:

The proposed WRF Phase II Expansion project will expand the treatment capacity of the existing Water Reclamation Facility (Phase I) from 5 million gallons per day (mgd) to 10 mgd. Secondary effluent from the SRWTP would be treated to Title 22 standards for irrigation and other non-potable uses. The additional recycled water would be provided to users in the immediate vicinity of the SRWTP and to the SRWTP process area and bufferlands.

The proposed project was part of a previous project titled SRWTP Reclaimed Water Project (Control Number 94-PWE-0460) for which an Environmental Impact Report (EIR) was prepared. This EIR was approved by the Board of Supervisors on May 22, 1996, and concluded that no significant and unavoidable impacts would occur as a result of the project.

DISCUSSION:

Sacramento Regional County Sanitation District (SRCSD) staff consulted with staff from the Sacramento County Department of Environmental Review and Assessment (DERA) regarding the environmental requirements for the proposed project. Due to the age of the original EIR, which was approved in May 1996, DERA recommended performing an Initial Study to determine the appropriate type of environmental document to cover the proposed project with up to date environmental requirements. A copy of the Initial Study is included in the attachments.

DERA has reviewed the application for the proposed project and determined that a Negative Declaration, pursuant to the California Environmental Quality Act (CEQA), is the appropriate environmental document for the project. This review was prepared consistent with the 1996 EIR and was intended to reflect changes in County requirements now relevant to the project, given consideration to CEQA guidelines § 15162 and 15164. Through this review the applicable mitigation was reiterated, but no new significant impacts were identified.

On June 25, 2009, DERA released a "Notice of Intent to Adopt A Negative Declaration" for the project. The review period for the Notice of Intent began on June 25, 2009 and ended on July 15, 2009. To date, DERA has only received one comment letter, dated July 28, 2009, from the Central Valley Flood Protection Board (CVFPB). This letter is included in the attachments. The comments from the CVFCB were submitted after the review period had expired. Nevertheless, SRCSD staff reviewed the comments and coordinated with staff from the CVFCB to address their comments.

The actions requested of your Board today do not approve the project for bid and construction. These actions only relate to the approval of the project's environmental document. SRCSD staff will bring before your Board a separate Board item for your consideration to approve the project for bid and construction, which is estimated to occur by early 2010.

ENVIRONMENTAL DOCUMENTATION

Attached is the Notice of Intent to Adopt A Negative Declaration, the Negative Declaration, the Initial Study, the MMRP and the comment letter received for the proposed project.

CONCLUSION:

It is recommended that your Board adopt the attached Resolution approving that the negative declaration is adequate and complete, approving the proposed project and adopting the MMRP.

Respectfully submitted,

Stan Dean

Stan R. Dean
Director of Policy and Planning

APPROVED:

Mary K Snyder

Mary K. Snyder
District Engineer

Attachments: SRCSD Resolution
Negative Declaration

Contact for additional information
Stan R. Dean
Director of Policy and Planning
875-9101

RESOLUTION NO.: SR-2513

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

ENVIRONMENTAL DOCUMENT FOR THE SRWTP WATER RECLAMATION FACILITY PHASE II EXPANSION PROJECT

WHEREAS, the Sacramento County Department of Environmental Review and Assessment (DERA) has reviewed the application for the Water Reclamation Facility (WRF) Phase II Expansion project and determined that a Negative Declaration, pursuant to the California Environmental Quality Act (CEQA), is the appropriate environmental document for the project; and

WHEREAS, on June 25, 2009, DERA released a "Notice of Intent to Adopt A Negative Declaration" for the project. The review period for the Notice of Intent began on June 25, 2009 and ended on July 15, 2009.

NOW, THEREFORE, BE IT RESOLVED AND ORDERED that the that the Board of Directors of the SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT, a county sanitation district pursuant to and operating under the authority of the County Sanitation District Act, commencing at Health and Safety Code section 4700, hereby:

1. Determines that the negative declaration is adequate and complete
2. Approves the proposed project
3. Adopts the Mitigation Monitoring and Reporting Program

ON A MOTION by Director Nottoli, and seconded by Director Villegas, the foregoing resolution was passed and adopted by the Board of Directors of the Sacramento Regional County Sanitation District, State of California, this 23rd day of September September, 2009, by the following vote, to wit:

AYES: Directors, MacGlashan, Nottoli, Yee, Bruins, Scherman, Howell, Skoglund, Sheedy, Villegas, McGowan, Cohn, Hammond

NOES: Directors, None

ABSENT: Directors, Peters, Dickinson, Fong, Pannell

ABSTAIN: Directors, None

In accordance with Section 25103 of the Government Code of the State of California a copy of the document has been delivered to the Chairman on 9/23/09

By [signature]
Deputy Clerk, Board of Directors

[signature]

Chair of the Board of Directors
Sacramento Regional County Sanitation District, a county sanitation district pursuant to and operating under the authority of the County Sanitation District Act, commencing at Health and Safety Code section 4700

ATTEST: [signature]
Clerk of the Board of Supervisors of Sacramento County, California, and ex-officio Secretary of the Board of Directors of the Sacramento Regional County Sanitation District

FILED
BOARD OF DIRECTORS
SEP 23 2009
By [signature]
Clerk of the Board

ATTACHMENT A.1

Notice of Intent to Adopt a Negative Declaration

NOTICE OF INTENT

TO ADOPT A NEGATIVE DECLARATION

NOTICE is hereby given that the County of Sacramento, State of California intends to adopt a Negative Declaration for the project described below.

TITLE:

SRWTP WATER RECLAMATION FACILITY PHASE II EXPANSION PROJECT

CONTROL NUMBER:

2009-70058

LOCATION:

The project site is located in the southwest corner of the process area of the Sacramento Regional Wastewater Treatment Plant (SRWTP). SRWTP is located on the north side of Laguna Boulevard between interstate 5 and Franklin Boulevard in the city of Elk Grove

APN:

119-0100-009

GENERAL DESCRIPTION:

The proposed project will expand the treatment capacity of the existing Water Reclamation Facility from 5 million gallons per day (mgd) to 10 mgd. Secondary effluent from the SRWTP would be treated to Title 22 standards for irrigation and other non-potable uses. The additional recycled water would be provided to users in the immediate vicinity of the SRWTP and to the SRWTP process area and bufferlands.

REVIEW:

The review period for the Negative Declaration begins on June 25, 2009 , and ends on July 15, 2009 . The Negative Declaration may be reviewed at the following location:

Sacramento County
Department of Environmental
Review and Assessment
827 7th Street, Room 220
Sacramento, California 95814
(916) 874-7914

Comments regarding the Negative Declaration should be directed to the Sacramento County Environmental Coordinator and emailed to DERA@saccounty.net or mailed to 827 7th Street, Room 220, Sacramento, California, 95814. Failure to do so will not preclude your right to testify at a future public hearing for the proposed project. The date, time, and place of the public hearing is presently unknown. A notice providing the date, time, and place of the public hearing will be provided by the hearing body authorized to conduct the public hearing for the proposed project.

ATTACHMENT A.2

Negative Declaration

NEGATIVE DECLARATION

Pursuant to Division 6, Title 14, Chapter 3, Article 6, Sections 15070 and 15071 of the California Administrative Code and pursuant to the Procedures for Preparation and Processing of Environmental Impact Reports adopted by the County of Sacramento pursuant to Sacramento County Ordinance No. SCC-116, the Environmental Coordinator of Sacramento County, State of California, does prepare, make, declare, publish, and cause to be filed with the County Clerk of Sacramento County, State of California, this Negative Declaration re: The Project described as follows:

1. **Control Number:** 2009-70058
2. **Title and Short Description of Project:** SRWTP WATER RECLAMATION FACILITY PHASE II EXPANSION PROJECT
   The proposed project will expand the treatment capacity of the existing Water Reclamation Facility from 5 million gallons per day (mgd) to 10 mgd. Secondary effluent from the SRWTP would be treated to Title 22 standards for irrigation and other non-potable uses. The additional recycled water would be provided to users in the immediate vicinity of the SRWTP and to the SRWTP process area and bufferlands.
3. **Assessor's Parcel Number:** 119-0100-009
4. **Location of Project:** The project site is located in the southwest corner of the process area of the Sacramento Regional Wastewater Treatment Plant (SRWTP). SRWTP is located on the north side of Laguna Boulevard between interstate 5 and Franklin Boulevard in the city of Elk Grove
5. **Project Applicant:** Sacramento Regional County Sanitation District
6. Said project will not have a significant effect on the environment for the following reasons:
   a) It will not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.
   b) It will not have the potential to achieve short-term, to the disadvantage of long-term, environmental goals.
   c) It will not have impacts, which are individually limited, but cumulatively considerable.
   d) It will not have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly.
7. As a result thereof, the preparation of an environmental impact report pursuant to the Environmental Quality Act (Division 13 of the Public Resources Code of the State of California) is not required.
8. The attached Initial Study has been prepared by the Sacramento County Department of Environmental Review and Assessment in support of this Negative Declaration. Further information may be obtained by contacting the Department of Environmental Review and Assessment at 827 Seventh Street, Room 220, Sacramento, California, 95814, or phone (916) 874-7914.

[Original Signature on File]
Joyce Horizumi
ENVIRONMENTAL COORDINATOR OF
SACRAMENTO COUNTY, STATE OF CALIFORNIA

ATTACHMENT A.3

Initial Study

County of Sacramento
Department of Environmental Review and Assessment

INITIAL STUDY

Project Information

Control Number: 2009-70058

Name: **SRWTP WATER RECLAMATION FACILITY PHASE II EXPANSION PROJECT**

Location: The project site is located in the southwest corner of the process area of the Sacramento Regional Wastewater Treatment Plant (SRWTP). SRWTP is located on the north side of Laguna Boulevard between interstate 5 and Franklin Boulevard in the city of Elk Grove (Plate IS-1).

Assessor's Parcel Number: 119-0100-009

Applicant:

Sacramento Regional County Sanitation District
Attention: William Yu / Jose Ramirez

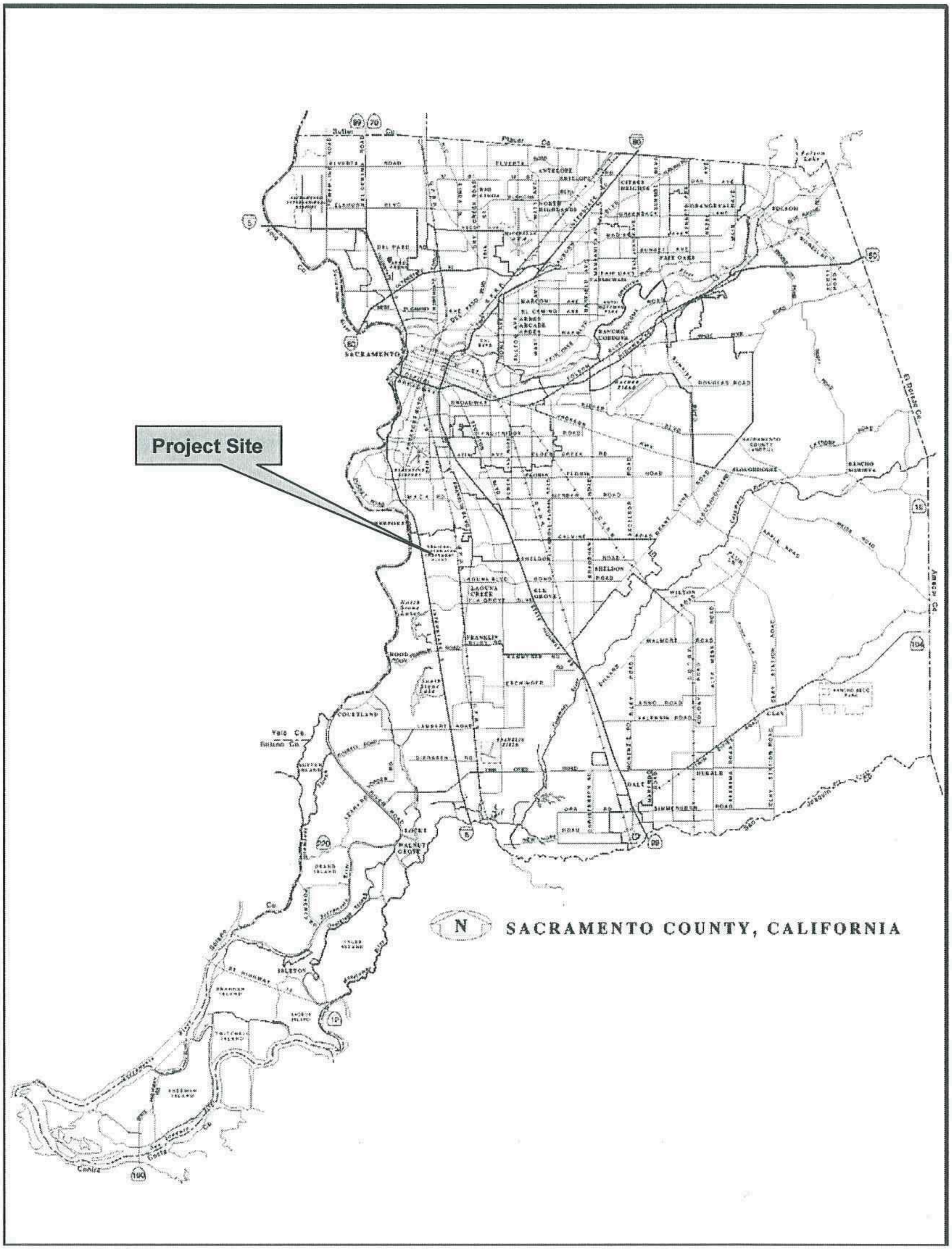
Project Description

The proposed project will expand the treatment capacity of the existing Water Reclamation Facility from 5 million gallons per day (mgd) to 10 mgd. Secondary effluent from the SRWTP would be treated to Title 22 standards for irrigation and other non-potable uses. The additional recycled water would be provided to users in the immediate vicinity of the SRWTP and to the SRWTP process area and bufferlands.

Environmental Setting

The project is located at the Water Reclamation Facility (WRF) in the southwest corner of the process area of the SRWTP. The project site is located on approximately 2.5 acres within the approximately 900-acre SRWTP. The SRWTP is surrounded by open space bufferlands managed by SRWTP staff. The Bufferlands are a relatively undisturbed area of open space grassland, natural preserve land, riparian vegetation, and minor amounts of introduced landscaping, which act as a buffer between SRWTP and the surrounding land uses.

Plate IS-1: Vicinity Map



The WRF is an existing facility that is completely developed and does not contain any vegetation. The site is fenced to the south and west with a chain link fence, separating it from the bufferlands, and open to the SRWTP to the north and east. Access to the site is through the SRWTP entry by way of interior property roads.

ENVIRONMENTAL EFFECTS

See the Initial Study Checklist attached to this report and the following discussion.

BACKGROUND

The proposed project was part of a previous project titled Sacramento Regional Wastewater Treatment Plant (SRWTP) Reclaimed Water Project (Control Number 94-PWE-0460) for which an Environmental Impact Report (EIR) was prepared. The EIR was approved by the Board of Supervisors on May 22, 1996. The document discussed impacts related to Land Use/SRWTP Master Plan Consistency, Public Heath/Reclaimed Water Quality, Sacramento River and Delta Hydrology and Water Quality, Biological Resources, Flooding, Erosion Control, and Cultural Resources. The EIR concluded that no significant and unavoidable impacts would occur as a result of the project. The current review is being prepared consistent with that document and is intended to reflect changes in County requirements now relevant to the current project, giving consideration to CEQA Guidelines §15162 and 15164. Through this document, applicable mitigation is reiterated, but no new significant impacts are identified.

LAND USE

The project proposes to expand the treatment capacity of the existing WRF from 5 mgd to 10 mgd by replacing existing filters with modular microfiltration equipment, which will be installed on top of an existing chlorine contact tank, modifying piping, and replacing equipment. All construction will take place at existing facilities within the existing footprint of the WRF (see Plate IS-2 for WRF layout).

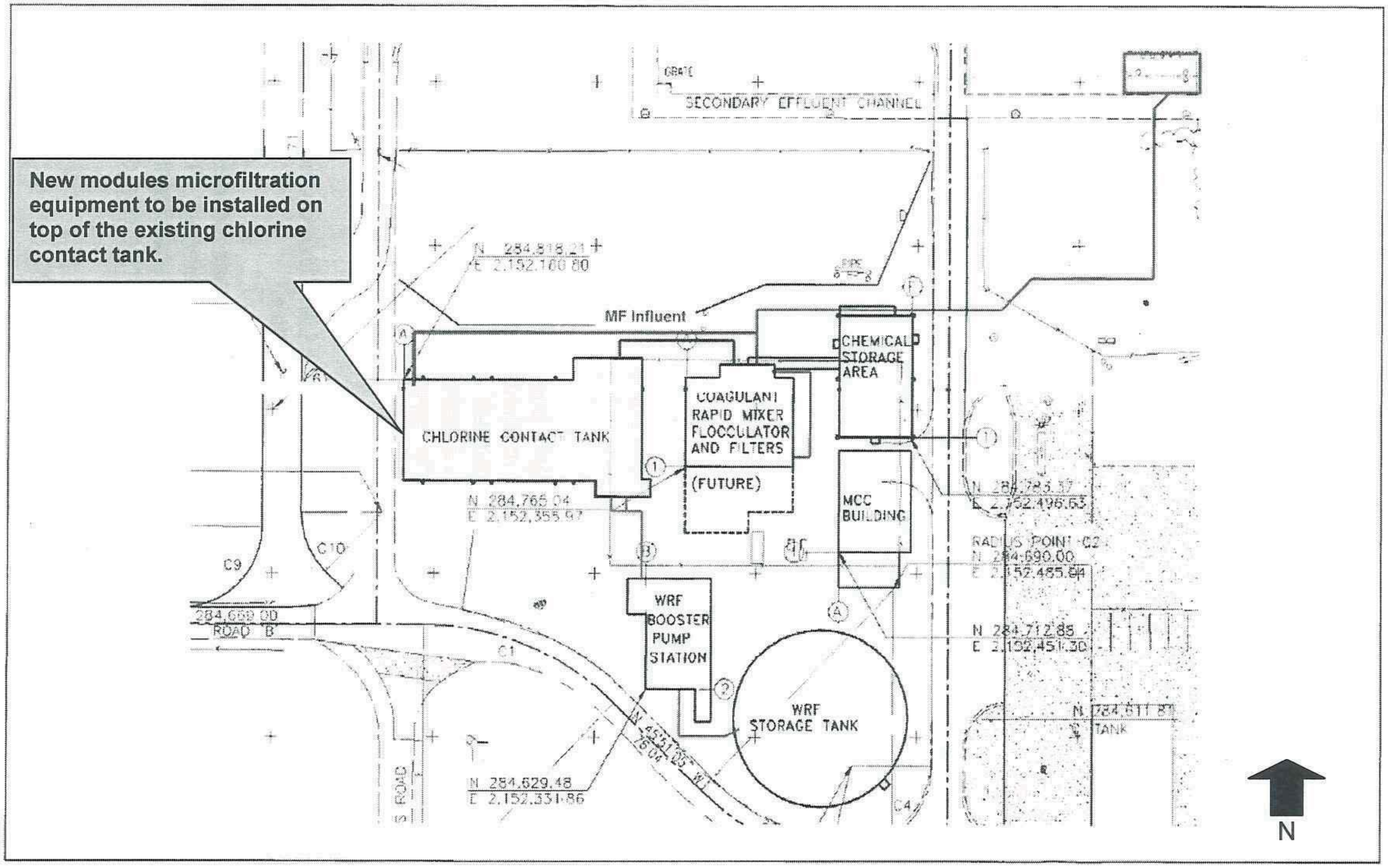
SACRAMENTO COUNTY GENERAL PLAN

The project site is designated for Public/Quasi-Public Land Use on the Sacramento County General Diagram. According to the General Plan:

> The Public/Quasi-Public designation establishes areas for uses such as education, solid and liquid waste disposal, and cemeteries. This designation identifies public and quasi-public areas which are of significant size, under County jurisdiction, regional in scope, specified by State law, or have significant land use impacts.

The project is consistent with this General Plan designation.

Plate IS-2: WRF Layout



Sacramento County Zoning Code

The project site is zoned AG-80. According to the Sacramento County Zoning Code (Zoning Code) (SZC 205-01), the AG-80 and other Agricultural land use zones were established and designed to promote and protect the public health, safety and general welfare, and were adopted for the following purposes:

- To eliminate the encroachment of land uses which are incompatible with the long-term agricultural use of land;
- To preserve the maximum amount of the limited supply of agricultural land in order to conserve the County's economic resources which are vital for a healthy agricultural economy within the County;
- To discourage the premature and unnecessary conversion of agricultural land to urban uses, which will benefit the residents of urban areas and which will prevent unnecessary increases in the costs of providing community services to urban residents;
- To assure the preservation of agricultural lands which have a definite value as open space and for the production of agricultural products, so as to preserve an important physical, social, aesthetic and economic asset of the residents of the County; and
- To encourage the retention of sufficiently large agricultural lots to assure maintenance of viable agricultural units.

The SRWTP is specifically identified on the Sacramento County Comprehensive Zoning Map at its current location.

Sacramento Regional Wastewater Treatment Plant Master Plan 2020

The SRWTP Master Plan (Master Plan) identifies wastewater treatment and facility needs for a 20-year planning period, which lasts through the year 2020. The goal of the Master Plan is to provide a phased program of recommended facilities to accommodate planned growth while at the same time maintaining treatment reliability, meeting future regulatory requirements, and optimizing costs. To meet this goal, the 2020 Master Plan was prepared to integrate overall strategies for wastewater treatment, effluent management, and biosolids disposal into an effective wastewater treatment management program. The 2020 Master Plan proposed staged or phased treatment facility expansion to occur as the sewage generated by the population increased. The capacity of the plant would increase under this plan from 181 mgd to 218 mgd (dry weather). The water reclamation project is identified on the Master Plan Site Layout.

The Sacramento Regional County Sanitation District (SRCSD) Board of Directors approved the SRWTP Master Plan 2020 in fall of 2003. In November 2007, the Superior Court of California invalidated portions of the Environmental Impact Report that were certified for the 2020 Master Plan. Both the SRCSD and the plaintiffs have appealed the judge's ruling.

The project does not propose any change to the land use designation of the site and is consistent with the General Plan, the Zoning Code, and the SRWTP Master Plan. Impacts related to Land Use are considered less than significant.

WATER QUALITY

WATER RECLAMATION REGULATIONS

Wastewater reclamation in California is regulated under Title 22, Division 4, of the California Code of Regulations. The intent of these regulations is to ensure protection of public health associated with the use of reclaimed water. The regulations establish acceptable levels of constituents in reclaimed water for a range of uses and prescribe means for assurance of reliability in the production of reclaimed water. The California Department of Health Services (DHS) has jurisdiction over the distribution of reclaimed wastewater and the enforcement of Title 22 regulations. The Regional Water Quality Control Board (RWQCB) is responsible for issuing waste discharge requirements (including discharge prohibitions, monitoring, and reporting programs).

PROJECT IMPACTS

The reclaimed water at the water reclamation facility will be disinfected tertiary reclaimed water. Disinfected tertiary reclaimed water is the highest level of treatment of reclaimed water. According to SRCSD, water treated to this level is suitable for all proposed uses. The SRCSD is permitted under the Master Reclamation Permit issued by the RWQCB to produce, convey, and use reclaimed water.

The project includes measures that will protect public health including delivering water through a separate distribution system to prevent mixing reclaimed water with potable water. In accordance with American Water Works Association (AWWA) recommendations, purple pipe is used and is clearly marked to prevent connection for potable use. Further, reclaimed water use for the irrigation of parks and streetscapes would be restricted to minimize potential public contact.

Project compliance with all applicable regulations related to reclaimed water use and the additional measures proposed to avoid public contact will ensure that impacts related to Water Quality are less than significant.

HYDROLOGY

As part of the previous review of this project an Impacts Evaluation Report was prepared and submitted by SRCSD (see Appendix A). The report evaluated project impacts related to hydrology, water quality, and fisheries on the Sacramento River and Delta due to flow volume reductions from reduced effluent discharge.

The report analyzed the effects of the expected effluent flow reductions on the Sacramento River and the Delta. The analysis was done for ultimate capacity of the facility; therefore, the maximum potential discharge reduction was assumed to be 10 mgd less that portion at capacity used for the SRWTP process and returned to the river as effluent (903 acre feet/year or 0.8 mgd). The assumed maximum potential discharge reduction was 9.2 mgd.

According to the report the potential reduction in flows to the Sacramento River and the Delta relative to the historic range of flows is approximately 0.05 and 0.17 percent of the maximum and minimum average daily Sacramento River flows, and 0.04 and 0.16 percent of the maximum and minimum Delta inflows. According to the study these flow reductions would be virtually imperceptible and within the normal range of fluctuations that already occur.

Further, the water demands met by the reclaimed water supply would be otherwise met through the use of groundwater, surface water, or a combination of the two. Using surface water or groundwater supplies to meet the demand met by the reclaimed water would effectively deplete the Sacramento River by the same amount that the reclaimed water diversion would.

The study concluded that the water reclamation diversion would have essentially the same effect on the Sacramento River and the Delta as other diversions for the same use. Impacts of water diversion from the Sacramento River and the Delta are considered less than significant.

CLIMATE CHANGE

Although current forecasts vary, the effects of global climate change on precipitation and temperature regimes in California could lead to significant challenges in securing an adequate water supply for a growing population and California's agricultural industry. An increase in precipitation falling as rain rather than snow could also lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California's levee/flood control system. California also relies heavily on gradual snowmelt from the Sierra Nevada to supply water.

According to the Intergovernmental Panel on Climate Change (IPCC) 2007 report, the annual mean warming in North America is likely to exceed the global mean warming in most areas and snow season length and snow depth are very likely to decrease in most of North America[1]. These trends have already been observed, as the snow pack in the Sierra Nevada and the Cascade Range has been declining over the last few decades of record, and the average temperature in California has increased one degree Fahrenheit

[1] Intergovernmental Panel on Climate Change, United Nations (IPCC). "Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC", 2007a.

over the past 50 years[2]. Although these general statements are made, it is recognized that although there is high model agreement on warming trends the agreement among precipitation and hydrologic trend models is not nearly so strong.

The Climate Scenarios for California white paper modeled changes in Snow Water Equivalent as of April 1, when the snow season begins to taper off. Snow Water Equivalent is the amount of water contained within the snowpack. It can be thought of as the depth of water that would theoretically result if the entire snowpack melted instantaneously. The analysis results differ widely depending on which model and emissions scenario is used. As compared to the 1961 – 1990 period of record, the net change in Snow Water Equivalent ranges from +6% to -29% (for the 2005 – 2034 period), from -12% to -42% (for 2035 – 2064), and from -32% to -79% (for the 2070 – 2099 period). These results highlight the lack of agreement found amongst hydrologic models. The ranges of projected change vary widely, and in the near-term some modeling even predicts an *increase* in Snow Water Equivalent. However, in the long-term all of the models do agree that Snow Water Equivalent will be reduced, even though further refinement of the modeling will need to be completed to narrow down the range of reductions[3] .

The modeling results indicate that snow losses have greatest impact in relatively warm low-middle and middle elevations between about 3,280 feet and 6,560 feet (losses of 60% to 93%) and between about 6,560 feet and 9,840 feet (losses of 25% to 79%). The central and northern portions of the Sierra Nevada contain large portions of this low-middle and middle elevations, and are subject to the heaviest reductions in snow accumulation[4].

The effect of climate change on future demand of water supply remains uncertain (DWR 2006), but changes in water supply are expected. The California Department of Water Resources (DWR) has sponsored or published a number of papers on the interaction between climate change and water supply, and has included a Climate Change Portal on the State DWR website (www.climatechange.water.ca.gov). Climate change is also addressed in the 2009 California Water Plan update (public review draft of Volumes 1, 2, and 3 released January 2009). Adaptation is the primary thrust of the strategies outlined in the public review draft, with a focus on reducing water demand, improvements in operational efficiency, and increasing water supply.

The American River and many other major and minor rivers within the County are largely fed by snowmelt within the low-middle and middle elevation range that is

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[2] Cayan, D.C, Maurer, E., Dettinger, M., Tyree, M., Hayhoe, K. Bonfils, C., Duffy, P., and Santer, B., "Climate Scenarios for California: Climate Action Team Reports to the Governor and Legislature", publication # CEC-500-2005-203-SF (March 2006a).

[3] Cayan, D.C, Maurer, E., Dettinger, M., Tyree, M., Hayhoe, K. Bonfils, C., Duffy, P., and Santer, B., "Climate Scenarios for California: Climate Action Team Reports to the Governor and Legislature", publication # CEC-500-2005-203-SF (March 2006a).

[4] Cayan, D.C, Maurer, E., Dettinger, M., Tyree, M., Hayhoe, K. Bonfils, C., Duffy, P., and Santer, B., "Climate Scenarios for California: Climate Action Team Reports to the Governor and Legislature", publication # CEC-500-2005-203-SF (March 2006a).Blue Oak

expected to suffer the greatest reductions in snowpack. It can be concluded that Sacramento County will see a significant reduction in snowmelt-driven water supply by the end of this century. In the shorter term, it is less clear whether there will be a significant reduction in snowpack. Modeling results indicate that snowpack may either increase by 6% or decrease by as much as 29% by the year 2034. Given this uncertainty, it would be speculative to attempt to provide a quantified analysis of the effects of climate change on current water sources within Sacramento County.

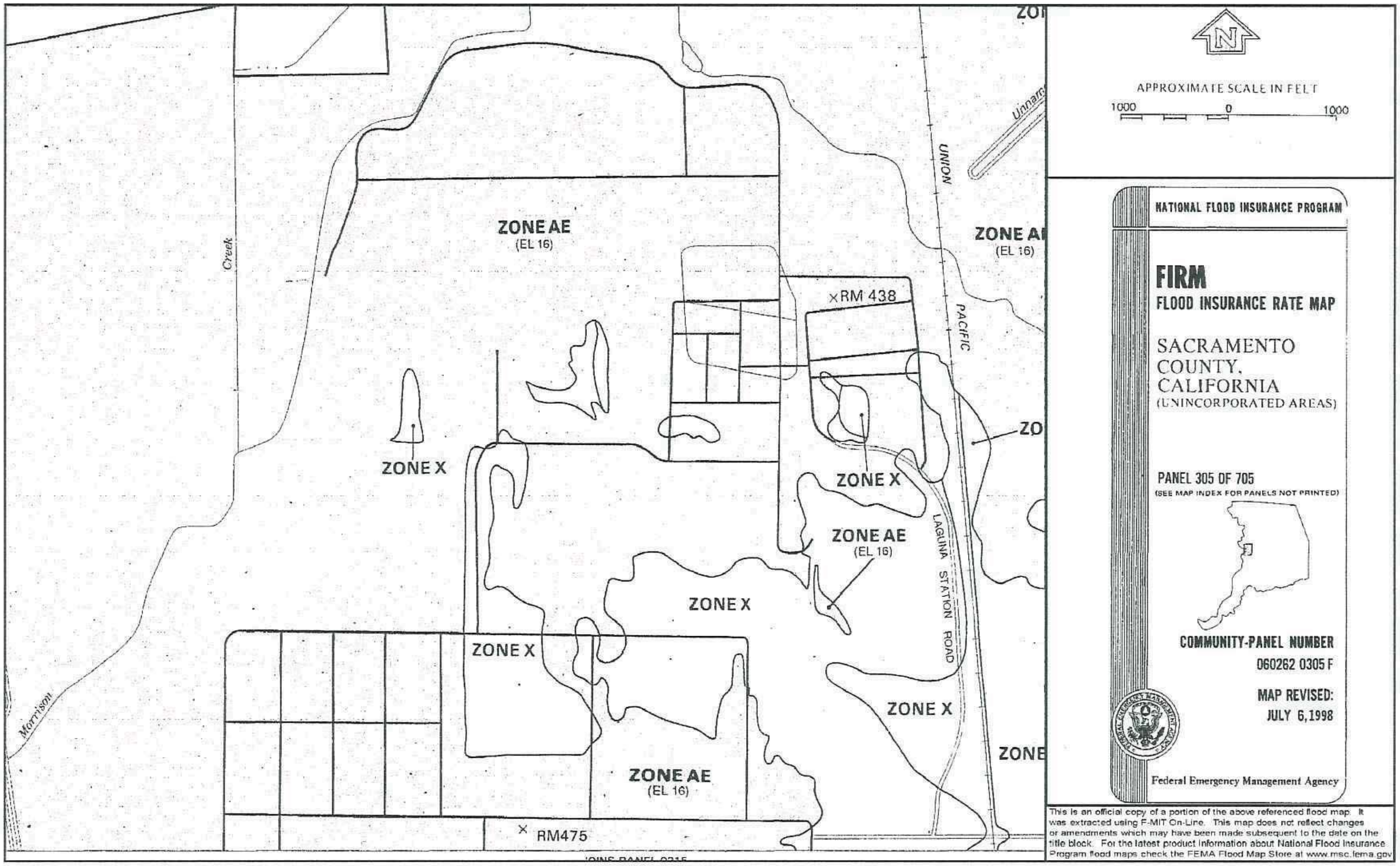
PROJECT IMPACTS

Implementation of the proposed project will result in an increase in the amount of reclaimed water available for irrigation and other nonpotable uses by water users in the immediate vicinity of the SRWTP. The facility currently has a treatment capacity of 5 mgd. With completion of the proposed project treatment capacity will increase by 5 mgd to a total of 10 mgd. It is assumed that the additional reclaimed water will replace potable water currently being used for irrigation and other nonpotable uses. The project will have a positive effect relative to climate change impacts as an adaptive measure by reducing potable water demand. Impacts related to climate change are considered less than significant.

DRAINAGE AND FLOODING

The project site is located within the Federal Emergency Management Agency (FEMA) Flood Zone X and Flood Zone AE, as determined by the 1998 FEMA Flood Insurance Rate Map (FIRM), panel number 060266-0305 F (Plate IS-3). Flood Zone X is defined as an area determined to be outside the 500-year floodplain, which indicates there is a less than 0.2 percent chance of a flood event occurring on the site for any given year. Flood Zone AE is defined as an area of special flood hazard inundated by the 100-year flood, which indicates there is a one percent chance of a flood event occurring on the site for any given year. Though located within the 100-year floodplain the project site is located within a completely developed portion of SRWTP. The SRWTP process plant is surrounded by a perimeter levee that was enhanced in 1996 to provide 200-year level flood protection to the SRWTP. This levee was constructed and is maintained to U.S. Army Corps of Engineer standards. Environmental impacts related to Drainage and Flooding are considered less than significant.

Plate IS-3: FEMA Flood Insurance Rate Map



STORMWATER POLLUTION AND EROSION/SEDIMENT CONTROL

Project compliance with requirements outlined below, as administered by the County Municipal Services Agency and Central Valley Regional Water Quality Control Board (Regional Board), will ensure that project-related erosion and pollution impacts are less than significant.

BACKGROUND

Sacramento County has a National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit issued by the Regional Board. The Municipal Stormwater Permit requires the County to reduce pollutants in stormwater discharges to the maximum extent practicable. The County complies with this permit in part by developing and enforcing ordinances and requirements to reduce the discharge of sediments and other pollutants in runoff from newly developing and redeveloping areas of the County.

SACRAMENTO COUNTY ORDINANCES

The County has established a Stormwater Ordinance (Sacramento County Code 15.12). The Stormwater Ordinance prohibits the discharge of unauthorized non-stormwater to the County's stormwater conveyance system and local creeks. It applies to all private and public projects in the County, regardless of size or land use type. In addition, Sacramento County Code 16.44 (Land Grading and Erosion Control) requires private construction sites disturbing one or more acres or moving 350 cubic yards or more of earthen material to obtain a grading permit. To obtain a grading permit, project proponents must prepare and submit for approval an Erosion and Sediment Control (ESC) Plan describing erosion and sediment control best management practices (BMPs) that will be implemented during construction to prevent sediment from leaving the site and entering the County's storm drain system or local receiving waters. Construction projects not subject to SCC 16.44 are subject to the Stormwater Ordinance (SCC 15.12) described above.

STATE PERMIT FOR CONSTRUCTION PROJECTS

In addition to complying with the County's ordinances and requirements, construction sites disturbing one or more acres are required to comply with the State's General Stormwater Permit for Construction Activities. The Construction General Permit is issued by the State Water Resources Control Board (http://www.waterboards.ca.gov/stormwtr/construction.html) and enforced by the Regional Board. Coverage is obtained by submitting a Notice of Intent (NOI) to the State Board prior to construction. The General Permit requires preparation and implementation of a site-specific Stormwater Pollution Prevention Plan (SWPPP) that must be kept on site at all times for review by the State inspector.

Applicable projects applying for a County grading permit must show proof that a NOI has been filed and must submit a copy of the SWPPP. Although the County has no enforcement authority related to the Construction General Permit, the County is required by its Municipal Stormwater Permit to verify that SWPPPs include six minimum components.

TEMPORARY CONSTRUCTION BMPS

During the wet season (October 1 – April 30), the project must include an effective combination of erosion, sediment and other pollution control BMPs in compliance with the County ordinances and the State's Construction General Permit. During the rest of the year, typically erosion controls are not required, except in the case of predicted rain.

Erosion controls should always be the first line of defense, to keep soil from being mobilized in wind and water. Examples include stabilized construction entrances, tackified mulch, 3-step hydroseeding, spray-on soil stabilizers and anchored blankets. Sediment controls are the second line of defense; they help to filter sediment out of runoff before it reaches the storm drains and local waterways. Examples include rock bags to protect storm drain inlets, staked or weighted straw wattles/fiber rolls, and silt fences.

In addition to erosion and sediment controls, the project must have BMPs in place to keep other construction-related wastes and pollutants out of the storm drains. Such practices include, but are not limited to: filtering water from dewatering operations, providing proper washout areas for concrete trucks and stucco/paint contractors, containing wastes, managing portable toilets properly, and dry sweeping instead of washing down dirty pavement.

It is the responsibility of the project proponent to verify that the proposed BMPs for the project are appropriate for the unique site conditions, including topography, soil type and anticipated volumes of water entering and leaving the site during the construction phase. In particular, the project proponent should check for the presence of colloidal clay soils on the site. Experience has shown that these soils do not settle out with conventional sedimentation and filtration BMPs. The project proponent may wish to conduct settling column tests in addition to other soils testing on the site, to ascertain whether conventional BMPs will work for the project.

If sediment-laden or otherwise polluted runoff discharges from the construction site are found to impact the County's storm drain system and/or Waters of the State, the property owner will be subject to enforcement action and possible fines by the County and the Central Valley Regional Water Quality Control Board (Regional Board).

POST-CONSTRUCTION STORMWATER QUALITY CONTROL MEASURES

Development and urbanization can increase pollutant loads, temperature, volume and discharge velocity of runoff over the predevelopment condition. The increased volume, increased velocity, and discharge duration of stormwater runoff from developed areas has the potential to greatly accelerate downstream erosion and impair stream habitat in natural drainage systems. Studies have demonstrated a direct correlation between the degree of imperviousness of an area and the degradation of its receiving waters. These impacts must be mitigated by requiring appropriate runoff reduction and pollution prevention controls to minimize runoff and keep runoff clean for the life of the project.

The County requires that projects include source and/or treatment control measures on selected new development and redevelopment projects. Source control BMPs are intended to keep pollutants from contacting site runoff. Examples include "No Dumping-Drains to Creek/River" stencils/stamps on storm drain inlets to educate the public, and providing roofs over areas likely to contain pollutants, so that rainfall does not contact the pollutants. Treatment control measures are intended to remove pollutants that have already been mobilized in runoff. Examples include vegetated swales and water quality detention basins. These facilities slow water down and allow sediments and pollutants to settle out prior to discharge to receiving waters. Additionally, vegetated facilities provide filtration and pollutant uptake/adsorption. The project proponent should consider the use of "low impact development" techniques to reduce the amount of imperviousness on the site, since this will reduce the volume of runoff and therefore will reduce the size/cost of stormwater quality treatment required. Examples of low impact development techniques include pervious pavement and bioretention facilities.

The County requires developers to utilize the Stormwater Quality Design Manual for the Sacramento and South Placer Regions, 2007 (Design Manual) in selecting and designing post-construction facilities to treat runoff from the project. A new post construction design regulation was approved by the Municipal Services Agency Administrator (C. Creson) on May 18th 2006. This regulation defines the development standards that the County is implementing and is reflected in the Design Manual. Treatment control measures are required on new development and redevelopment projects that meet or surpass the thresholds defined in Table 3-2 of the Design Manual.

Updates and background on the County's requirements for post-construction stormwater quality treatment controls, along with several downloadable publications, can be found at the following websites:

http://www.msa.saccounty.net/sactostormwater/SSQP/development.asp

http://www.sactostormwater.org/newdevelopment.asp

The final selection and design of post-construction stormwater quality control measures is subject to the approval of the County Department of Water Resources; therefore, they should be contacted as early as possible in the design process for guidance.

Project compliance with requirements outlined above, as administered by the County Municipal Services Agency and Central Valley Regional Water Quality Control Board (Regional Board), will ensure that project-related erosion and pollution impacts are less than significant.

BIOLOGICAL RESOURCES

NESTING RAPTORS

The project site contains suitable nesting habitat for nesting raptors. Raptors are defined as members of the order Falconiformes (vultures, eagles, hawks, and falcons) and the order Strigiformes (owls). Common species of raptors found locally include: red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), and great horned owl (*Bubo virginianus*). The following raptors are listed as California State Species of Special Concern: northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetu*), merlin (*Falco columbarius*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperi*), prairie falcon (*Falco mexicanus*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), and burrowing owl (*Athene cunicularia*). American peregrine falcon (*Falco peregrinus anatum*), golden eagle, and white-tailed kite (*Elanus leucurus*) are classified as Fully Protected under California Fish and Game Code Section 3511, 4700, 5050, and 5515. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Raptors and their active nests are protected by the Fish and Game Code of California (§3503.5, 3511, and 3513). The Code states the following: "It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird." Because most raptors migrate they are also protected by the federal Migratory Bird Treaty Act of 1918, which states "unless and except as permitted by regulations, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill" a migratory bird. Section 3(18) of the federal Endangered Species Act defines the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Causing a bird to abandon an active nest may cause harm to egg(s) or chick(s) and is therefore considered "take."

The project site may contain suitable nesting habitat for raptors. The nesting survey, as discussed in the Swainson's Hawk section below, will reduce any potential impacts to nesting raptors to less than significant.

SWAINSON'S HAWK

The Swainson's hawk (*Buteo swainsoni*) is listed as a threatened species by the State of California and is a candidate for federal listing as threatened or endangered. It is a migratory raptor typically nesting in or near valley floor riparian habitats during spring and summer months. In addition Swainson's hawk is protected under the Federal Migratory Bird Treaty Act of 1918.

Swainson's hawks were once common throughout the state, but various habitat changes, including the loss of nesting habitat (trees) and the loss of foraging habitat through the conversion of native Central Valley grasslands to certain incompatible agricultural and urban uses has caused an estimated 90% decline in their population.

Swainson's hawks feed primarily upon small mammals, birds, and insects. Their typical foraging habitat includes native grasslands, alfalfa, and other hay crops that provide suitable habitat for small mammals. Certain other row crops and open habitats also provide some foraging habitat. The availability of productive foraging habitat near a Swainson's hawk's nest site is a critical requirement for nesting and fledgling success. In central California, about 85% of Swainson's hawk nests are within riparian forest or remnant riparian trees. CEQA analysis of impacts to Swainson's hawks consists of separate analyses of impacts to nesting habitat and foraging habitat.

The CEQA analysis provides a means by which to ascertain impacts to the Swainson's hawk. When the analysis identifies impacts, mitigation measures are established that will reduce impacts to the species to a less than significant level. Project proponents are cautioned that the mitigation measures are designed to reduce impacts and do not constitute an incidental take permit under the California Endangered Species Act (CESA). Anyone who directly or incidentally takes a Swainson's hawk, even when in compliance with mitigation measures established pursuant to CEQA, may violate the California Endangered Species Act.

Nesting Habitat

For determining impacts to and establishing mitigation for nesting Swainson's hawks in Sacramento County, the California Department of Fish and Game (CDFG) recommends implementing the measures set forth in the CDFG Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (November 1, 1994). These state that no intensive new disturbances, such as heavy equipment operation associated with construction, should be initiated within ¼ mile of an active Swainson's hawk nest in an urban setting or within ½ mile in a rural setting between March 1 and September 15.

The nearest known Swainson's hawk nest is within ¼ mile of the project site (see Plate IS-4). Since the project is within ¼ mile of a known nest site, construction activities on the project site may impact an active nest. If construction, grading, or project-related improvements are to occur between March 1 and September 15, a focused survey for Swainson's hawk and other raptors nests on the site and on nearby trees (within ½ mile of the site) shall be conducted by a qualified biologist within 14 days prior to the start of construction work (including clearing and grubbing). If active nests are found CDFG shall be contacted to determine appropriate protective measures. If no active nests are found during the focused survey, no further mitigation will be required. If active nests are found, the protective measures required by CDFG will prevent impacts to nesting Swainson's hawks.

Foraging Habitat

Statewide, CDFG recommends implementing the measures set forth in the CDFG Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (November 1, 1994) for determining impacts to Swainson's hawk foraging habitat unless local jurisdictions develop an individualized methodology designed specifically for their location. Sacramento County has developed such a methodology and received confirmation from CDFG in May 2006 that the new methodology is a better fit for unincorporated Sacramento County and should replace the statewide, generalized methodology for determining impacts to foraging habitat.

Swainson's hawks are known to forage up to 18 miles from their nest site; however, that is the extreme range of one individual bird's daily movement. It is more common for a Swainson's hawk to forage within 10 miles of its nest site. Therefore it is generally accepted and CDFG recommends evaluating projects for foraging habitat impacts when they are within 10 miles of a known nest site.

Swainson's hawk foraging habitat value is greater in large expansive open space and agricultural areas than in areas which have been fragmented by agricultural-residential or urban development. The new methodology for unincorporated Sacramento County is based on the concept that impacts to Swainson's hawk foraging habitat occur as properties develop to increasingly more intensive uses on smaller minimum parcel sizes. Therefore, the methodology relies mainly on the minimum parcel size allowed by zoning to determine habitat value. For the purpose of the methodology, properties with zoning of AG-40 and larger maintain 100% of their foraging habitat value and properties with AR-5 zoning and smaller have lost all foraging habitat value. **Error! Reference source not found.** illustrates the continuum between AG-40 and AR-5 that represents the partial loss of habitat value that occurs with fragmentation of large agricultural land holdings. The large, 50% loss of habitat value between AG-20 and AR-10 is due to the change in land use from general agriculture to agricultural-residential.

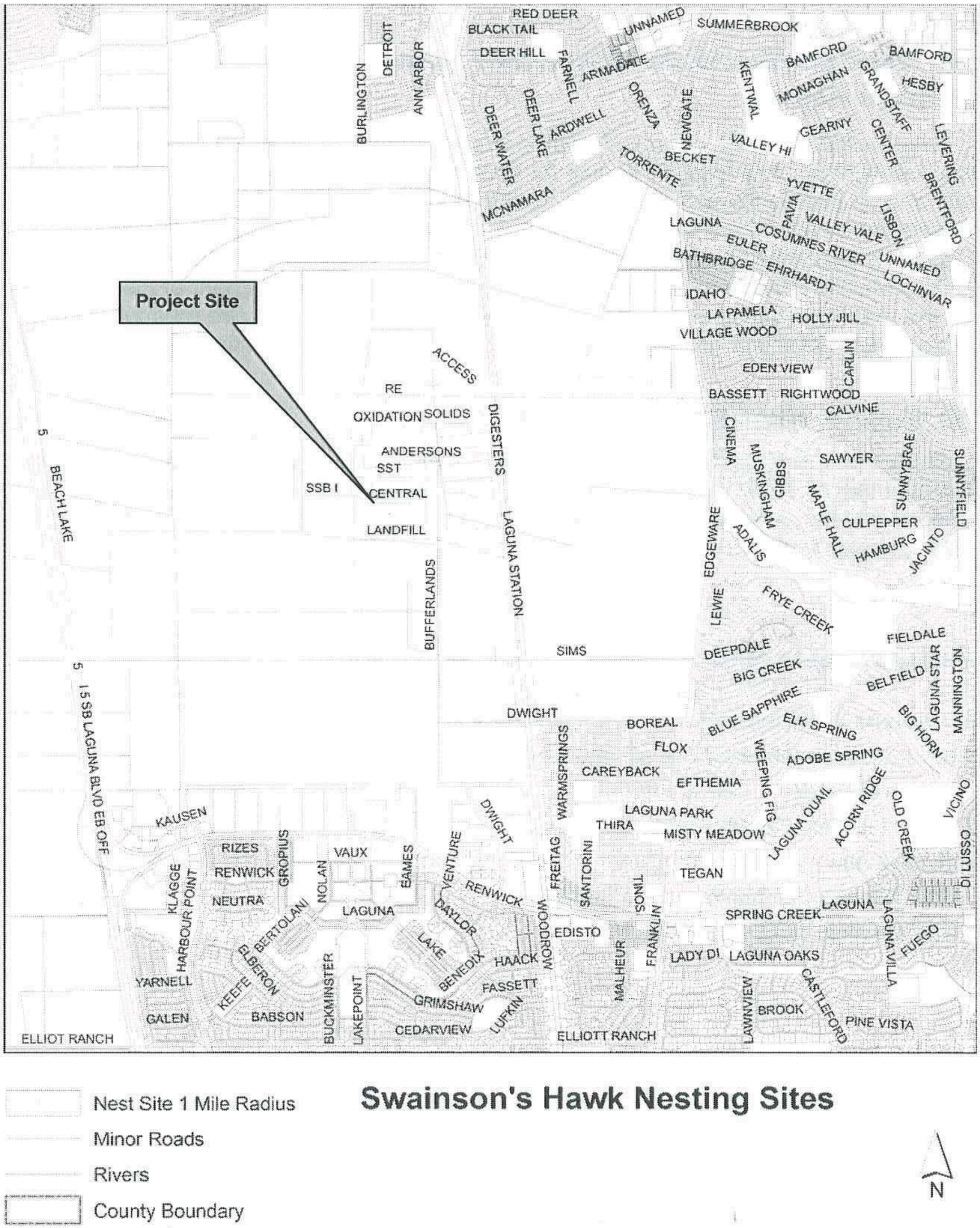
Table IS-1: Swainson's Hawk Foraging Habitat Value by Zoning Category

Zoning Category	Habitat Value Remaining
AG-40 and above (e.g., AG-80, 160 etc.)	100%
AG-20	75%
AR-10	25%
AR-5 and smaller (e.g., AR-2, 1 or RD-5, 7, 10, 15, 20 etc.)	0%

The project is located within one mile of active nest sites (Plate IS-4). However, the site is fully developed and the project does not propose to change the zoning of the site. No loss of Swainson's hawk foraging habitat is anticipated as a result of this project.

With mitigation requiring that nesting surveys are conducted, impacts to Swainson's hawks are considered less than significant.

Plate IS-4: Swainson's Hawk Nesting Sites



Swainson's Hawk Nesting Sites

ENVIRONMENTAL MITIGATION MEASURES

MITIGATION MEASURE A: SWAINSON'S HAWK AND OTHER RAPTORS NESTING HABITAT

If construction, grading, or project-related improvements are to occur between March 1 and September 15, a focused survey for Swainson's hawk and other raptor nests on the site and on nearby trees shall take place within ½ mile of the site, and shall be conducted by a qualified biologist within 14 days prior to the start of construction work (including clearing and grubbing). If active nests are found, the Department of Environmental Review and Assessment and the California Department of Fish and Game (CDFG) shall be contacted to determine appropriate protective measures. If no active nests are found during the focused survey, no further mitigation will be required.

MITIGATION MEASURE COMPLIANCE

Comply with the Mitigation Monitoring and Reporting Program for this project, including the payment of 100% of the Sacramento County Department of Environmental Review and Assessment staff costs, and the costs of any technical consultant services incurred during implementation of that Program.

INITIAL STUDY PREPARERS

Environmental Coordinator: Joyce Horizumi
Assistant Environmental Coordinator: Antonia Barry
Division Manager: Todd Smith
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INITIAL STUDY CHECKLIST

FOR SRWTP WATER RECLAMATION FACILITY PHASE II EXPANSION PROJECT

CONTROL NUMBER: 2009-70058

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. The words "significant" and "significance" used throughout the following checklist are related to impacts as defined by the California Environmental Quality Act.

INITIAL STUDY CHECKLIST

	Potentially Significant[i]	Less Than Significant with Mitigation[ii]	Less Than Significant or No Impact[iii]	Comments
1. **LAND USE** - Would the project:				
a. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to a general plan, specific plan or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			X	The project is consistent with environmental policies of the Sacramento County General Plan, SRWTP Master Plan, and Sacramento County Zoning Code.
b. Physically disrupt or divide an established community?			X	The project will not create physical barriers that substantially limit movement within or through the community.
2. **POPULATION/HOUSING** - Would the project:				
a. Induce substantial unplanned population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of infrastructure)?			X	The project will not induce substantial unplanned population growth in an area either directly or indirectly.
b. Displace substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere?			X	The project will not result in the removal of existing housing.
3. **AGRICULTURAL RESOURCES** - Would the project:				
a. Convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance or areas containing prime soils to uses not conducive to agricultural production?			X	The project site is not considered Prime Farmland, Unique Farmland, or Farmland of Statewide Importance nor does it contain prime soils.
b. Conflict with any existing Williamson Act contract?			X	No Williamson Act contracts apply to the project site.
c. Introduce incompatible uses in the vicinity of existing agricultural uses?			X	Given the nature of the proposed project, incompatibility between the project and existing agricultural uses is not anticipated.

	Potentially Significant[i]	Less Than Significant with Mitigation[ii]	Less Than Significant or No Impact[iii]	Comments
4. **AESTHETICS -** Would the project:				
a. Substantially alter existing viewsheds such as scenic highways, corridors or vistas?			X	The project does not occur in the vicinity of any scenic highways, corridors, or vistas.
b. Substantially degrade the existing visual character or quality of the site and its surroundings?			X	Construction will not substantially degrade the visual character or quality of the project site.
c. Create a new source of substantial light, glare or shadow that would result in safety hazards or adversely affect day or nighttime views in the area?			X	The project would not result in substantial new sources of light, glare or shadow.
5. **AIRPORTS -** Would the project:				
a. Result in a safety hazard for people residing or working in the vicinity of an airport/airstrip?			X	The project occurs outside of any identified public or private airport/airstrip safety zones.
b. Expose people residing or working in the project area to aircraft noise levels in excess of applicable standards?			X	The project is not located in the vicinity of an airport or airstrip.
c. Result in a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft?			X	The project does not affect navigable airspace.
d. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?			X	The project does not involve or affect air traffic movement.
6. **PUBLIC SERVICES -** Would the project:				
a. Have an adequate water supply for full buildout of the project?			X	The project site has existing water supplies and water supply facilities. Construction is not anticipated to substantially impact existing service capacity.
b. Have adequate wastewater treatment and disposal facilities for full buildout of the project?			X	The project pertains to reclamation of wastewater at the Sacramento Regional Wastewater Treatment Plant (SRWTP). No wastewater treatment facilities will be necessary for project implementation.

	Potentially Significant[i]	Less Than Significant with Mitigation[ii]	Less Than Significant or No Impact[iii]	Comments
c. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	The Sacramento County Integrated Waste Management Plan provides for adequate waste disposal capacity to serve existing and anticipated development until the year 2010. The Keifer Landfill has capacity to accommodate solid waste until the year 2030.
d. Result in substantial adverse physical impacts associated with the construction of new water supply or wastewater treatment and disposal facilities or expansion of existing facilities?			X	The project proposes expansion of the existing water reclamation facility. The Initial Study addresses all potential physical impacts associated with the project.
e. Result in substantial adverse physical impacts associated with the provision of storm water drainage facilities?			X	Project construction would not require the addition of new stormwater drainage facilities.
f. Result in substantial adverse physical impacts associated with the provision of electric or natural gas service?			X	Existing electric service will adequately support the proposed project.
g. Result in substantial adverse physical impacts associated with the provision of emergency services?			X	Project would incrementally increase demand for emergency services. However, no substantial adverse physical impacts have been identified.
h. Result in substantial adverse physical impacts associated with the provision of public school services?			X	The project will not result in physical impacts associated with the provision of public school.
i. Result in substantial adverse physical impacts associated with the provision of park and recreation services?			X	The project will not affect the provision of park services.
7. **TRANSPORTATION/TRAFFIC** - Would the project:				
a. Result in a substantial increase in peak hour vehicle trip-ends that could exceed, either individually or cumulatively, a level of service standard established by the County?			X	The project is consistent with existing zoning and will not increase the trip generation capacity of the project site.
b. Result in a substantial adverse impact to access and/or circulation?			X	No changes to existing access and/or circulation patterns would occur as a result of the project.

	Potentially Significant[i]	Less Than Significant with Mitigation[ii]	Less Than Significant or No Impact[iii]	Comments
c. Result in substantial adverse impact due to inadequate parking capacity?			X	No parking is required.
d. Result in a substantial adverse impact to public safety on area roadways?			X	No changes to existing access and/or circulation patterns would occur as a result of the project. Therefore no impacts to public safety on area roadways are anticipated.
e. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?			X	No conflicts with adopted policies, plans, or programs supporting alternative transportation have been identified.
8. **AIR QUALITY** - Would the project:				
a. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?			X	The project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment.
b. Expose sensitive receptors to pollutant concentrations in excess of standards?			X	The project will not expose sensitive receptors (i.e., schools, nursing homes, hospitals, daycare centers, etc.) to pollutant concentrations in excess of standards.
c. Create objectionable odors affecting a substantial number of people?			X	The project will not create objectionable odors affecting a substantial number of people.
9. **NOISE** - Would the project:				
a. Result in exposure of persons to, or generation of, noise levels in excess of standards established by the local general plan, noise ordinance or applicable standards of other agencies?			X	The project will not result in exposure of persons to, or generation of, noise levels in excess of applicable standards.
b. Result in a substantial temporary increase in ambient noise levels in the project vicinity?			X	Project construction will result in a temporary increase in ambient noise levels in the project vicinity. This impact is considered less than significant due to the temporary nature of the these activities, limits on the duration of noise, and evening and nighttime restrictions imposed by the County Noise Ordinance (Chapter 6.68 of the County Code).

	Potentially Significant[i]	Less Than Significant with Mitigation[ii]	Less Than Significant or No Impact[iii]	Comments
10. **HYDROLOGY AND WATER QUALITY** - Would the project:				
a. Substantially deplete groundwater supplies or substantially interfere with groundwater recharge?			X	The project will not rely on groundwater supplies and will not substantially interfere with groundwater recharge.
b. Substantially alter the existing drainage pattern of the project area and/or increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?			X	The project will not result in flooding on- or off-site through substantial alteration of the existing drainage pattern of the project area and/or by increasing the rate or amount of surface runoff.
c. Develop within a 100-year floodplain as mapped on a federal Flood Insurance Rate Map or within a local flood hazard area?			X	The project site is within a 100-year floodplain and/or local floodplain; however, onsite flooding is not anticipated. Refer to the "Drainage" discussion in the text of the Initial Study.
d. Place structures that would impede or redirect flood flows within a 100-year floodplain?			X	Improvements associated with the project will not impede or redirect flows within a 100-year floodplain.
e. Expose people or structures to a substantial risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			X	The project will not expose people or structures to a substantial risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
f. Create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems?			X	The project will not create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems.

	Potentially Significant[i]	Less Than Significant with Mitigation[ii]	Less Than Significant or No Impact[iii]	Comments
g. Create substantial sources of polluted runoff or otherwise substantially degrade ground or surface water quality?			X	Sacramento County has been issued a National Pollutant Discharge Elimination System (NPDES) Stormwater Permit by the Central Valley Regional Water Quality Control Board which requires the County to reduce pollutants in stormwater discharges to the maximum extent practicable. The County complies with this permit by developing and enforcing ordinances and requirements to reduce the discharge of sediments and other pollutants in runoff from newly developing and redeveloping areas of the County. These requirements apply to both private and public projects. Along with other efforts, the County enforces the Stormwater Ordinance and Land Grading and Erosion Control Ordinances (Chapters 15.12 and 14.44 of the County Code respectively). These ordinances prohibit the discharge of non-stormwater to the stormwater conveyance system and surface waters and require erosion and sediment control measures for construction sites disturbing one or more acres.
11. **GEOLOGY AND SOILS** - Would the project:				
a. Expose people or structures to substantial risk of loss, injury or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?			X	Sacramento County is not within an Alquist-Priolo Earthquake Fault Zone. Although there are no known active earthquake faults in the project area, the site could be subject to some ground shaking from regional faults. The Uniform Building Code contains applicable construction regulations for earthquake safety that will assure less than significant impacts.
b. Result in substantial soil erosion, siltation or loss of topsoil?			X	Compliance with the County's Land Grading and Erosion Control Ordinance will reduce the amount of construction site erosion and minimize water quality degradation by providing stabilization and protection of disturbed areas, and by controlling the runoff of sediment and other pollutants during the course of construction.
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, soil expansion, liquefaction or collapse?			X	The project is not located on an unstable geologic or soil unit.

	Potentially Significant[i]	Less Than Significant with Mitigation[ii]	Less Than Significant or No Impact[iii]	Comments
d. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available?			X	The project does not require the use of septic tanks or alternative wastewater disposal systems. A public sewer system is available to serve the project.
e. Result in a substantial loss of an important mineral resource?			X	The project is not located within an Aggregate Resource Area as identified by the Sacramento County General Plan Land Use Diagram, nor are any important mineral resources known to be located on the project site.
f. Directly or indirectly destroy a unique paleontological resource or site?			X	No known paleontological resources (e.g. fossil remains) or sites occur at the project location.
12. **BIOLOGICAL RESOURCES** - Would the project:				
a. Have a substantial adverse effect on any special status species?		X		Swainson's hawks are known to nest within the vicinity of the project site. However, the project is not expected to impact Swainson's hawks. Refer to the "Biological Resources" section in the Initial Study.
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community?			X	No sensitive natural communities occur on the project site nor is the project expected to affect natural communities off-site.
c. Have a substantial adverse effect on wetlands designated as jurisdictional waters of the United States as defined by Section 404 of the Clean Water Act?			X	No jurisdictional wetlands are known to occur on the subject property(ies).
d. Have a substantial adverse effect on the movement of any native resident or migratory fish or wildlife species?			X	The project site is already developed. Project implementation would not affect native resident or migratory species.
e. Adversely affect or result in the removal of native or landmark trees?			X	No native and/or landmark trees occur on the project site nor is it anticipated that any native and/or landmark trees would be affected by off-site improvement required as a result of the project.
f. Conflict with any local policies or ordinances protecting biological resources?			X	The project is consistent with local policies/ordinances protecting biological resources.

	Potentially Significant[i]	Less Than Significant with Mitigation[ii]	Less Than Significant or No Impact[iii]	Comments
g. Conflict with the provisions of an adopted Habitat Conservation Plan or other approved local, regional, state or federal plan for the conservation of habitat?			X	There are no known conflicts with any approved plan for the conservation of habitat.
13. **CULTURAL RESOURCES** - Would the project:				
a. Cause a substantial adverse change in the significance of an historical resource?			X	No historical resources would be affected by the proposed project.
b. Have a substantial adverse effect on an archaeological resource?			X	No known archaeological resources occur on-site.
c. Disturb any human remains, including those interred outside of formal cemeteries?			X	No known human remains exist on the project site.
14. **HAZARDS AND HAZARDOUS MATERIALS** - Would the project:				
a. Create a substantial hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?			X	The project will not create a substantial hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
b. Expose the public or the environment to a substantial hazard through reasonably foreseeable upset conditions involving the release of hazardous materials?			X	The project will not expose the public or the environment to a substantial hazard through reasonably foreseeable upset conditions involving the release of hazardous materials.
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?			X	The project site is not located within ¼ mile of an existing /proposed school.
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, resulting in a substantial hazard to the public or the environment?			X	The project is not located on a known hazardous materials site.
e. Impair implementation of or physically interfere with an adopted emergency response or emergency evacuation plan?			X	The project would not interfere with any known emergency response or evacuation plan.

SUPPLEMENTAL INFORMATION

LAND USE CONSISTENCY	Current Land Use Designation	Consistent	Not Consistent	Comments
General Plan	Public / Quasi-Public	X		
Community Plan				
Land Use Zone	AG-80	X		

[i] **Potentially Significant** indicates there is substantial evidence that an effect MAY be significant. If there are one or more "Potentially Significant" entries and Environmental Impact Report (EIR) is required. Further research of a potentially significant impact may reveal that the impact is actually less than significant or less than significant with mitigation.

[ii] **Less than Significant with Mitigation** applies where an impact could be significant but specific mitigation has been identified that reduces the impact to a less than significant level.

[iii] **Less than Significant or No Impact** indicates that either a project will have an impact but the impact is considered minor or that a project does not impact the particular resource.

Final

IMPACTS EVALUATION REPORT

For the Sacramento Regional Wastewater Treatment Plant - Wastewater Reclamation Project

Prepared for:

Sacramento Regional County Sanitation District

Prepared by:

beak consultants incorporated

In Association with:

Daniel B. Steiner, Consulting Engineer
and
Archibald & Wallberg Consultants

June 6, 1995

Final

Impacts Evaluation Report

For the Sacramento Regional Wastewater Treatment Plant Wastewater Reclamation Project

Prepared for:

Sacramento Regional County Sanitation District
8521 Laguna Station Road
Elk Grove, California 95758-9550

Prepared by:

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In Association with:

Daniel B. Steiner, Consulting Engineer
and
Archibald & Wallberg Consultants

June 6, 1995

1.0 AFFECTED ENVIRONME. :T

1.1 PROJECT DESCRIPTION

The Sacramento Regional Wastewater Treatment Plant (SRWTP), which became operational in 1982, is located on 900 acres of a 3,400 acre site between Interstate 5 and Franklin Boulevard, south of Meadowview Road. The remaining 2,500 acres are bufferlands to insulate the plant from nearby residential areas. The SRWTP provides secondary wastewater treatment for about 1 million residents in the urbanized area of Sacramento County. Inflow to the SRWTP includes both sanitary and storm water discharges. Wastewater discharges to the Sacramento River currently average approximately 140 mgd (215 cfs).

The project involves the construction of a 5 mgd (7.7 cfs) water reclamation plant within the property of the SRWTP. The plant is currently being designed, and will have the capability to be expanded to 10 mgd (15.5 cfs). The water reclamation plant will process SRWTP secondary effluent through additional treatment steps. Secondary effluent will be pumped from the secondary effluent channel for chemical conditioning, flocculation, filtration and chlorination. A covered storage tank and reclaimed water distribution pump station will comprise the remainder of the reclamation plant. Reclaimed water will be delivered to users through transmission mains connected to reclaimed water distribution systems. The reclaimed water distribution systems will be completely separate from the · able water distribution systems. Users will receive reclaimed water through separate metere. service connections, similar to a potable water system.

1.1.1 Reclaimed Water Users and Demands

The project will provide reclaimed water to users in the immediate vicinity of the SRWTP. Anticipated reclaimed water users/areas to be served include the City of Sacramento's Bart Cavanaugh Golf Course near Freeport, the SRWTP for plant process and irrigation needs, the Laguna West, Lakeside, and Elliott Ranch South developments for irrigation of parks, schools, streetscape, greenbelts, and commercial properties, and for irrigation of the interchanges at Interstate 5 with Laguna and Elk Grove Boulevards.

The initial project will deliver approximately 2,500 acre-feet per year of reclaimed water with a peak monthly daily demand of 5 mgd (7.7 cfs). **Table 1** summarizes the estimated water deliveries for each of the anticipated use·s/areas. However, the project will be able to be expanded to 10 mgd (15.5 cfs) in the future. Specific areas for use of additional reclaimed water have not been identified; however, use of this additional reclaimed water would be expected to be similar to that in the Laguna West development.

Table 1[a]. Estimated reclaimed water deliveries to anticipated water users for the proposed 5 mgd project.

User/Area	Acres	Annual Demand Rate (ft/yr)	Annual Demand (Ac-ft)	Peak Month Daily Demand (mgd)	Peak Month Daily Demand (cfs)
Laguna West, Lakeside, Elliot Ranch South					
Parks, Schools, Interchanges, Levees	138	4.0	552	1.29	2.0
Commercial	36	4.0	144	0.34	0.5
Landscape Corridor	72	4.0	288	0.67	1.0
Subtotal	246		984	2.30	3.6
Bartley W. Cavanaugh Golf Course	68	3.0	204	0.39	0.6
SRWTP Non-Potable Process	--	--	903	1.40	2.2
SRWTP Landscape Buffer	86	4.8	413	0.84	1.3
TOTAL	400		2,504	4.93	7.6

[a]Developed from Table 1 Water Reclamation Project, Estimated Reclaimed Water Deliveries, County of Sacramento Water Reclamation Project, Project Description

1.2 AREA POTENTIALLY AFFECTED BY THE PROJECT

The project is designed to treat and deliver SRWTP effluent to non-potable, consumptive and non-consumptive uses which are currently, or potentially served from regional water supplies. The source of the water is SRWTP effluent that would otherwise be discharged to the Sacramento River. The project would, therefore, affect the amount of SRWTP effluent discharged to the Sacramento River, and thereby, potentially reduce flow volumes in the Sacramento River.

The discussion of the affected environment is restricted to the hydrology and associated water quality and fisheries resources of waterways in the immediate vicinity of the wastewater reclamation plant and downstream. Reduced flow volume in the Sacramento River could potentially influence the hydrology and water quality in the Sacramento River downstream from the water reclamation plant and in the Sacramento-San Joaquin Delta (Delta) which receives water from the Sacramento River. The discussion of the affected environment focuses on the facilities and operations dependent on, involved in or potentially affected by changes in the availability of water within the Sacramento River below Freeport or the Delta as a result of this action. The operations and descriptions of facilities outside of this defined region are included only to the extent that operation of specific facilities outside the region are necessary for complying with regulatory requirements for the Delta. Water quality and fisheries resources in the Sacramento River and Delta potentially affected by the project will also be addressed.

1.3 PHYSICAL AND BIOLOGICAL ENVIRONMENT

1.3.1 Hydrology

Sacramento Regional Water Treatment Plant

The rate of inflow to the SRWTP averages 150 mgd (230 cfs). Storm runoff can double the daily amount of inflow to the plant. The inflow to the SRWTP has averaged 160 mgd (248 cfs) over the last three years.

Average daily effluent discharges to the Sacramento River are normally less than average daily inflow to the plant. This is due to a variety of reasons including variations in equipment calibration, water use within the process train (i.e., wash down, spraying, etc.), and water that is diverted to emergency storage basins due to plant process shutdown during maintenance, permit discharge limitations, or during the rainy season when the plant is unable to directly handle the increased inflows. Discharges to the Sacramento River have averaged 140 mgd (215 cfs) over the last three years. Figures 1a, 1b, 1c, and 1d illustrate the daily average inflow and Sacramento River discharge of the SRWTP for the period 1985 through 1994. Figure 2 illustrates the range of daily discharges that have occurred over the last ten years. Storm events have created daily releases in excess of 291 mgd (450 cfs) while a minimum daily discharge of

65 mgd (100 cfs) occurs during a year. Figure 3 illustrates the monthly distribution of discharges to the Sacramento River over the last three years. Discharges during the summer months occur relatively constant (between months and on a daily basis), while the range of discharges during winter months varies due to storm events.

Sacramento River

Flows in the Sacramento River at and downstream from the proposed project are largely determined by the operation of upstream reservoirs (e.g., Shasta, Oroville, and Folsom reservoirs) and the timing and rates of diversions from the Sacramento River and tributary streams. Upstream reservoirs are operated to fulfill a variety of functions, including flood control, water supply, fisheries and wildlife benefits, power generation, and to meet water quality and flow requirements in the Delta. Diversions from the Sacramento River and tributary streams also influence seasonal flow levels in the project area by reducing overall flow volumes in the river.

According to the Sacramento River Basin Four Rivers Index, unimpaired flows (i.e., flows that would exist in the absence of upstream impoundments and diversions) in the Sacramento River at Freeport are characteristically high from January through May and low in July to September (State Water Resources Control Board (SWRCB) 1995). The natural flow pattern has since been altered due to a variety of river flow control facilities. Flows have since been reduced during the wetter months due to upstream storage and diversions. However, flows are also typically higher during the drier months due to the requirements to set flows at levels capable of meeting water quality objectives and water delivery obligations.

The flow of the Sacramento River can significantly vary from year-to-year and within a year. Flow in the Sacramento River can be either specifically caused (controlled) by operations of the Central Valley Project (CVP) and State Water Project (SWP), or be somewhat irrespective of these operations, such as during times of significant uncontrolled runoff during storm events. Figure 4 illustrates the variance in average monthly flow in the Sacramento River at Freeport for the period 1985 through 1993. The data for Figure 4 are presented in Table 2. This period of record encompasses a few wet years along with the recent 6-year drought during which Sacramento River flows were extremely low.

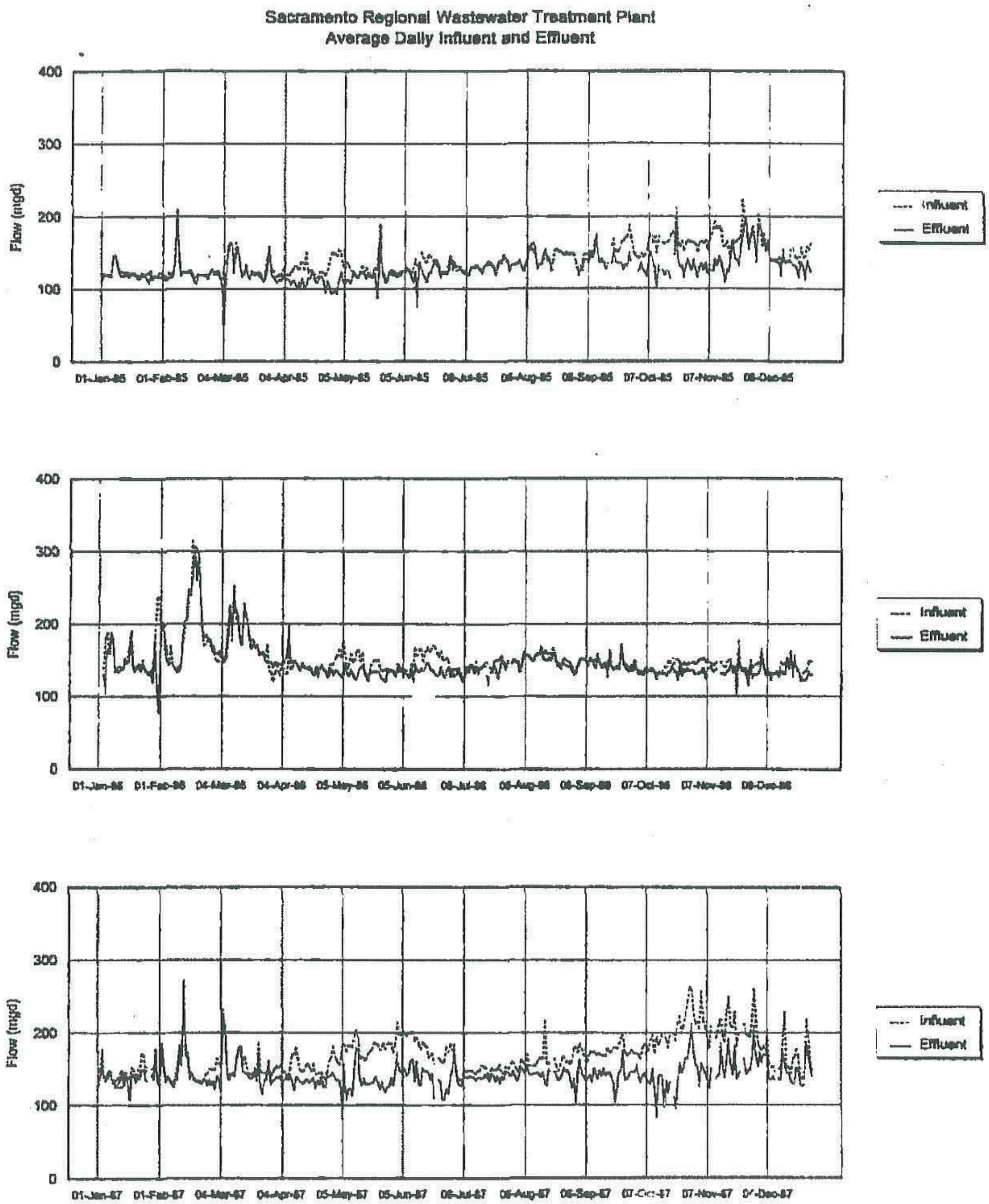

Figure 1a. Average daily influent and effluent (mgd) at the Sacramento Regional Wastewater Treatment Plant during 1985, 1986, and 1987.

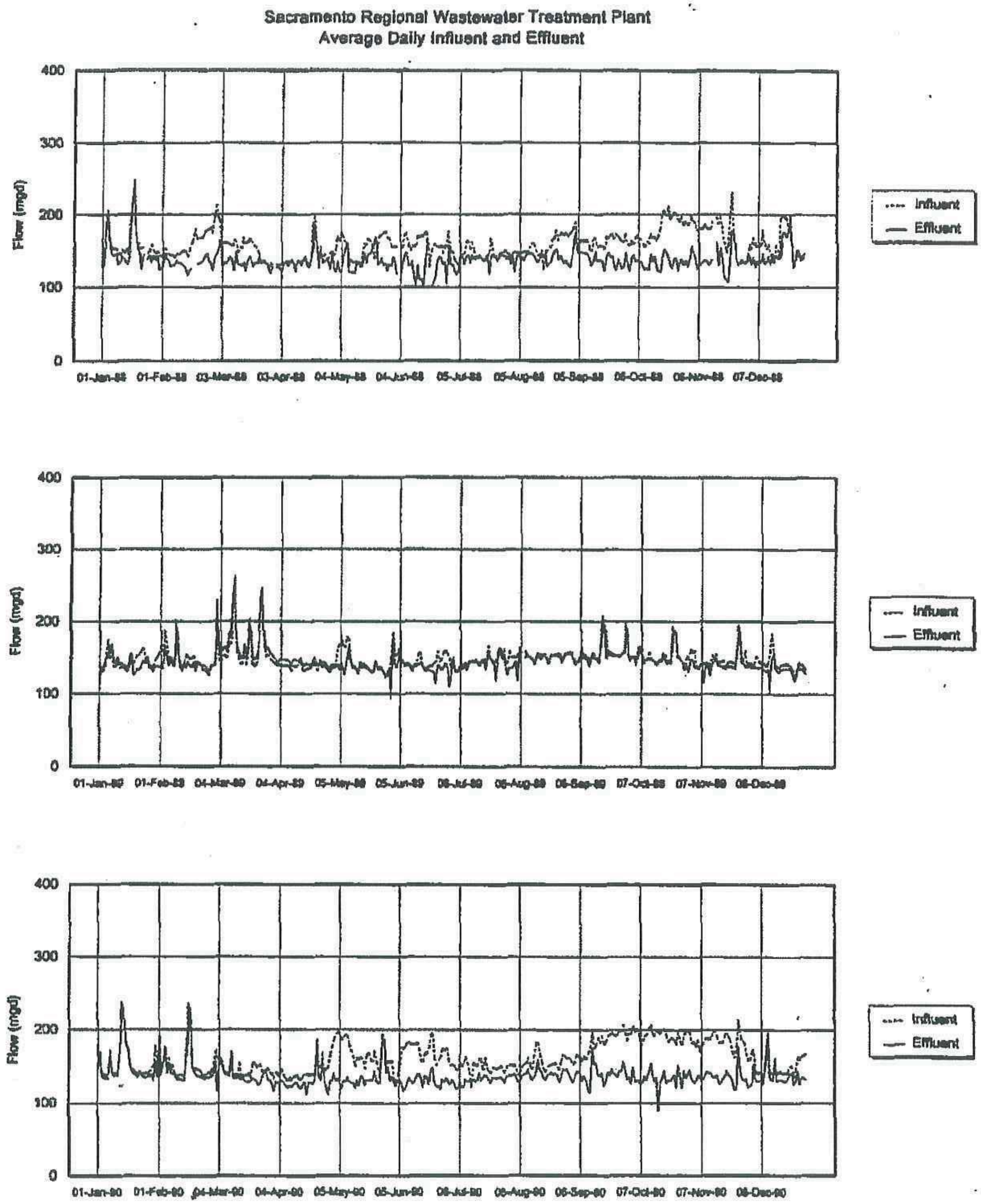

Figure 1b. Average daily influent and effluent (mgd) at the Sacramento Regional Wastewater Treatment Plant during 1988, 1989, and 1990.

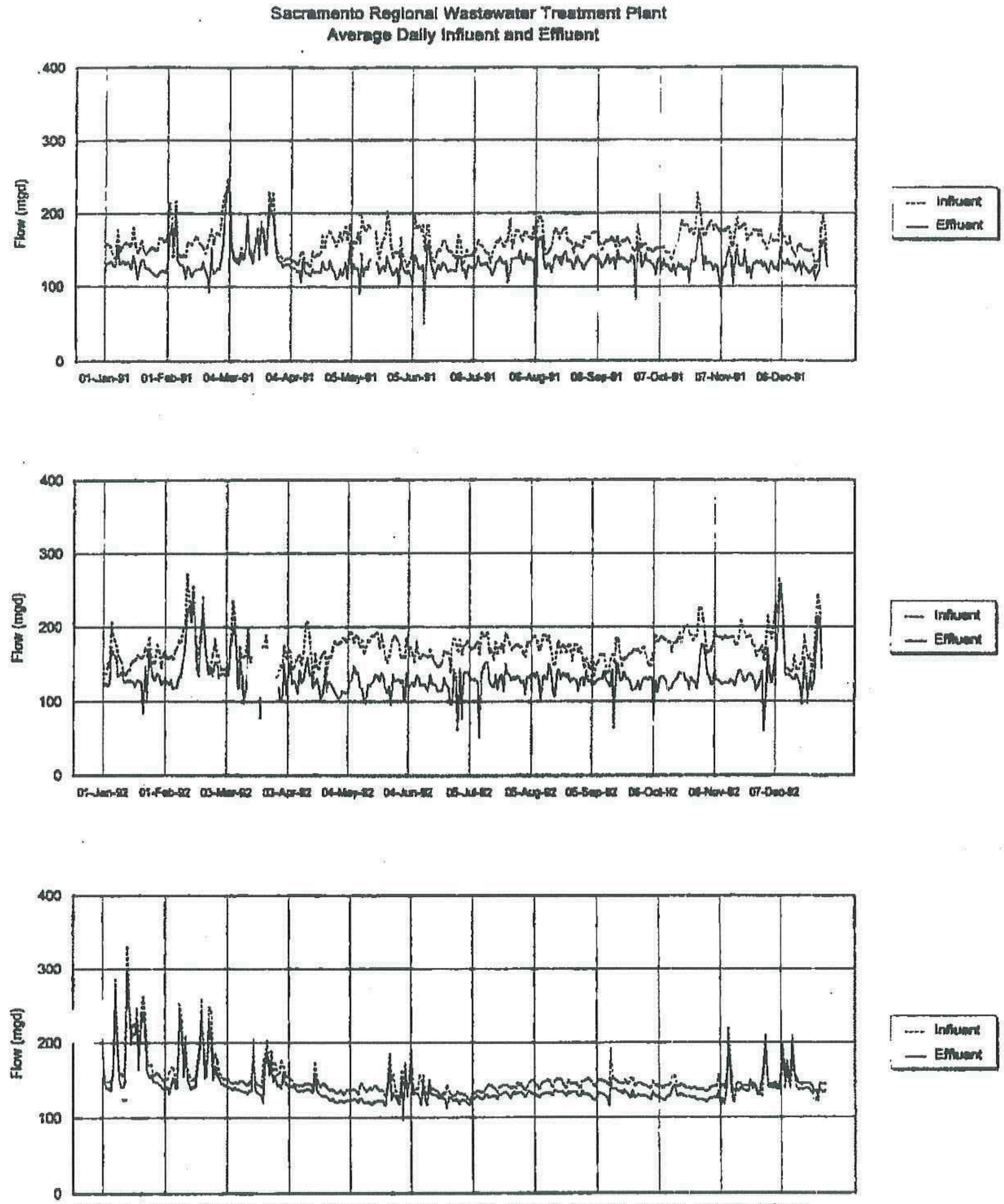

Figure 1c. Average daily influent and effluent (mgd) at the Sacramento Regional Wastewater Treatment Plant during 1991, 1992, and 1993.

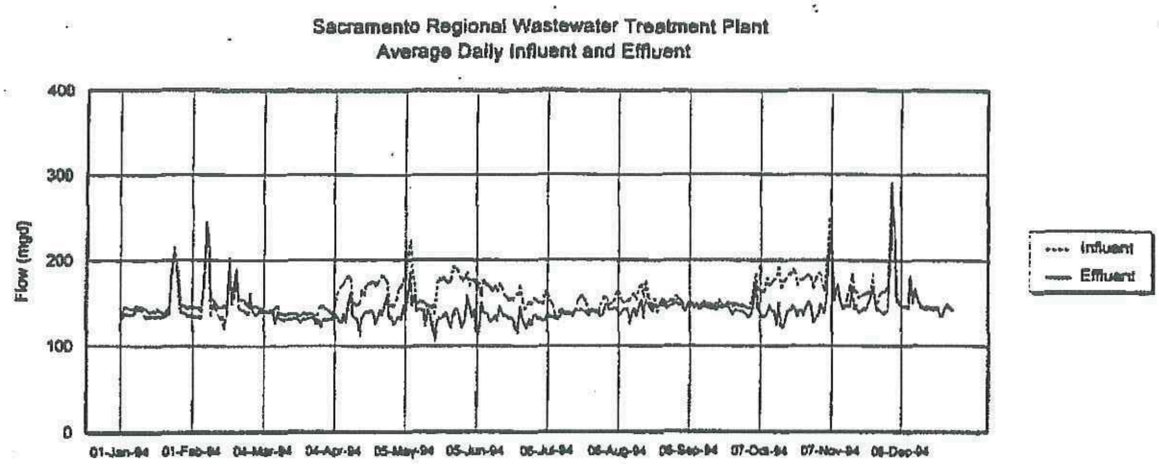

Figure 1d. Average daily influent and effluent (mgd) at the Sacramento Regional Wastewater Treatment Plant during 1994.

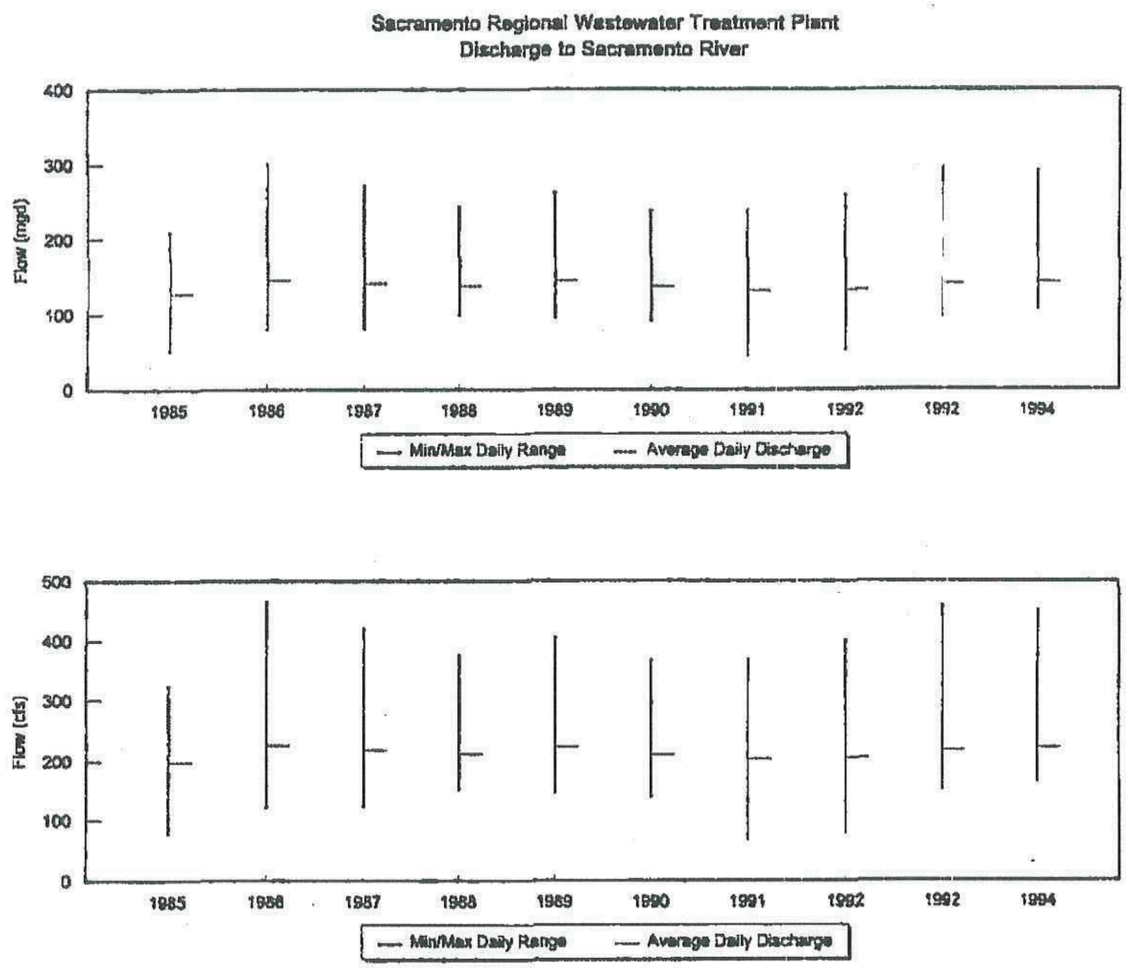

Figure 2. Average, minimum and maximum daily discharge from the Sacramento Regional Wastewater Treatment Plant expressed as mgd and cfs during 1985 through 1994.

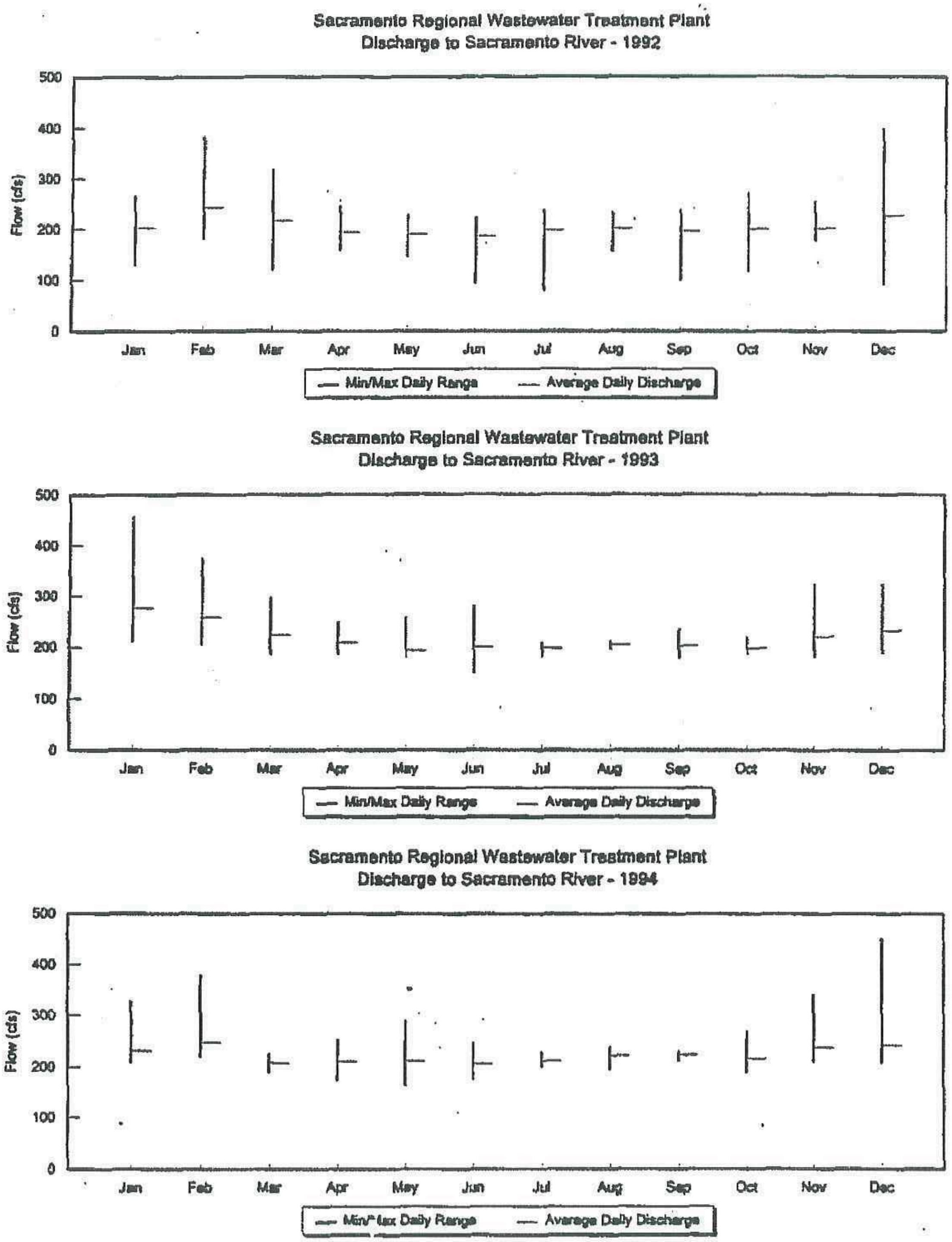

Figure 3. Average, minimum and maximum daily discharge (cfs) from the Sacramento Regional Wastewater Treatment Plant for each month during 1992, 1993, and 1994.

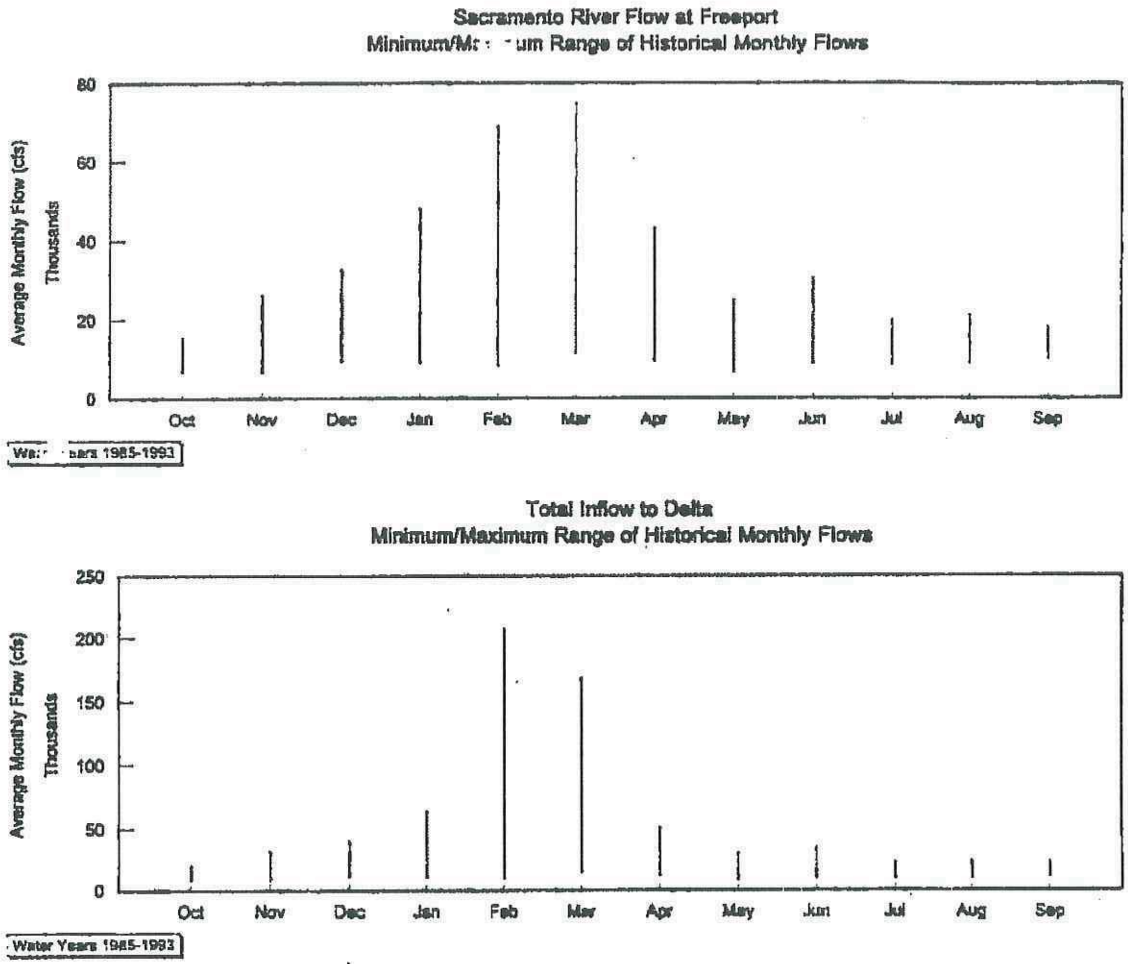

Figure 4. Minimum and maximum average monthly flow (cfs) in the Sacramento River at Freeport and minimum and maximum average monthly total Delta inflow for the period 1985 through 1993.

Table 2[a]. Average daily flows (cfs) in the Sacramento River and total Delta inflow for each month during the period 1985 through 1993.

Sacramento River at Freeport												
Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1985	13238	26284	32559	16784	18276	14312	12503	13433	13310	16036	13450	12184
1986	9709	10419	16101	19971	68890	74990	25830	12767	11814	16881	15109	18133
1987	15450	12688	13108	13173	17412	21581	11831	10002	10066	15141	14442	11629
1988	9514	8134	15743	25403	12622	11352	16889	10978	10571	14637	13287	11528
1989	9319	11360	12393	12832	12064	43374	21276	13791	13293	18768	18312	16469
1990	14279	14822	15401	18914	13810	12864	15276	10408	10520	13498	13840	10033
1991	7627	7730	10815	8977	8139	25761	10873	7335	8924	9514	9514	9949
1992	9400	6957	9254	10441	26991	20329	9445	6408	8503	8310	8717	9814
1993	6652	6386	12441	48253	48597	49343	43206	24948	30468	19857	21077	15831
Max	15450	26284	32559	48253	68890	74990	43206	24948	30468	19857	21077	18133
Min	6652	6386	9254	8977	8139	11352	9445	6408	8503	8310	8717	9814

Total Delta Inflow												
Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1985	18052	31812	39731	21386	22687	18003	15831	16036	15293	18751	16214	14352
1986	12019	12688	19093	23321	207822	168601	50080	23533	19141	20313	18865	23023
1987	20053	16284	17402	15987	20148	26314	15158	12588	12419	17125	16442	13495
1988	11026	9814	17206	28786	14261	13873	19377	12994	12537	16231	15043	13142
1989	10522	12738	13889	14230	13504	47293	23897	16133	15074	20215	19662	17982
1990	15808	16503	16946	20362	15467	15141	16973	12002	11898	14718	15076	11108
1991	8863	9058	11823	9888	8985	29648	12604	8896	9814	10327	10246	10755
1992	10360	8386	10392	11644	31582	22882	11310	7611	9260	8994	9416	10604
1993	7709	7596	13840	64077	61111	67704	51323	30494	34468	22671	24167	19024
Max	20053	31812	39731	64077	207822	168601	51323	30494	34468	22671	24167	23023
Min	7709	7596	10392	9888	8985	13873	11310	7611	9260	8994	9416	10604

[a] Data derived from DWR DAYFLOW.

Even among drought years, the flow in the Sacramento River can vary significantly as the result of CVP and SWP operational objectives. During periods of drought, the Delta export objectives of the CVP and SWP will largely influence Sacramento River flow rates. For instance, in July of 1992 the projects had a Delta export of about 1,500 cfs which required a Sacramento River flow of about 8,300 cfs. To support a Delta export of about 8,000 cfs during July of 1988, the projects needed to provide a Sacramento River flow of about 14,600 cfs - a comparable increase of flow and exports of about 6,500 cfs.

Delta

Freshwater flows into the Delta principally through the Sacramento and San Joaquin rivers. The Sacramento River contributes the greatest amount of water to Delta inflow, about 80 percent as compared to the San Joaquin River which delivers about 15 percent of total Delta inflow. Other streams (e.g., the Mokelumne and Cosumnes rivers) carry about five percent of total Delta inflow.

The total annual volume of freshwater inflow to the Delta is highly variable, fluctuating with precipitation patterns and upstream water development, primarily storage reservoirs and diversions (San Francisco Estuary Project (SFEP) 1992). During the past 70 years, annual inflow has averaged 21 million acre-feet (MAF) but has varied substantially (SFEP 1992). For example, in 1977, a year of extraordinary drought, Delta inflow totaled only 5.9 MAF, while for 1983, ar ceptionally wet year, total Delta inflow was about 70 MAF. Seasonal variation is also high. Avc.age natural flow to the Delta varies by a factor of more than ten between the month of highest flow in winter or spring and the lowest month in fall (SWRCB 1995). Figure 4 and Table 2 illustrate the variance in average monthly Delta inflow for period 1985 through 1993.

Of the water entering the Delta, some is diverted for use within the Delta or exported for water users in other parts of California. Outflow from the Delta can therefore, be considerably less than Delta inflow. During normal water years, about ten percent of the water reaching the Delta would be withdrawn for local use, 30 percent would be withdrawn for export by the CVP and SWP, 20 percent would be needed for salinity control, and the remaining 40 percent would become Delta outflow in excess of minimum requirements.

1.3.2 Water Quality

Sacramento River

Water quality parameters of interest include: salinity, temperature, dissolved oxygen, nutrients, and other pollutants, including metals. Significant seasonal variation is present for a number of water quality parameters. Salinity is generally low in the Sacramento River, less than 2 ppt (parts per thousand), but does vary seasonally and among years depending on flow levels (SFEP 1992). Levels of most trace metals, total suspended solids, and organic carbon vary with flow. Dissolved oxygen levels, temperature, pH, hardness, and conductivity, however, generally vary independently of flow (Larry Walker Associates and Brown and Caldwell 1995). Despite the seasonal variability, a recent study revealed that water quality parameters in the vicinity the proposed wastewater reclamation plant were found to be almost always within water quality objectives specified in the former Inland Surface Waters Plan (ISWP), except for some metals (Larry Walker and Associates 1994). This study was based on water quality data collected over the period from September, 1991 through December, 1993. Water quality data collected at Freeport Marina, near the proposed project, are provided in Appendix A.

Ambient concentrations of several metals in the Sacramento River approach or exceed criteria specified in the U.S. Environmental Protection Agency's (EPA) Ambient Water Quality Criteria and former ISWP, primarily due to discharges from abandoned mines in the watershed. Lead concentrations in excess of guidelines for the protection of aquatic life and mercury concentration in excess of guidelines based upon human health protection have been recorded (Larry Walker and Associates 1994). Because ambient concentrations affect allowable discharge limits, there has been concern as to whether wastewater dischargers would be able to meet water quality objectives for metals.

Delta

The Delta's water quality (salinity, temperature, nutrients, dissolved oxygen, and other pollutants) can show considerable geographic and seasonal variation (SFEP 1992). Water quality in the Delta is heavily influenced by a combination of environmental and institutional variables, including water export and diversions within and upstream from the Delta and agricultural activities in the Delta.

Saltwater intrusion into the Delta from the Pacific Ocean is controlled by freshwater flows into the Delta from the Sacramento, San Joaquin, Mokelumne, Calaveras and Cosumnes rivers. Water development facilities upstream and within the Delta reduce winter and spring flows resulting in higher salinity levels than would have occurred naturally. Water development facilities also augment the natural flows into the Delta during the summer and fall months resulting in lower salinity levels than would have occurred naturally, and have eliminated the severe salinity level intrusions that once occurred every summer - sometimes moving upstream as far as the City of Sacramento on the Sacramento River, and Stockton on the San Joaquin River. An additional source of salt is upstream agricultural discharges to the San Joaquin River, which can sometimes create elevated salinity levels in portions of the south Delta.

The temperature of the Delta water is determined by a wide variety of factors because of the slow velocity and high volume of water present in the Delta. Tributary inflow volume and temperature, climate and weather, extent of agricultural withdrawal or return water contributions, and riparian vegetation all affect Delta water temperatures. Water temperature in the Delta ranges from about 57 to 75°F throughout the year. Summer temperatures often exceed 70°F which is a concern for fishery resources (SFEP 1992).

Nutrients in the Delta (nitrogen, phosphate, and silicate) are derived from several sources including river inflow, ocean water, sewage treatment plants, runoff, wetlands, and atmospheric fallout (rain and dust). Nutrient concentrations vary seasonally. In the northern reach, where river flow provides most of the nutrient load, nutrient concentrations are highest in winter and lowest in summer (SFEP 1992).

In portions of the Delta, primarily along the lower San Joaquin River and in certain localized areas, dissolved oxygen can seasonally fall below minimum levels for fishery resources. Dissolved oxygen problems are most acute during late summer months when water temperatures are high and flow levels are low (SWRCB 1995). Low levels of dissolved oxygen generally occur in areas of the Delta receiving wastewater discharges, but which have little freshwater flow (SWRCB 1995). In some portions of the Delta, low dissolved oxygen levels can inhibit movement of anadromous and resident fish species.

Pollutants enter the Delta through several avenues, including agricultural runoff, municipal and industrial wastewater discharge, urban runoff, river inflow, and atmospheric deposition (SFEP 1992). The concentrations of pollutants in the Delta such as metals, pesticides and petroleum hydrocarbons vary among locations in the Delta as well as seasonally. Pesticides from agricultural runoff are of particular concern, as biologically significant concentrations have been recorded in portions of the Delta (SFEP 1992). Toxic effects of pollutants can vary with flow levels, as water flowing into and through the Delta acts to dilute concentrations of toxicants.

1.3.3 Fisheries Resources

Winter-run chinook salmon, delta smelt and Sacramento splittail are considered the primary species of concern in the development of operations and flow requirements for the Sacramento River and Delta. Winter-run chinook salmon are listed as an endangered species and delta smelt are listed as a threatened species under the federal Endangered Species Act (Act). Sacramento splittail has been proposed for listing as a threatened species under the Act.

Sacramento River

More than 30 species of native and introduced fish species use the Sacramento River. Anadromous species including chinook salmon, steelhead trout, green and white sturgeon, American shad and striped bass use the Sacramento River as an upstream and downstream migration corridor between the ocean where they reside as adults and upstream spawning areas. Other fish are considered resident species, and complete their life cycle entirely in freshwater, often in a lo- ized area. The resident fishes can be divided into warmwater game fish (e.g., largemouth . sunfishes, and catfish), coldwater game fish (rainbow trout and brown trout) and nongame fishes (e.g., squawfish, carp and suckers). Several fish species occurring in the Sacramento River are federally or state listed, classified as candidates for federal listing, or are considered species of special concern by the California Department of Fish and Game (Table 3).

Flow levels in the Sacramento River affect fish in the river through influencing the amount of physical habitat available, providing transport flows and altering water quality parameters. Relationships between the amount of physical ha available at various flow levels, however, have not been determined for resident species in . e lower Sacramento River. For chinook

Table 3.[a] Fish species occurring the Sacramento River or Delta which are federally or state listed, federal candidate or state species of special concern.

Species Common Name *Scientific Name*	Status
Winter-run chinook salmon *Oncorhynchus tshawytscha*	Federal - Endangered State - Endangered
Delta smelt *Hypomesus transpacificus*	Federal - Threatened State - Threatened
Sacramento splittail *Pogonichthys macrolepidotus*	Federal - Proposed Threatened State - Species of Special Concern
Spring-run chinook salmon *Oncorhynchus tshawytscha*	Federal - No Status State - Species of Special Concern
Late fall-run chinook salmon *Oncorhynchus tshawytscha*	Federal - No Status State - Species of Special Concern
Green sturgeon *Acipenser medirostros*	Federal - No Status State - Species of Special Concern
Pink salmon *Oncoryhynchus gorbuscha*	Federal - No Status State - Species of Special Concern
River lamprey *Lampetra ayresi*	Federal - No status State - Species of Special Concern
Sacramento perch *Archoplites interruptus*	Federal - Candidate 2 State - No status
Coho salmon *Oncorhynchus kisutch*	Federal - No Status State - Species of Special Concern
Hardhead *Mylopharodon conocephalus*	Federal - No Status State - Species of Special Concern
Summer steelhead trout *Oncorhynchus mykiss gairdneri*	Federal - Sensitive Species State - No status
Longfin smelt *Spirinichus thaleichthys*	Federal - No Status State - Species of Special Concern

Endangered - listed as an endangered species by under the Federal or California State Endangered Species Acts
Threatened - listed as a threatened species by under the Federal or California State Endangered Species Acts
Candidate 2 - May warrant listing under the Federal Endangered Species Act but additional biological information is needed
Species of Special Concern - considered a species of special concern by California Department of Fish and Game
Sensitive Species - considered a federal sensitive species by the U.S. Bureau of Land Management or U.S. Forest Service

[a] California Department of Fish and Game, Natural Diversity Data Base, Special Animals List, August 1994.

salmon, an anadromous species, the flow level in the Sacramento River is [illegible] for providing attraction flows as migratory cues during upstream migrations. Flow [illegible] the Sacramento River are also important for facilitating the movement of downstream [illegible] chinook salmon smolts to the ocean (U.S. Fish and Wildlife Service (USFWS) [illegible]).

Winter-run Chinook Salmon. Winter-run chinook salmon are listed as a federally [illegible] species. As an anadromous species, winter-run chinook salmon spend their adult [illegible] but return to freshwater streams to spawn. Spawning grounds for winter-run chinook [illegible] present in the upper reaches of the Sacramento River. Winter-run chinook salmon [illegible] present in the Sacramento River in the vicinity of the proposed project only [illegible] upstream and downstream migrations. Upstream migrants pass through the lower [illegible] Sacramento River from mid-December through April. Smolts migrate downstream [illegible] lower Sacramento River during the period January through April.

Sacramento splittail. Sacramento splittail are proposed for listing as a federal [illegible] species. They occur throughout the Delta and in tributaries to the Delta, [illegible] Sacramento River as far upstream as Princeton (Department of Water Resources [illegible] U.S. Bureau of Reclamation (Reclamation) 1994). Sacramento splittail generally [illegible] moving sections of rivers and sloughs. They are usually a freshwater species, [illegible] salinities up to 10-18 ppt. Splittail spawn over flooded vegetation in tidal [illegible] oligohaline habitats of estuarine marshes and sloughs and slow-moving reaches of [illegible] Peak spawning occurs from March through May, but records of spawning exist for [illegible] to early July (DWR and Reclamation 1994). Although they are [illegible] project area, their relative abundance and habitat requirements have not been [illegible]

Delta

At least 55 species of fish have been recorded in the Delta, 28 of them native [illegible] Fishes Recovery Team 1994). The Delta, which is primarily a freshwater environment [illegible] as a migratory route for anadromous species, including chinook salmon, steelhead [illegible] bass, American shad and green and white sturgeon. Striped bass and chinook salmon [illegible] also rear in portions of the Delta. Resident fish species of the Delta are [illegible] Sacramento River. Some fishes, however, are primarily found in the Delta (e.g. [illegible] smelt, and longfin smelt) (Delta Native Fishes Recovery Team 1994). Several fish [illegible] the Delta for some portion of their life history are federally or state listed, [illegible] candidates for federal listing, or are considered species of special concern by [illegible] Department of Fish and Game (Table 3).

Seasonal flows through the Delta affect the migration and transport of various [illegible] resident and anadromous fishes using the Delta (SFEP 1992). Some Delta fish [illegible] upstream areas and depend on currents to carry their eggs and larvae to downstream [illegible] areas (SWRCB 1995). For anadromous species, flows through the Delta are important for providing upstream attraction flows and facilitating the downstream movement of [illegible]

Winter-run Chinook Salmon. Winter-run chinook salmon occur in the Delta only during their upstream and downstream migrations. Adult winter-run chinook salmon migrate upstream through the Delta during the period mid-December to April. Smolts pass downstream through the Delta along the Sacramento River from January through April.

Delta Smelt. Delta smelt is a federally threatened species. They occur throughout the Delta and have been found as far upstream in the Sacramento River as the mouth of the American River (DWR and Reclamation 1994). Proposed critical habitat corresponds to the legally-defined Delta.

When not spawning, Delta smelt tend to concentrate near the entrapment zone, preferring shallow water habitats if available (DWR and Reclamation 1994). Adults migrate in winter and spring from brackish water to upstream areas to spawn. Spawning occurs in shallow, fresh or slightly brackish water habitats in the Delta. The timing of spawning varies from year to year, but may occur from December to July. Peak spawning generally occurs in April and early May. Spawning has been documented in the Sacramento River, north of Suisun Bay in Montezuma and Suisun Sloughs, and their tributaries. Newly hatched larvae are planktonic and drift downstream near the surface in inshore and channel areas to the upper end of the entrapment zone where they continue to rear and mature (DWR and Reclamation 1994).

Delta outflow is believed important for delta smelt for transporting larvae from upstream spawning areas through the Delta and into rearing habitats in Suisun Bay. In addition, it has been suggested that delta smelt benefit from moderately high Delta outflows, which place the primary nursery area in Suisun Bay (Moyle and Herbold 1989). Stevens and Miller (1983) did not find a statistically significant relationship between delta smelt abundance and Delta outflow. Moyle and Herbold (1989), however, found that lowest delta smelt numbers occurred either in years of low or extremely high outflow, but there was no outflow-abundance relationship at intermediate outflows. These results suggest that if outflow does affect delta smelt abundance, the influence may be small relative to other factors in some or all years (DWR and Reclamation 1994).

Sacramento splittail. Sacramento splittail spawn in portions of the Delta. The quantity of Delta inflow and outflow during the peak spawning period (March through May) may be an important contributor to splittail reproductive success as the abundance of young-of-the-year splittail was found to be significantly positively correlated to Delta outflow (DWR and Reclamation 1994). It has been suggested that young-of-the-year abundance is related to Delta outflow because at very high outflow levels substantially more flooded habitat is available for spawning (DWR and Reclamation 1994). Delta outflow may also facilitate the movement of juveniles into rearing habitats downstream from the Delta (DWR and Reclamation 1994).

1.4 STRUCTURAL AND OPERATIONAL ENVIRONMENT

Two major interbasin water delivery systems, the SWP and the federal CVP, significantly influence the hydrology of the Sacramento River and Delta. Both projects include major reservoirs north of the Delta, and transport water released from storage to areas south and west of the Delta. The Sacramento River and Delta are used by the CVP and SWP to convey water from northern storage facilities to central and southern California.

Other water development facilities also influence flows in the Sacramento River and Delta. However, currently these projects do not have direct responsibility for the control of water quality conditions within the Delta. This analysis focuses on the operational effects to the CVP and SWP as a result of modified flows in the Sacramento River.

1.4.1 Central Valley Project Facilities and Operations

The CVP, operated by Reclamation, is a water storage and transport system designed to capture, store and deliver excess winter flows. The primary purpose of the CVP is to provide water for irrigation throughout the Central Valley. However, the CVP is also operated for other purposes including, urb. water supply, water quality, flood control, power generation, recreation, and fish and wildlife habitat enhancement. The CVP stores and controls waters of the Sacramento, Trinity and American river basins in the northern part of the Central Valley basin for use in the Sacramento River basin and the water deficient San Joaquin Valley (SWRCB 1995). The CVP includes 20 reservoirs, 500 miles of canals, including the Delta-Mendota Canal and other facilities.

Tracy Pumping Plant and San Luis Reservoir

The CVP operates the Tracy Pumping Plant in the south Delta, about five miles north of Tracy. The Tracy Pumping Plant lifts CVP water into the Delta-Mendota Canal for delivery in the San Joaquin Valley and San Felipe Service Area. The water originates from upstream CVP reservoirs and tributaries to the Sacramento River, the San Joaquin River and the Delta. The nominal capacity of the Tracy Pumping Plant is 4,600 cfs. During winter months the plant is constrained to approximately 4,200 cfs due to limited canal capacity in the upper reaches of the Delta-Mendota Canal.

San Luis Reservoir is used by the CVP and SWP to store water during the winter and early spring when the pumping plants can generally export more water than is needed fo. .irect deliveries. This water is used to meet contractual obligations throughout the summer months. Operations of the Tracy and Banks pumping plants (see Section 1.4.2) are clos: y coordinated with each other and with operations of San Luis Reservoir. During the fall, the CVP and SWP transfer water stored north of the Delta from Shasta, Clair Engle, Folsom and Oroville reservoirs to San Luis Reservoir. During the winter, the Tracy and Banks pumping plants export a combination of uncontrolled river flows and upstream reservoir releases for storage in San Luis Reservoir. Beginning in May and continuing through summer, water is released from San Luis Reservoir to satisfy requests from downstream water contractors because irrigation and urban requirements are substantially larger than allowable Delta pumping or plant capacity.

Contra Costa Canal

CVP water is delivered through the Contra Costa Canal (CCC) to the Contra Costa Water District (CCWD) which delivers water throughout eastern Contra Costa County, including a portion of the district in the San Joaquin River region. The CCC originates at Rock Slough. Historically, pumping has ranged from about 50 to 250 cfs, and varies seasonally. Most of the CCWD's demands are met through direct diversions from the Delta through the CCC (SWRCB 1995).

Other CVP Facilities

The major CVP facilities upstream from the Delta are Shasta and Keswick reservoirs, Clair Engle and Lewiston lakes, and Folsom Reservoir. Water from the Trinity River is delivered to the Sacramento River via Clair Engle and Lewiston Lakes. Shasta Dam and Lake Shasta on the Sacramento River control floodwater and store surplus winter runoff. Water from these reservoirs is delivered for irrigation use in the Sacramento and San Joaquin valleys and provides maintenance of navigation flows and conservation of fish in the Sacramento River, protection of the Delta from intrusion of saline ocean water, water for municipal and industrial uses, and generation of hydroelectric energy (Reclamation 1992). Folsom Reservoir is operated to meet similar needs. These reservoirs are a primary source of CVP water delivered through the Delta to water users in southern and central California. Operation of these facilities also contribute to the achievement and maintenance of Delta flow and water quality standards.

1.4.2 State Water Project Facilities and Operations

The main purpose of the SWP is to store and distribute water to urban and agricultural areas in northern California, the San Francisco Bay Area, the San Joaquin Valley, and southern California. Like the CVP, the SWP stores runoff from the Sacramento Valley basin, releases stored water to the Sacramento River and the Delta, and pumps water out of the southern Delta for delivery to water users to the south and west of the Delta. Other project functions include flood control, water quality maintenance, power generation, recreation, and fish and wildlife enhancement. The SWP includes 14 reservoirs, the North Bay and South Bay aqueducts, the California Aqueduct including the East, West, and Coastal branches, and power and pumping plants (SWRCB 1995).

Harvey O. Banks Delta Pumping Plant

Banks Pumping Plant, about 12 miles northwest of Tracy, provides the initial lift of water to the California Aqueduct. Water entering the aquedu ·ows to Bethany Reservoir, from which South Bay Aqueduct diverts water. Most of the water .ontinues south by gravity to O'Neill Forebay, where it is pumped into San Luis Reservoir or conveyed to water users in the San Joaquin Valley and southern California. Like the CVP's pumping plant at Tracy, water pumped at Banks Pump·g Plant originates from upstream storage facilities and tributaries to the Delta. The maximum diversion rate of Banks Pumping Plant is 10,300 cfs, the nominal capacity of the California Aqueduct. However, m.st of the year average daily diversions are limited to 6,680 cfs, as set forth by the U.S. Army Corps of Engineers criteria dated October 13, 1981.

North Bay Aqueduct

In 1987, the SWP began pumping from Barker Slough through the North Bay Aqueduct to meet SWP entitlements in Napa and ·olano counties. Maximum pumping capacity is about 175 cfs (pipeline capacity). However, d. .y pumping rates have ranged between zero and 90 cfs with an average annual pumping rate of 35 cfs. Pumping rates could increase by 30 to 50 cfs in dry years when additio·al water may be needed to help meet new water quality standards in western Suisun Marsh (DV R and Reclamation 1994).

1.4.3 Coordinated Operations Agreement

Th. CVP and SWP use the Sacramento River and Delta as common conveyance facilities. Reservoir releases and exports from the SWP and CVP pumping plants must be coordinated to ensure that each of the projects retains its portion of the shared water and bears its share of the obligation to protect beneficial uses. The Coordinated Operation Agreement between Reclamation and DWR, which became effective in November 1986, defines the rights and responsibilities of the CVP and SWP regarding Sacramento Valley and Delta water needs and provides a means to measure and account for those responsibilities.

During portions of a year, regulated and unregulated flows to the Delta may be greater than the estimated minimum amount of flow necessary to meet CVP and SWP delivery requirements and Delta w ater quality objectives. This circumstance is referred to as an "excess condition" in the Delta. During excess conditions, surplus water in excess of flows necessary to maintain water quality standards occurs. A "balanced condition" occurs in the Delta when the CVP and SWP take specific actions to balance reservoir releases with exports and Delta outflow to maintain water quality conditions in the Delta.

1.5 REGULATORY ENVIRONMENT

Flow levels and water quality requirements for the Sacramento River and Delta are regulated under several state and federal policies and plans. These policies and plans include the following.

1) Water Rights Decision 1485 (D-1485) ordered the CVP and SWP to provide certain conditions for water quality protection for agricultural, municipal and industrial, and fish and wildlife uses. Each project is obligated to ensure that water is available for these uses, with the level of protection dependent on hydrologic conditions;

2) Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (currently being finalized);

3) Delta Smelt Biological Opinion; and,

4) Sacramento River Winter-run Chinook Salmon Biological Opinion.

The requirements of these plans with relevance to the proposed water reclamation project are described below.

1.5.1 Decision 1485 and the draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary

During May 1995, the SWRCB issued a revised, proposed water quality control plan for the San Francisco Bay and Sacramento-San Joaquin Delta. This plan will amend the 1978 Delta Plan and 1991 Bay-Delta Plan. The plan provides the component of a comprehensive management package for the protection of the Bay/Delta's beneficial uses that involves salinity (from saltwater intrusion and agricultural drainage) and water project operations (flows and diversions), as well as a dissolved oxygen objective. Relevant flow and water quality requirements under the SWRCB's Draft Water Quality Control Plan are provided in **Appendix B.**

The SWRCB will initiate a water right proceeding following adoption of this water quality control plan. The water right proceeding will address changes in implementation of the water supply-related objectives in this plan through the amendment of water rights under the authority of the SWRCB. The water supply related objectives include those for Delta outflow, river flows, export limits, the Delta Cross Channel gates, salinity control for the protection of municipal and industrial supply, agricultural supply, and fish and wildlife. The water right decision, which is anticipated before June 1998, will allocate responsibility for meeting the objectives among water right holders in the Bay-Delta Estuary watershed and establish terms and conditions in appropriate water rights permits.

During the interim period until the water rights process has been completed, the SWRCB plans to implement the revised water quality control plan, in part, through modification of the water rights permits of the SWP and CVP pertaining to D1485. Additionally, the SWP and CVP will meet other compliance actions that are required by the Biological Opinions for delta smelt and winter-run chinook salmon.

1.5.2 Recent Other Changes to Existing Regul· ›ry Environment

On December 15, 1994, the state and federal governments and numerous urban, agricultural and environmental interests agreed to the implementation of a Bay-Delta protection plan. The plan and the institutional agreements to implement the plan are described in the document titled, "Principles for Agreement on Bay-Delta Standards between the State of California and the Federal Government." The CVP and SWP are presently operating in accordance with those Principles, and the SWRCB is currently implementing this Delta accord through the Draft Water Quality Control Plan and water rights processes described above.

Currently the CVP and SWP are operating under the guidance of Biological Opinions for delta smelt and winter-run chinook salmon. The reasonable and prudent alternatives (RPA) contained in the Biological Opinions for winter-run chinook salmon and delta smelt include operational flow requirements for the Delta which are consistent with the water quality control plan and the Delta accord reached on December 15, 1994.

1.5.3 Applicable Water Quality Standards

The Draft Water Quality Control Plan for the Sacramento River, Delta, and San Joaquin River (Basin Plan) developed by the Central Valley Regional Water Quality Control Board, contains water quality objectives to maintain designated beneficial uses. The designated beneficial uses include municipal, industrial, agricultural, navigational, and recreational uses as well as environmental uses for aquatic life and wildlife habitat. Objectives for biostimulatory substances, colo- floating substances, and oil and grease are provided in narrative form; numerical objec..ves are specified for turbidity, dissolved oxygen, and bacteria (for water bodies subject to recreational use). Numerical objectives are also established for several metals, trace elements, and cyanide in specific bodies of water.

The anticipated Water Quality Control Plan for the San Francisco Bay and Sacramento-San Joaquin Delta also contains water quality standards for the protection of municipal and industrial, and agricultural beneficial uses. The water quality standards of this plan supplement other regional water quality control plans and SWRCB policies for water control relevant to the Delta. Water quality objectives for municipal and industrial, and agricultural beneficial uses focus on sa -y intrusion.

Pursuant to the Basin Plan, the State Water Resources Control Board adopted the California Inland Surface Waters Plan (ISWP) and the California Enclosed Bays and Estuary Plan (EBEP) in 1991. These plans, which were based largely on the U.S. Environmental Protection Agency's (EPA) Ambient Water Quality Criteria for aquatic life (the federal "Gold Book" standards), specified water quality objectives for toxic substances which might interfere with beneficial uses. The ISWP objectives applied to freshwater rivers including the Sacramento River and the EBEP objectives applied to Bay/Delta waters.

In 1994, the ISWP and EBEP were declared invalid in court. The court ruling stemmed from the considerations that economic factors and the California Environmental Quality Act procedures were not taken into account during promulgation of the ISWP. Currently, the State Board is working to rewrite these plans in a consensus type approach with the regulated community.

2.0 ENVIRONMENTAL CONSEQUENCES

2.1 HYDROLOGY

The water demands of the project require an initial 5 mgd (7.7 cfs) and future 10 mgd (15.5 cfs) of treatment capacity. The depletion of the effluent stream, however, may be less than the project design capacity where reclaimed water is used for SRWTP processes (903 acre-feet) and retured to the effluent stream. It is acknowledged that where this occurs, the potential reduction in Sacramento River discharge may be as low as 3.6 mgd (5.6 cfs), and for the expanded project 8.6 mgd (13.3 cfs).

For purposes of this environmental analysis, however, a maximum potential reduction of 10 mgd (15.5 cfs) in Sacramento River discharge will be evaluated as the maximum potential impact to Sacramento River flows and operations to maintain Delta inflow. The Sacramento River flow and Delta inflow conditions for the period 1985 through 1993 will be used as the basis to evaluate the potential flow impacts of the reclamation project. Although Delta water quality and flow standards have changed from the standards which are reflected by the historical record, the historical record provides a reasonable basis for the evaluation of the minimum potential flows that may occur in the future. The current draft Delta standards generally increase the amount of Delta inflow from those levels that historically occurred, and the analysis presented here is regarded as a "worst case" scenario.

2.1.1 Sacramento River

The project would result in a relatively immediate, but insignificant reduction in flows to the Sacramento River. The greatest potential hydrologic impact to Sacramento River flow due to the reclamation project would likely occur during July, the peak month of reclaimed water use. Peak usage during July (resulting in a potential reduction in effluent discharge to the Sacramento River) is estimated to be 10 mgd (15.5 cfs). Table 4 compares the potential reduction in Sacramento River discharge to the historical record of Sacramento River flow for the months of June, July and August.

Table 4ᵃ. Potential peak reduction in flow (cfs) due to the project relative to historical (1985 through 1993) maximum and minimum average daily flow (cfs) in the Sacramento River and Delta inflow for June, July, and August.				
	Potential Peak Month Reduction in Flow	Historical Average Daily Flow June	Historical Average Daily Flow July	Historical Average Daily Flow August
Maximum Sacramento River Flow	15.5	30,468	19,857	21,077
Minimum Sacramento River Flow	15.5	8,503	8,310	8,717
Maximum Total Delta Inflow	15.5	34,468	22,671	24,167
Minimum Total Delta Inflow	15.5	9,260	8,994	9,416

[a] Historical average daily flows from DWR DAYFLOW.

As shown in Table 4, the maximum potential effluent discharge reduction is insignificant relative to the historic range of average daily Sacramento River flows accounting for about 0.05 percent and 0.19 percent of the maximum and minimum of these average daily flows, respectively. During months other than the peak month of reclaimed water use, the proportionate impact to Sacramento River flow would be even less.

The actual impact to Sacramento River flows may even be less than 15.5 cfs. The consumptive uses to be served with reclaimed water would otherwise be served with (1) surface water diversions or (2) groundwater which would be substantially replenished with percolation of streamflow. The water demand at Bart Cavanaugh Golf Course will be served with either treated water from the City of Sacramento or non-potable groundwater if reclaimed water is not utilized. Similarly, the consumptive water demands at the SRWTP and within the SCWA Zone 40 service area will be met with a combination of surface (currently assumed to be available through the water supply contracts with Reclamation as authorized by Public Law 101-514) and groundwater supplies, if reclaimed water is not utilized.

Meeting the identified reclaimed water use demand by surface supplies would, in effect, deplete the Sacramento River by the same amount that will be depleted from the effluent discharge to the Sacramento River. If met by groundwater, the result would be the same although the additional depletion of the stream for groundwater aquifer stabilization will not be immediate.

2.1.2 Delta

The Sacramento River is the main contributor to Delta inflows and, therefore, reductions in Sacramento River flows could potentially affect Delta inflow. The project would result in a minute reduction in Sacramento River flows downstream from the project. As discussed in the previous section, the maximum potential reduction in discharge to the Sacramento River would be insignificant relative to average daily flows. This potential reduction in Sacramento River flows would likewise be insignificant relative to Delta inflows (Table 4) accounting for about 0.04 percent and 0.17 percent of the maximum and minimum average daily flows, respectively.

Arguably, the project would not affect the overall water balance within the region or the Delta. On first inspection, the project appears to deplete the amount of water discharged to the Sacramento River. Given that at times flow to the Delta is maintained by the CVP and SWP (balanced conditions), this depletion could impact CVP/SWP operations, and any entities that may in the future be responsible for inflow to the Delta. However, from a perspective that the water supplies that will be used to serve the project's water demands will otherwise be provided from regional water supplies that are hydraulically connected to the Delta, no net change will occur to the long-term amount of water that would otherwise arrive at the Delta.

During periods when the Delta is in excess conditions, the depletion of the river discharge would reduce the amount of excess flow existing in the Delta. Again, the amount of river flow reduction is insignificant in comparison to Delta outflows that occur during excess conditions.

2.1.3 CVP and SWP Operations

No change to any operation of the CVP or SWP is expected due to the reclamation project. River operations established by the two projects is normally measured in terms of hundreds of cfs of flow, not in the tens of units. Further, the anticipated maximum potential effluent discharge reduction is well within the normal daily and annual fluctuation of discharge that already occurs. Thus, the CVP and SWP will likely not modify their operations in response to the reclamation project. As explained previously, there will be no long-term volumetric loss in water supply to other entities due to the hydraulic connection between surface and groundwater supplies in the region.

2.2 WATER QUALITY

The SRWTP discharge is a combination of treated domestic wastewater, industrial wastewater, and combined wastewater and urban runoff. The SRWTP monitors the effluent and receiving water at an upstream location on the Sacramento River to measure and ensure compliance with its National Pollutant Discharge Elimination System (NPDES) effluent limitations, and the effectiveness of its industrial pretreatment program. The NPDES effluent limitations (for biochemical oxygen demand, total suspended solids, settleable matter, residual chlorine, total coliforms, oil and grease, total chlorinated phenols, and pH) are established at levels to protect the eficial uses in the Sacramento River from adverse impacts of the SRWTP discharge. Mo ring fc he industrial pretreatment program is limited to priority pollutant metals and organic compounds. The SRWTP consistently meets its NPDES effluent limitations. The SRWTP has also conducted or participated in several studies which have focused principally on metals and whether the metals in the SRWTP discharge have affected the Sacramento River with respect to exceedances of former ISWP objectives.

2.2.1 Sacramento River

Several previous studies have evaluated the effect of effluent discharge from the SRWTP on water quality in the Sacramento River. Three of the four studies focused on an evaluation of the effects of metals in the effluent discharge. The fourth study focused on contaminants of concern to drinking water. These studies provide background information and a frame of reference for evaluating potential impacts to water quality in the Sacramento River resulting from reduced effluent discharge under the proposed project. A summary of these studies is provided below followed by an evaluation of the potential effects of the proposed wastewater reclamation project on Sacramento River water quality.

Studies of the Effect of the Entire Discharge on Sacramento River Water Quality

Wet Weather Local Effects Monitoring Program (WWLEMP). The WWLEMP study evaluated the combined effects of the Sacramento area's major discharges to the Sacramento River (Sacramento Regional County Sanitation District (SRCSD) and the City of Sacramento, 1993). The major discharges are urban runoff, discharges from the combined sewer system in downtown Sacramento, and the effluent discharge from the SRWTP. Water quality samples were collected from all three discharges and along the length of the Sacramento River from the I-5 Bridge (upstream from the Sacramento urban area) to Cliff's Marina (downstream from the SRWTP). Samples collected during two storm events in the 1991/1992 rain season were analyzed for conventional constituents, metals, organic compounds, and bacteria.

The evaluation of the data focused on the metals, and the other constituents were evaluated to a lesser degree. The evaluation consisted of a comparison to ISWP objectives and a visual examination of the data displayed in three dimensional graphs. Moreover, to determine the individual contribution of the SRWTP discharge, the dilution ratio of discharge to river flow was examined..

The study concluded that the upstream load of constituents greatly exceeds the combined impacts of the three major discharges studied. No increases in metals were observed temporally (during the course of the storm) or spatially (from upstream to downstream). Discharge from the SRWTP was not found to be a major contributor to water quality constituents in the Sacramento River based on the evaluation of discharge ratios. A dilution ratio of 14:1 is required for the SRWTP to discharge effluent to the river, however the SRWTP can, in extremely rare circumstances, discharge at dilution ratios as low as 9:1 provided specific conditions are met. Effluent is diverted into emergency storage basins when discharge to the river is not permitted. The individual analysis of the SRWTP effluent impact reasoned that the required 14:1 dilution ratio is sufficient to preclude the SRWTP from having a measurable impact on the river unless the effluent concentrations were many times higher than the river concentrations, which was not the case for the metals evaluated. During the two storm events, the dilution ratio averaged 31:1, well above the 14:1 threshold.

Effluent and Receiving Water Quality Assessment (ERWQA). The ERWQA study was conducted to assess whether the SRWTP effluent discharge contributed to exceedances of former ISWP water quality objectives for metals in the Sacramento River (Larry Walker Associates 1993). Water samples were collected from the discharge and from the Sacramento River at locations upstream and downstream of the discharge during 48 sampling events from September, 1991 through August, 1993. The samples were analyzed for total suspended solids, [illegible], and trace metals.

Monte Carlo simulation methods were used to estimate the probability of exceedances of the former ISWP water quality objectives for metals in the river, and to estimate the impact of the SRWTP effluent on metal concentrations in the river. The analysis concluded that the probability of the river exceeding the former ISWP objectives was less than 1 percent except for chromium (3.7 percent), copper (16 percent), lead (12 percent), and mercury (52 percent). Of these four metals, the probability that the SRWTP effluent was responsible for causing or contributing to any exceedance was estimated at 0.01 percent for chromium, 2.7 percent for copper, 2.[illegible] percent for lead, and 50 percent for mercury. Subsequent continued investigation of mercury [illegible] concern that the sampling and analytical methods contaminated samples and overestimated the amount of mercury present in the SRWTP discharge.

Ambient Monitoring Program (AMP). The AMP is conducted under the auspices of the Coordinated Monitoring Program (CMP) which is a program jointly funded by the [illegible], the SCWA, and the City of Sacramento, to coordinate water quality monitoring [illegible] in the Sacramento area, characterize long term ambient water quality through [illegible] of the AMP, and study and advise the agencies on regulatory issues pertaining to their discharges. Through the AMP, water samples are collected on the Sacramento River at Alamar Marina (upstream from the Sacramento urban area) and River Mile 44 (downstream from the SRWTP). Analyses are conducted for twelve trace metals and nine conventional constituents.

The data evaluation conducted for the CMP 1993 Annual Report had several objectives (Larry Walker Associates and Brown and Caldwell 1995). The comparison of water quality at locations upstream (Alamar Marina) and downstream (River Mile 44) from the SRWTP [illegible] to addressing potential impacts of the proposed wastewater reclamation project. Levels of [illegible], pH, temperature, dissolved oxygen, electrical conductivity, total suspended solids and [illegible] metals were compared between upstream and downstream sites. Concentrations of dissolved copper and total recoverable zinc were higher at River Mile 44 than at Alamar Marina. Concentrations of total and dissolved mercury, temperature, and total suspended solids [illegible] from Alamar Marina to River Mile 44. Although these changes were statistically significant, they were small in magnitude.

Study of Drinking Water Quality in Delta Tributaries. The study of Drinking Water Quality in Delta Tributaries examined the drinking water quality of the principal Delta tributaries (the Sacramento and San Joaquin rivers) to determine if control of certain contaminant sources would result in improvements in drinking water quality in the rivers and the Delta (Brown and Caldwell 1995). The SRWTP was one of the contaminant sources examined in the Sacramento River watershed.

The evaluation of the contaminant sources used existing water quality and flow data from the contaminant sources and the rivers to estimate the proportion of the river load contributed by each contaminant source. The constituents evaluated were those of particular concern to drinking water quality, rather than aquatic life or wildlife habitat. For the SRWTP, the evaluation included load estimates of organic carbon, total dissolved solids, ammonia, nitrate plus nitrite, and total phosphorus.

The study results indicated that the SRWTP contributes approximately two to nine percent of the total organic carbon load in the Sacramento River at Greene's Landing, and two to eight percent of the total dissolved solids load. The proportional contribution of nutrients is higher with an estimated contribution of 43 to 53 percent of the ammonia, 10 to 29 percent of the nitrate plus nitrite, and 41 to 61 percent of the total phosphorus. The study concluded that although the SRWTP contributes a significant proportion of the ammonia and phosphorus in the river, removing the discharge entirely would not substantially improve the drinking water quality of the river because nutrient concentrations are relatively low.

Effect of the Discharge Reduction

As stated previously, the SRWTP effluent discharges to the Sacramento River have averaged 140 mgd (215 cfs) over the last three years. The largest percent reduction in the effluent discharge volume from the wastewater reclamation project will occur during the summer months when the demand for the reclaimed water will be highest. Reduction in the effluent discharge due to reclaimed water use during the months of June, July, and August may reach 15.5 cfs. The summer season is also the time period when river flows approach their lowest level, ranging from about 8,310 cfs to 30,468 cfs (1985 to 1993 minimum and maximum average daily flows for June, July, and August). At 15.5 cfs, the reduction in the effluent discharge due to the reclaimed wastewater project in June, July, and August would be a maximum of 0.19 percent of the daily flow in the Sacramento River. The small reduction would only affect water quality if the difference in concentration between the effluent and the river water quality was extraordinarily high, which is not the case (see Table 1-1 in Appendix A). Therefore, based on the percent of the flow reduction in the river, and the water quality of the effluent and the river, no measurable change in water quality of the river would be expected to occur as a result of the reduction in the effluent discharge. The above-referenced studies support this conclusion, in that few measurable changes in water quality in the river have been evidenced due to discharge from the SRWTP.

2.2.2 Delta

The above analysis and reasoning applies to the Delta as well. Thus, there would be no expected change in water quality in the Delta due to a reduction in the SRWTP discharge, and therefore, no expected environmental consequence resulting from a water quality change. At 15.5 cfs, the reduction in volume of the total Delta inflow from the reclaimed wastewater project in the months of June, July, and August would be a maximum of 0.17 percent. This is based on an average daily total Delta inflow ranging from 8,994 cfs to 34,469 cfs as measured during these months for the period 1985 to 1993. Water quality in the Delta generally shows higher levels of constituent concentrations than in the Sacramento River. These higher concentrations reflect the input of San Joaquin River water which is high in dissolved salts and trace elements, Delta agricultural discharges which are high in organic matter, and seawater intrusion. Delta concentrations, however, are not sufficiently lower than the SRWTP effluent concentrations to result in a change in receiving water quality concentrations when the reclamation project reduces the SRWTP discharge.

2.3 FISHERIES RESOURCES

2.3.1 Sacramento River

Fisheries resources in the Sacramento River could be adversely affected by a significant reduction in flow levels which reduce the amount of physical habitat available. Anadromous species could also be adversely affected by flow reductions during their upstream and downstream migrations.

The reclaimed water project could reduce flow levels in the Sacramento River below the SRWTP by up to 15.5 cfs. Considering recent historic flows (1985-1993), the project could reduce flows in the Sacramento River, downstream of the SRWTP, by a maximum of about 0.19 percent. This small change would not substantially change the extent of physical habitat available to fish in the Sacramento River. Also, a 15.5 cfs reduction in flows would not perceptibly alter in-river migratory cues used by adult and juvenile anadromous fishes. Therefore, fisheries resources in the Sacramento River would not be adversely affected by the reclamation project.

2.3.2 Delta

Fisheries resources in the Delta could be adversely affected by a significant reduction in the amount of Delta inflow. The quantity of Delta inflow and outflow is believed to be important for Delta fisheries resources for providing transport flows through the Delta and spawning and rearing habitat.

The reclaimed water project could reduce Delta inflow levels by up to 15.5 cfs. Considering recent historic inflows (1985-1993), the project could reduce Delta inflows by a maximum of about 0.17 percent. This small reduction would not substantially affect transport flows within the Delta nor would the extent of physical habitat change substantially. In addition, no change is expected to CVP and SWP operations, which must be operated in compliance with flow and operational requirements established to benefit fisheries resources in the Delta. Therefore, fisheries resources in the Delta would not be adversely affected by the reclamation project.

2.3.3 Cumulative Impacts

Potential cumulative impacts resulting from the proposed project are limited to potential effects on operations of the CVP and SWP. The anticipated Water Quality Control Plan for the Sacramento-San Joaquin Delta Estuary establishes flow standards for the Sacramento River at Rio Vista and for total Delta outflow. Because the reduction in flows to the Sacramento River and Delta from the proposed project are so small, the proposed project should not require modification of actual CVP and SWP reservoir operations. Theoretically, additional releases from upstream reservoirs to meet downstream water quality standards could result in lower carry-over storages. However, as discussed in the hydrology impacts section of this report, project releases are measured on a much larger scale than the expected reduction in Sacramento River flows resulting from the proposed project. In summary, the magnitude of the potential reduction in river flows is within the range of "background" variation experienced in the Sacramento River and Delta and would not require additional accounting or releases from upstream reservoirs to satisfy downstream objectives.

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APPENDIX A

Measurements of Water Quality Parameters in the Sacramento River at Freeport Marina

From: Larry Walker and Associates. 1994. NPDES effluent and receiving water quality study and NPDES effluent and receiving water quality assessment. Feasibility Study and Final Draft Report. Prepared by Larry Walker and Associates for the Sacramento Regional County Sanitation District. April 1, 1994.

Table 1-1. Constituent Screening - Water Quality Objectives for the Protection of Aquatic Life

All values in µg/l		R-1 Freeport Marina				SRWTP Effluent			
Constituent	Objective (1)	Max	Min	Number of Samples	Number Detected	Max (2)	Min	Number of Samples	Number Detected
Arsenic, dissolved	181	1.5	<0.56	48	22	3.2	<0.81	48	39
Arsenic, total recoverable	190	2.7	<0.56	48	37	3.2	<0.81	48	39
Cadmium, dissolved	0.59	<0.12	<0.12	48	0	1.4	<0.13	48	11
Cadmium, total recoverable	0.7	0.7	<0.12	48	9	1.4	<0.13	48	11
Chlordane	0.0043	<0.05	<0.05	9	0	<2.5	<0.05	10	0
Chromium (III) (3)	119	14	<0.7	47	37	7.6	<0.71	48	47
Chromium (VI) (3)	11	14	<0.7	47	37	7.6	<0.71	48	47
Copper, dissolved	5.9	3.1	<0.4	47	43	9.2	1.8	48	48
Copper, total recoverable	7	14.5	0.42	48	48	9.2	1.8	48	48
Cyanide	5.2	3	<3	13	1	<5	<3	12	0
DDT	0.001	<0.385	<0.05	9	0	<2.5	<0.05	10	0
Dieldrin	0.0019	<0.14	<0.05	9	0	<2.5	<0.05	10	0
Endosulfan	0.056	<0.27	<0.07	9	0	<3.5	<0.07	10	0
Endrin	0.0023	<0.175	<0.06	9	0	<3	<0.06	10	0
Heptachlor	0.0038	<0.28	<0.02	9	0	<1	<0.02	10	0
gamma-BHC (Lindane)	0.08	<0.2	<0.01	9	0	0.11	<0.01	10	4
Lead, dissolved	0.36	1.3	<0.2	48	4	4.75	<0.2	46	29
Lead, total recoverable	1.45	4.9	<0.2	48	15	4.75	<0.2	46	29
Mercury, total	2.4	0.19	<0.01	47	22	0.31	<0.005	46	30
Nickel, dissolved	79.6	8.9	<1.7	48	8	23	<1.7	47	45
Nickel, total recoverable	93.6	19.5	<1.7	47	34	23	<1.7	47	45
PCBs	0.014	<1.4	<1.4	9	0	<70	<1.4	10	0
Pentachlorophenol	8.6	<10	<4	12	0	<10	<4	13	0
Selenium, total	5	<0.87	<0.87	48	0	16	<1.1	48	1
Silver, dissolved	1.2	0.05	<0.012	48	1	0.83	<0.11	48	45
Silver, total recoverable	1.4	0.36	<0.012	47	6	0.83	<0.11	48	45
Toxaphene	0.0002	<0.5	<0.5	9	0	<25	<0.5	10	0
Tributyltin	0.02					0.004	0.004	1	1
Zinc, dissolved	53.5	7.5	<1.5	46	27	71	20	48	48
Zinc, total recoverable	62.9	30	<1.5	48	42	71	20	48	48

Table continues on following page.

Notes:

(1) The median hardness of the Sacramento River between 9/92 and 8/93 (54 mg/L as $CaCO_3$) was used to calculate hardness-based objectives. Dissolved objectives were calculated from total recoverable objectives using recommended percent dissolved values used in toxicity tests (Prothro, 1993).

(2) Assumes total-dissolved metals translator equals 1.

(3) Measurements are for total recoverable chromium.

Table 1-1. Constituent Screening - Water Quality Objectives for the Protection of Aquatic Life

All values in µg/l		Worst Case Analysis				
Constituent	Objective (1)	Max in River	Max in Effluent (2)	Max Down-stream	Potential Exceedance?	Notes
Arsenic, dissolved	181	1.5	3.2	1.6	NO	
Arsenic, total recoverable	190	2.7	3.2	2.7	NO	
Cadmium, dissolved	0.59	<0.12	1.4	<0.2[illegible]	NO	
Cadmium, total recoverable	0.7	0.7	1.4	0.75	YES	
Chlordane	0.0043	<0.05	<2.5	<0.21	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Chromium (III) (3)	119	14	7.6	13.6	NO	
Chromium (VI) (3)	11	14	7.6	13.6	NO	Maximum effluent concentration is below objective.
Copper, dissolved	5.9	3.1	9.2	3.5	NO	
Copper, total recoverable	7	14.5	9.2	14.2	YES	
Cyanide	5.2	3	<5	<3.1	NO	
DDT	0.001	<0.385	<2.5	<0.52	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Dieldrin	0.0019	<0.14	<2.5	<0.29	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Endosulfan	0.056	<0.27	<3.5	<0.48	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Endrin	0.0023	<0.175	<3	<0.36	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Heptachlor	0.0038	<0.28	<1	<0.33	UNKNOWN	Not detected in river or effluent. (Objective < DL)
gamma-BHC (Lindane)	0.08	<0.2	0.11	<0.194	UNKNOWN	Maximum effluent concentration exceeds objective.
Lead, dissolved	0.36	1.3	4.75	1.5	YES	
Lead, total recoverable	1.45	4.9	4.75	4.9	YES	
Mercury, total	2.4	0.19	0.31	0.20	NO	
Nickel, dissolved	79.6	8.9	23	9.8	NO	
Nickel, total recoverable	93.6	19.5	23	19.7	NO	
PCBs	0.014	<1.4	<70	<5.9	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Pentachlorophenol	8.6	<10	<10	<10	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Selenium, total	5	<0.87	16	<1.9	NO	
Silver, dissolved	1.2	0.05	0.83	0.1	NO	
Silver, total recoverable	1.4	0.36	0.83	0.4	NO	
Toxaphene	0.0002	<0.5	<25	<2.1	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Tributyltin	0.02		0.004		NO	Maximum effluent concentration is below objective.
Zinc, dissolved	53.5	7.5	71	11.7	NO	
Zinc, total recoverable	62.9	30	71	32.7	NO	

Notes:

(1) The median hardness of the Sacramento River between 9/92 and 8/93 (54 mg/L as $CaCO_3$) was used to calculate hardness-based objectives. Dissolved objectives were calculated from total recoverable objectives using recommended percent dissolved values used in toxicity tests (Prothro, 1993).

(2) Assumes total-dissolved metals translator equals 1.

(3) Measurements are for total recoverable chromium.

Table 1-2a. Constituent Screening - Water Quality Objectives for Protection of Human Health - Noncarcinogens

All values in µg/l		R-1 Freeport Marina				SRWTP Effluent			
Constituent	Objective	Max	Min	Number of Samples	Number Detected	Max	Min	Number of Samples	Number Detected.
Acrolein	320	<10	<10	1	0	<10	<10	1	0
Antimony (1)	14	<5	<1	13	0	<5	<1	7	0
Bis(2-chloroisopropyl)ether	1400	<10	<10	9	0	<10	<10	9	0
Cadmium (1)	10	0.7	<0.12	48	9	1.4	<0.13	48	11
Chlorobenzene	20	<0.5	<0.5	13	0	<0.5	<0.5	14	0
4-Chloro-3-methylphenol	3000	<10	<4	12	0	<10	<4	13	0
Chromium (III) (1)	33000	14	<0.7	47	37	7.6	<0.71	48	47
Chromium (VI) (1)	50	14	<0.7	47	37	7.6	<0.71	48	47
Copper (1)	1000	14.5	0.42	48	48	9.2	1.8	48	48
Cyanide (2)	700	3	<3	13	1	<5	<3	12	0
Di-n-butyl phthalate	2700	<10	<10	9	0	<10	<10	9	0
1,2-Dichlorobenzene	2700	<0.5	<0.5	13	0	<0.5	<0.5	14	0
1,3-Dichlorobenzene	400	<0.5	<0.5	13	0	1.6	<0.5	14	1
2,4-Dichlorophenol	0.3	<10	<4	12	0	<10	<4	13	0
Diethyl phthalate	23000	<10	<10	9	0	<10	<10	9	0
2,4-Dimethylphenol	400	<10	<4	12	0	<10	<4	13	0
Dimethyl phthalate	310000	<10	<10	9	0	<10	<10	9	0
4,6-Dinitro-2-methylphenol	13	<10	<4	12	0	<10	<4	13	0
2,4-Dinitrophenol	70	<10	<4	12	0	<10	<4	13	0
Endosulfan	0.9	<0.27	<0.07	9	0	<3.5	<0.07	10	0
Endrin	0.8	<0.175	<0.06	9	0	<3	<0.06	10	0
Ethylbenzene	680	<0.5	<0.5	8	0	<0.5	<0.5	9	0
Fluoranthene	42	<10	<0.9	12	0	<10	<0.25	13	0
Hexachlorocyclopentadiene	1	<5	<0.4	9	0	<10	<0.4	10	0
Lead (1)	50	4.9	<0.2	48	15	4.75	<0.2	46	29
Mercury (2)	0.012	0.19	<0.01	47	22	0.31	<0.005	46	30
Nickel (1)	600	19.5	<1.7	47	34	23	<1.7	47	45
Nitrobenzene	17	<10	<10	9	0	<10	<10	9	0
Phenol	300	<10	<4	12	0	<10	<4	13	0
Selenium (2)	10	<0.87	<0.87	48	0	16	<1.1	48	1
Silver (1)	50	0.36	<0.012	47	6	0.83	<0.11	48	45
Thallium (1)	1.7	1.3	<1	16	1	<1	<1	7	0
Toluene	10000	<0.5	<0.5	8	0	2.6	<0.5	9	3
1,1,1-Trichloroethane	200	<0.5	<0.5	13	0	2.3	<0.5	14	6
Zinc (1)	5000	30	<1.5	48	42	71	20	48	48

Table continues on following page.

Notes:

(1) Measurements are for total recoverable.

(2) Measurements are for total.

Table 1-2a. Constituent Screening - Water Quality Objectives for Protection of Human Health - Noncarcinogens

All values in µg/l		Worst Case Analysis				
Constituent	Objective	Max in River	Max in Effluent	Max Down-stream	Potential Exceedance?	Notes
Acrolein	320	<10	<10	<10	NO	
Antimony (1)	14	<5	<5	<5	NO	
Bis(2-chloroisopropyl)ether	1400	<10	<10	<10	NO	
Cadmium (1)	10	0.7	1.4	0.75	NO	
Chlorobenzene	20	<0.5	<0.5	< 0.5	NO	
4-Chloro-3-methylphenol	3000	<10	<10	<10	NO	
Chromium (III) (1)	33000	14	7.6	13.6	NO	
Chromium (VI) (1)	50	14	7.6	13.6	NO	
Copper (1)	1000	14.5	9.2	14.2	NO	
Cyanide (2)	700	3	<5	< 3.1	NO	
Di-n-butyl phthalate	2700	<10	<10	<10	NO	
1,2-Dichlorobenzene	2700	<0.5	<0.5	<0.50	NO	
1,3-Dichlorobenzene	400	<0.5	1.6	<0.57	NO	
2,4-Dichlorophenol	0.3	<10	<10	<10	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Diethyl phthalate	23000	<10	<10	<10	NO	
2,4-Dimethylphenol	400	<10	<10	<10	NO	
Dimethyl phthalate	310000	<10	<10	<10	NO	
4,6-Dinitro-2-methylphenol	13	<10	<10	<10	NO	
2,4-Dinitrophenol	70	<10	<10	<10	NO	
Endosulfan	0.9	<0.27	<3.5	<0.5	NO	
Endrin	0.8	<0.175	<3	<0.4	NO	
Ethylbenzene	680	<0.5	<0.5	<0.5	NO	
Fluoranthene	42	<10	<10	<10	NO	
Hexachlorocyclopentadiene	1	<5	<10	<5.3	UNKNOWN	Not detected in river or effluent. (Objective < DL)
Lead (1)	50	4.9	4.75	4.9	NO	
Mercury (2)	0.012	0.19	0.31	0.2	YES	
Nickel (1)	600	19.5	23	19.7	NO	
Nitrobenzene	17	<10	<10	<10	NO	
Phenol	300	<10	<10	<10	NO	
Selenium (2)	10	<0.87	16	<1.9	NO	
Silver (1)	50	0.36	0.83	0.4	NO	
Thallium (1)	1.7	1.3	<1	<1.3	NO	
Toluene	10000	<0.5	2.6	<0.6	NO	
1,1,1-Trichloroethane	200	<0.5	2.3	<0.6	NO	
Zinc (1)	5000	30	71	32.7	NO	

Notes:
(1) Measurements are for total recoverable.
(2) Measurements are for total.

Table 1-2b. Constituent Screening - Water Quality Objectives for Protection of Human Health - Carcinogens

All values in µg/l unless noted otherwise		R-1 Freeport Marina				SRWTP Effluent			
Constituent	Objective	Max	Min	Number of Samples	Number Detected	Max	Min	Number of Samples	Number Detected
Acrylonitrile	0.032	<10	<10	1	0	<10	<10	1	0
Aldrin	0.00013	<0.28	<0.01	9	0	0.18	<0.01	10	1
Arsenic (1)	5	2.7	<0.56	48	37	3.2	<0.81	48	39
Asbestos (millions of fibers/L)	7			0		<0.19	<0.19	1	0
Benzene	0.34	<0.5	<0.5	8	0	<0.5	<0.5	9	0
Benzidine	0.0001	<100	<5	9	0	<100	<5	9	0
Beryllium (1)	0.008	<1	<1	6	0	<10	<1	7	0
Bis(2-chloroethyl)ether	0.014	<10	<10	9	0	<10	<10	9	0
Bis(2-ethylhexyl)phthalate	2.9	48	<10	9	1	39	<10	9	3
Carbon Tetrachloride	0.22	<0.5	<0.5	13	0	<0.5	<0.5	14	0
Chlordane	0.00008	<0.05	<0.05	9	0	<2.5	<0.05	10	0
Chloroform	100	2.2	<0.5	13	1	24	<0.5	14	13
DDT	0.00059	<0.385	<0.05	9	0	<2.5	<0.05	10	0
1,4-Dichlorobenzene	9.9	2.2	<0.5	13	1	3.9	<0.5	14	13
3,3'-Dichlorobenzidine	0.014	<100	<5	9	0	<100	<5	9	0
1,2-Dichloroethane	0.5	<0.5	<0.5	13	0	<0.5	<0.5	14	0
1,1-Dichloroethylene	0.057	<0.2	<0.2	13	0	<0.5	<0.2	14	0
Dichloromethane	4.6	3	<1	13	4	12	<1	14	12
1,3-Dichloropropene	0.19	<1	<1	13	0	<1	<1	14	0
Dieldrin	0.00014	<0.14	<0.05	9	0	<2.5	<0.05	10	0
2,4-Dinitrotoluene	0.11	<10	<10	9	0	<10	<10	9	0
1,2-Diphenylhydrazine	0.04	<10	<10	6	0	<10	<10	7	0
Halomethanes	100	<4.1	<2	13	1	<7.35	<2.5	14	12
Heptachlor	0.00016	<0.28	<0.02	9	0	<1	<0.02	10	0
Heptachlor epoxide	0.00007	<0.18	<0.1	9	0	<5	<0.1	10	0
Hexachlorobenzene	0.00066	<5	<0.05	9	0	<10	<0.05	10	0
Hexachlorobutadiene	0.44	<2	<0.3	9	0	0.58	<0.3	10	1
alpha-BHC	0.0039	<0.22	<0.01	9	0	<0.5	<0.01	10	0
beta-BHC	0.014	<0.18	<0.05	9	0	0.1	<0.05	10	1
gamma-BHC (Lindane)	0.019	<0.2	<0.01	9	0	0.11	<0.01	10	4
Hexachloroethane	1.9	<10	<0.03	9	0	<10	<0.03	10	0
Isophorone	8.6	<10	<10	9	0	<10	<10	9	0
N-Nitrosodimethylamine	0.0022	<10	<10	9	0	<10	<10	9	0
N-Nitrosodiphenylamine	2.7	<10	<10	9	0	<10	<10	9	0
PAHs	0.0028	<130	<6.3	12	0	<130	<4.59	13	3
PCBs	0.00007	<1.4	<1.4	9	0	<70	<1.4	10	0
Pentachlorophenol	0.28	<10	<4	12	0	<10	<4	13	0
TCDD equivalents (pg/L)	0.013			0		<3.82	<3.82	1	0
1,1,2,2-Tetrachloroethane	0.17	<0.5	<0.5	13	0	<0.5	<0.5	14	0
Tetrachloroethylene	0.62	<0.5	<0.5	13	0	11	<0.5	14	12
Toxaphene	0.00067	<0.5	<0.5	9	0	<25	<0.5	10	0
1,1,2-Trichloroethane	0.6	<0.5	<0.5	13	0	<0.5	<0.5	14	0
Trichloroethylene	3.1	<0.5	<0.5	13	0	0.62	<0.5	14	1
2,4,6-Trichlorophenol	0.34	<10	<4	12	0	<10	<4	13	0
Vinyl Chloride	0.13	<1	<1	13	0	<1	<1	14	0

Table continues on following page.

Notes:

(1) Measurements are for total recoverable.

APPENDIX B

Water Quality Objectives for Municipal and Industrial, Agricultural, and Fish and Wildlife Beneficial Uses

From: State Water Resources Control Board. 1995. Draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. May 1995.

TABLE 3 — WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENEFICIAL USES

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DISSOLVED OXYGEN						
San Joaquin River between Turner Cut & Stockton	(RSAN050- RSAN061)	Dissolved Oxygen (DO)	Minimum DO (mg/l)	All	Sep-Nov	6.0 [4]
SALMON PROTECTION						
			narrative	Water quality conditions shall be maintained, together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law.		
SAN JOAQUIN RIVER SALINITY						
San Joaquin River at and between Jersey Point and Prisoners Point [5]	D-15 (RSAN018) -and- D-29 (RSAN038)	Electrical Conductivity (EC)	Maximum 14-day running average of mean daily EC (mmhos/cm)	W,AN,BN,D	Apr-May	0.44 [6]
EASTERN SUISUN MARSH SALINITY						
Sacramento River at Collinsville -and- Montezuma Slough at National Steel -and- Montezuma Slough near Beldon Landing	C-2 (RSAC081) S-64 (SLMZU25) S-49 (SLMZU11)	Electrical Conductivity (EC)	Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location.	All	Oct Nov-Dec Jan Feb-Mar Apr-May	19.0 15.5 12.5 8.0 11.0
WESTERN SUISUN MARSH SALINITY						
Chadbourne Slough at Chadbourne Road -and- Suisun Slough, 300 feet south of Volanti Slough -and- Cordelia Slough at Cordelia Goodyear Ditch -and- Goodyear Slough at Morrow Island Clubhouse -and- Water supply intakes for waterfowl management areas on Van Sickle and Chipps islands	S-21 [7] (SLCBN1) S-42 [7] (SLSUS12) S-97 [8] (SLCRD06) S-35 [8] (SLGYR03) No locations specified	Electrical Conductivity (EC)	Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location.	All but deficiency period	Oct Nov Dec Jan Feb-Mar Apr-May	19.0 16.5 15.5 12.5 8.0 11.0
				Deficiency period [9]	Oct Nov Dec-Mar Apr May	19.0 16.5 15.6 14.0 12.5
BRACKISH TIDAL MARSHES OF SUISUN BAY						
			narrative			[10]

TABLE 3	WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENEFICIAL USES	(continued)

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DELTA OUTFLOW						
		Net Delta Outflow Index (NDOI) [11]	*Minimum monthly average [12] NDOI (cfs)*	*All*	*Jan*	*4,500 [13]*
				All	*Feb-Jun*	*[14]*
				W,AN	*Jul*	*8,000*
				BN		*6,500*
				D		*5,000*
				C		*4,000*
				W,AN,BN	*Aug*	*4,000*
				D		*3,500*
				C		*3,000*
				All	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nov-Dec*	*4,500*
				C		*3,500*
RIVER FLOWS						
Sacramento River at Rio Vista	*D-24 (RSAC101)*	*Flow rate*	*Minimum monthly average [15] flow rate (cfs)*	*All*	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nov-Dec*	*4,500*
				C		*3,500*
San Joaquin River at Airport Way Bridge, Vernalis	*C-10 (RSAN112)*	*Flow rate*	*Minimum monthly average [16] flow rate (cfs) [17]*	*W,AN*	*Feb-Apr 14 and May 16-Jun*	*2,130 or 3,420*
				BN,D		*1,420 or 2,280*
				C		*710 or 1,140*
				W	*Apr 15-May 15 [18]*	*7,330 or 8,620*
				AN		*5,730 or 7,020*
				BN		*4,620 or 5,480*
				D		*4,020 or 4,880*
				C		*3,110 or 3,540*
				All	*Oct*	*1,000 [19]*
EXPORT LIMITS						
		Combined export rate [20]	*Maximum 3-day running average (cfs)*	*All*	*Apr 15-May 15 [21]*	*[22]*
			Maximum percent of Delta inflow diverted [23] [24]	*All*	*Feb-Jun*	*35% Delta inflow [25]*
				All	*Jul-Jan*	*65% Delta inflow*
DELTA CROSS CHANNEL GATES CLOSURE						
Delta Cross Channel at Walnut Grove	—	*Closure of gates*	*Close gates*	*All*	*Nov-Jan*	*[26]*
					Feb-May 20	—
					May 21-Jun 15	*[27]*

Table 3 Footnotes

[1] River Kilometer Index station number.

[2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.

[3] The Sacramento Valley 40-30-30 Water Year Hydrologic Classification Index (see page 23) applies unless otherwise specified.

[4] If it is infeasible for a waste discharger to meet this objective immediately, a time extension or schedule of compliance may be granted, but this objective must be met no later than September 1, 2005.

[5] Compliance will be determined at Jersey Point (station D15) and Prisoners Point (station D29).

[6] This standard does not apply in May when the best available May estimate of the Sacramento River Index for the water year is less than 8.1 MAF at the 90% exceedence level. [Note: The Sacramento River Index refers to the sum of the unimpaired runoff in the water year as published in the DWR Bulletin 120 for the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total unimpaired inflow to Oroville Reservoir; Yuba River at Smartville; and American River, total unimpaired inflow to Folsom Reservoir.]

[7] The effective date for objectives for this station is October 1, 1995.

[8] The effective date for objectives for this station is October 1, 1997.

[9] A deficiency period is: (1) the second consecutive dry water year following a critical year; (2) a dry water year following a year in which the Sacramento River Index (described in footnote 6) was less than 11.35; or (3) a critical water year following a dry or critical water year.

[10] Water quality conditions sufficient to support a natural gradient in species composition and wildlife habitat characteristic of a brackish marsh throughout all elevations of the tidal marshes bordering Suisun Bay shall be maintained. Water quality conditions shall be maintained so that none of the following occurs: (a) loss of diversity; (b) conversion of brackish marsh to salt marsh; (c) for animals, decreased population abundance of those species vulnerable to increased mortality and loss of habitat from increased water salinity; or (d) for plants, significant reduction in stature or percent cover from increased water or soil salinity or other water quality parameters.

[11] Net Delta Outflow Index (NDOI) is defined on page 25.

[12] For the May-January objectives, if the value is less than or equal to 5,000 cfs, the 7-day running average shall not be less than 1,000 cfs below the value; if the value is greater than 5,000 cfs, the 7-day running average shall not be less than 80% of the value.

[13] The objective is increased to 6,000 cfs if the best available estimate of the Eight River Index for December is greater than 800 TAF. [Note: The Eight River Index refers to the sum of the unimpaired runoff as published in the DWR Bulletin 120 for the following locations: Sacramento River flow at Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River flow at Smartville; American River, total inflow to Folsom Reservoir; Stanislaus River, total inflow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total inflow to Exchequer Reservoir; and San Joaquin River, total inflow to Millerton Lake.]

[14] The minimum daily Delt· ·rtflow shall be 7,100 cfs for this period, calculated as a 3-day running average This requirement is alsc ·t if either the daily average or 14-day running average EC at the confluence of the Sacramento and the ı Joaquin rivers is less than or equal to 2.64 mmhos/cm (Collinsville station C2). If the best availab. .stimate of the Eight River Index (described in footnote 13) for January is more than 900 TAF, the daily average or 14-day running average EC at station C2 shall be less than or equal to 2.64 mmhos/cm for at least one day between February 1 and February 14; however, if the best available estimate of the Eight River Index for January is between 650 TAF and 900 TAF, the operations group established under the Framework Agreement shall decide whether this requirement will apply, with any disputes resolved by the CALFED policy group. If the best available estimate of the Eight River Index for February is less than 500 TAF, the standard may be further relaxed in March upon the recommendation of the operations group established under the Framework Agreement, with any disputes resolved by the CALFED policy group. The standard does not apply in May and June if the best available May estimate of the Sacramento River Index (described in footnote 6) for the water year is less than 8.1 MAF at the 90% exceedence level. Under this circumstance, a minimum 14-day running average flow of 4,000 cfs is required in May and .ne. Additional Delta outflow objectives are contained in Table A on page 26.

[15] The 7-day running average shall not be less than 1,000 cfs below the monthly objective.

[16] Partial months are averaged for that period. For example, the flow rate for April 1-14 would be averaged over 14 days. The 7-day running average shall not be less than 20% below the flow rate objective, with the exception of the April 15-May 15 pulse flow period when this restriction does not apply.

[17] The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley Water Year Hydrologic Classification (see page 24) at the 75% exceedence level. The higher flow objective applies when the 2 ppt isohaline (measured as 2.64 mmhos/cm surface salinity) is required to be at or west of Chipps Island.

[18] This time period may be varied based on real-time monitoring. One pulse, or two separate pulses of combined duration equal to the single pulse, should be scheduled to coincid. with fish migration in San Joaquin River tributaries and the Delta. The time period for this 31-day flow requirement will be determined by the operations group established under the Framework Agreement.

[19] Plus up to an additional 28 TAF pulse/attraction flow during all water year types. The amount of additional water will be limited to that amount necessary to provide a monthly average flow of 2,000 cfs. The additional 28 TAF is not required in a critical year following a critical year. The pulse flow will be scheduled by the operations group established under the Framework Agreement.

[20] Combined ɔort rate for this objective is defined as the Clifton Court Forebay inflow rate (minus actual Byron-Bethany Irrigation District diversions from Clifton Court Forebay) and the export rate ᴄ ʼhe Tracy pumping plant.

[21] This time period may be varied based on real-time monitoring and will coincide with the San Joaquin River pulse flow described in footnote 18. The time period for this 31-day export limit will be determined by the operations group established under the Framework Agreement.

[22] Maximum export rate is 1,500 cfs or 100% of 3-day running average of San Joaquin River flow at Vernalis, whichever is greater. Variations to this maximum export rate are authorized if agreed to by the operations group established under the Framework Agreement. This flexibility is intended to result in no net water supply cost annually within the limits of the water quality and operational requirements of this plan. Variations may result from recommendations of agencies for protection of fish resources, including actions taken pursuant to the nd federal Endangered Speci · Act. Disputes within the operations group will be resolved by the C/ olicy group. Any agreement ariations will be effective immediately and will be prese ted to th tive Director of the SWRCB. Executive Director does not object to the variations w ı 10 day. variations will remain in effect

[23] Percent of Delta inflow diverted is defined on page 25. For the calculation of maximum percent Delta inflow diverted, the export rate is a 3-day running average and the Delta inflow is a 14-day running average, except when the CVP or the SWP is making storage withdrawals for export, in which case both the export rate and the Delta inflow are 3-day running averages.

[24] The percent Delta inflow diverted values can be varied either up or down. Variations are authorized *subject to the process described in footnote 22.*

[25] If the best available estimate of the Eight River Index (described in footnote 13) for January is less than or equal to 1.0 MAF, the export limit for February is 45% of Delta inflow. If the best available estimate of the Eight River Index for January is greater than 1.5 MAF, the February export limit is 35% of Delta inflow. If the best available estimate of the Eight River Index for January is between 1.0 MAF and 1.5 MAF, the export limit for February will be set by the operations group established under the Framework Agreement within the range of 35% to 45%. Disputes within the operations group will be resolved by the CALFED policy group.

[26] For the November-January period, close Delta Cross Channel gates for up to a total of 45 days, as needed for the protection of fish. The timing of the gate closure will be determined by the operations group established under the Framework Agreement.

[27] For the May 21-June 15 period, close Delta Cross Channel gates for a total of 14 days. The timing of the gate closure shall be based on the need for the protection of fish and will be determined by the operations group established under the Framework Agreement.

FOOTNOTE 2 FOR TABLE 1 AND FOOTNOTE 3 FOR TABLES 2 AND 3

Sacramento Valley
Water Year Hydrologic Classification

Year classification shall be determined by computation of the following equation:

$$INDEX = 0.4 * X + 0.3 * Y + 0.3 * Z$$

Where: X = Current year's April – July Sacramento Valley unimpaired runoff

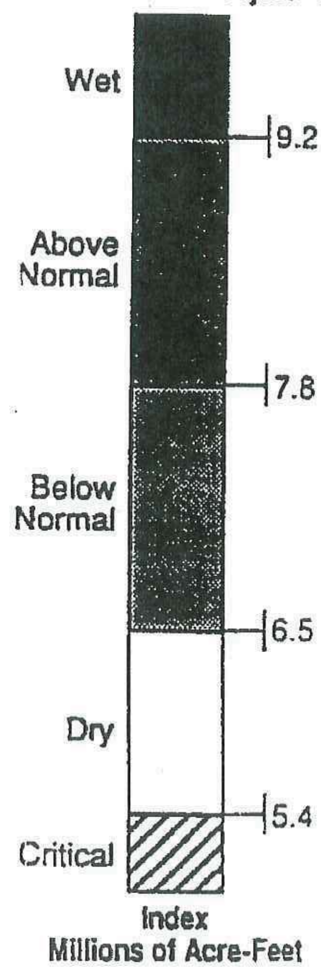
Y = Current October – March Sacramento Valley unimpaired runoff

Z = Previous year's index[1]

The Sacramento Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

Classification	Index Millions of Acre-Feet (MAF)
Wet	Equal to or greater than 9.2
Above Normal	Greater than 7.8 and less than 9.2
Below Normal	Equal to or less than 7.8 and greater than 6.5
Dry	Equal to or less than 6.5 and greater than 5.4
Critical	Equal to or less than 5.4

YEAR TYPE[2]
All Years for All Objectives



[1] A cap of 10.0 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years

[2] The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

FOOTNOTE 17 FOR TABLE 3

San Joaquin Valley
Water Year Hydrologic Classification

Year classification shall be determined by computation of the following equation:

$$INDEX = 0.6 * X + 0.2 * Y + 0.2 * Z$$

Where: X = Current year's April – July San Joaquin Valley unimpaired runoff

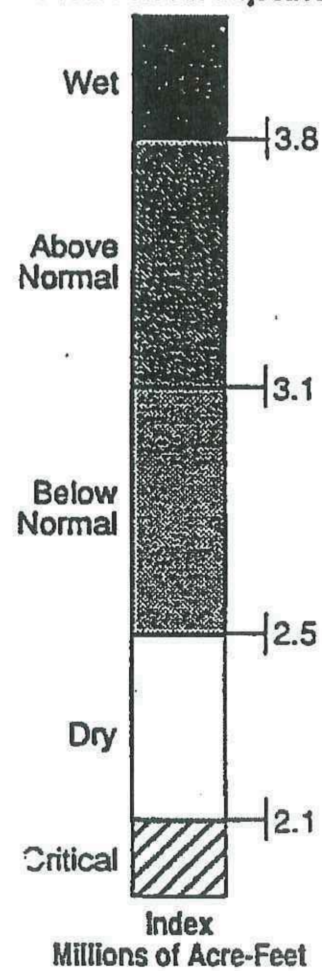
Y = Current October – March San Joaquin Valley unimpaired runoff

Z = Previous year's index [1]

The San Joaquin Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Stanislaus River, total flow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total flow to Exchequer Reservoir; San Joaquin River, total inflow to Millerton Lake. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

Classification	Index Millions of Acre-Feet (MAF)
Wet	Equal to or greater than 3.8
Above Normal	Greater than 3.1 and less than 3.8
Below Normal	Equal to or less than 3.1 and greater than 2.5
Dry	Equal to or less than 2.5 and greater than 2.1
Critical	Equal to or less than 2.1

YEAR TYPE [2]
All Years for All Objectives



[1] A cap of 4.5 MAF is placed on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

[2] The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

FOOTNOTES 11 AND 23 FOR TABLE 3

NDOI and PERCENT INFLOW DIVERTED [1]

The NDOI and the percent inflow diverted, as described in this footnote, shall be computed daily by the DWR and the USBR using the following formulas (all flows are in cfs):

NDOI = DELTA INFLOW - NET DELTA CONSUMPTIVE USE - DELTA EXPORTS

PERCENT INFLOW DIVERTED = (CCF + TPP) ÷ DELTA INFLOW

where *DELTA INFLOW = SAC + SRTP + YOLO + EAST + MISC + SJR*

SAC	=	Sacramento River at Freeport mean daily flow for the previous day; the 25-hour tidal cycle measurements from 12:00 midnight to 1:00 a.m. may be used instead.
SRTP	=	Sacramento Regional Treatment Plant average daily discharge for the previous week.
YOLO	=	Yolo Bypass mean daily flow for the previous day, which is equal to the flows from the Sacramento Weir, Fremont Weir, Cache Creek at Rumsey, and the South Fork of Putah Creek.
EAST	=	Eastside Streams mean daily flow for the previous day from the Mokelumne River at Woodbridge, Cosumnes River at Michigan Bar, and Calaveras River at Bellota.
MISC	=	Combined mean daily flow for the previous day of Bear Creek, Dry Creek, Stockton Diverting Canal, French Camp Slough, Marsh Creek, and Morrison Creek.
SJR	=	San Joaquin River flow at Vernalis, mean daily flow for the previous day.

where *NET DELTA CONSUMPTIVE USE = GDEPL - PREC*

GDEPL	=	Delta gross channel depletion for the previous day based on water year type using the DWR's latest Delta land use study.[2]
PREC	=	Real-time Delta precipitation runoff for the previous day estimated from stations within the Delta.

and where *DELTA EXPORTS*[3] = *CCF + TPP + CCC + NBA*

CCF	=	Clifton Court Forebay inflow for the current day.[4]
TPP	=	Tracy Pumping Plant pumping for the current day.
CCC	=	Contra Costa Canal pumping for the current day.
NBA	=	North Bay Aqueduct pumping for the current day.

---

1 Not all of the Delta tributary streams are gaged and telemetered. When appropriate, other methods of estimating stream flows, such as correlations with precipitation or runoff from nearby streams, may be used instead.

2 The DWR is currently developing new channel depletion estimates. If these new estimates are not available, DAYFLOW channel depletion estimates shall be used.

3 The term "Delta Exports" is used only to calculate the NDOI. It is not intended to distinguish among the listed diversions with respect to eligibility for protection under the area of origin provisions of the California Water Code.

4 Actual Byron-Bethany Irrigation District withdrawals from Clifton Court Forebay shall be subtracted from Clifton Court Forebay inflow (Byron-Bethany Irrigation District water use is incorporated into the GDEPL term.)

FOOTNOTE 14 FOR TABLE 3

TABLE A

Number of Days When Maximum Daily Average Electrical Conductivity of 2.64 mmhos/cm Must Be Maintained at Specified Location [a]

PMI [b] (TAF)	Chipps Island (Chipps Island Station D10) FEB	MAR	APR	MAY	JUN
≤ 500	0	0	0	0	0
750	0	0	0	0	0
1000	28 [c]	12	2	0	0
1250	28	31	6	0	0
1500	28	31	13	0	0
1750	28	31	20	0	0
2000	28	31	25	1	0
2250	28	31	27	3	0
2500	28	31	29	11	1
2750	28	31	29	20	2
3000	28	31	30	27	4
3250	28	31	30	29	8
3500	28	31	30	30	13
3750	28	31	30	31	18
4000	28	31	30	31	23
4250	28	31	30	31	25
4500	28	31	30	31	27
4750	28	31	30	31	28
5000	28	31	30	31	29
5250	28	31	30	31	29
≥ 5500	28	31	30	31	30

PMI [b] (TAF)	Port Chicago (Port Chicago Station C14) [d] FEB	MAR	APR	MAY	JUN
0	0	0	0	0	0
250	1	0	0	0	0
500	4	1	0	0	0
750	8	2	0	0	0
1000	12	4	0	0	0
1250	15	6	1	0	0
1500	18	9	1	0	0
1750	20	12	2	0	0
2000	21	15	4	0	0
2250	22	17	5	1	0
2500	23	19	8	1	0
2750	24	21	10	2	0
3000	25	23	12	4	0
3250	25	24	14	6	0
3500	25	25	16	9	0
3750	26	26	18	12	0
4000	26	27	20	15	0
4250	26	27	21	18	1
4500	26	28	23	21	2
4750	27	28	24	23	3
5000	27	28	25	25	4

PMI [b] (TAF)	Port Chicago (Port Chicago Station C14) [d] FEB	MAR	APR	MAY	JUN
5250	27	29	25	26	6
5500	27	29	26	28	9
5750	27	29	27	28	13
6000	27	29	27	29	16
6250	27	30	27	29	19
6500	27	30	28	30	22
6750	27	30	28	30	24
7000	27	30	28	30	26
7250	27	30	28	30	27
7500	27	30	29	30	28
7750	27	30	29	31	28
8000	27	30	29	31	29
8250	28	30	29	31	29
8500	28	30	29	31	29
8750	28	30	29	31	30
9000	28	30	29	31	30
9250	28	30	29	31	30
9500	28	31	29	31	30
9750	28	31	29	31	30
10000	28	31	30	31	30
>10000	28	31	30	31	30

[a] The requirement for number of days the maximum daily average electrical conductivity (EC) of 2.64 mmhos per centimeter (mmhos/cm) must be maintained at Chipps Island and Port Chicago can also be met with maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average Delta outflows of 11,400 cfs and 29,200 cfs, respectively. If salinity/flow objectives are met for a greater number of days than the requirements for any month, the excess days shall be applied to meeting the requirements for the following month. The number of days for values of the PMI between those specified in this table shall be determined by linear interpolation.

[b] PMI is the best available estimate of the previous month's Eight River Index. (Refer to Footnote 13 for Table 3 for a description of the Eight River Index.)

[c] When the PMI is between 800 TAF and 1000 TAF, the number of days the maximum daily average EC of 2.64 mmhos/cm (or maximum 14-day running average EC of 2.64 mmhos/cm, or 3 day running average Delta outflow of 11,400 cfs) must be maintained at Chipps Island in February is determined by linear interpolation between 0 and 28 days.

[d] This standard applies only in months when the average EC at Port Chicago during the 14 days immediately prior to the first day of the month is less than or equal to 2.64 mmhos/cm.

ATTACHMENT A.4

Mitigation Monitoring and Reporting Program

SACRAMENTO COUNTY

DEPARTMENT OF ENVIRONMENTAL REVIEW AND ASSESSMENT

MITIGATION MONITORING AND REPORTING PROGRAM

CONTROL NUMBER: 2009-70058

NAME: **SRWTP WATER RECLAMATION FACILITY PHASE II EXPANSION PROJECT**

LOCATION: The project site is located in the southwest corner of the process area of the Sacramento Regional Wastewater Treatment Plant (SRWTP). SRWTP is located on the north side of Laguna Boulevard between interstate 5 and Franklin Boulevard in the City of Elk Grove.

ASSESSOR'S PARCEL NUMBER: 119-0062-002 and 119-0110-004

APPLICANT:
Sacramento Regional County Sanitation District
Attention: William Yu / Jose Ramirez

PROJECT DESCRIPTION: The proposed project will expand the treatment capacity of the existing Water Reclamation Facility from 5 million gallons per day (mgd) to 10 mgd. Secondary effluent from the SRWTP would be treated to Title 22 standards for irrigation and other non-potable uses. The additional recycled water would be provided to users in the immediate vicinity of the SRWTP and to the SRWTP process area and bufferlands.

TYPE OF ENVIRONMENTAL DOCUMENT:

X Negative Declaration
___ Prior Negative Declaration
___ Environmental Impact Report
___ Prior Environmental Impact Report
___ Supplemental Environmental Impact Report

PREPARED BY: Sacramento County Department of
Environmental Review and Assessment
827 7th Street, Room 220
Sacramento, CA 95814

PHONE: (916) 874-7914

MITIGATION MONITORING AND REPORTING PROGRAM

ADOPTED BY: SRCSD BOARD OF DIRECTORS **DATE:**

ATTEST:____________________________________

CLERK

TABLE OF MEASURES

PURPOSE AND PROCEDURES

Pursuant to Section 21081.6 of the Public Resources Code and Chapter 20.02 of the Sacramento County Code, a Mitigation Monitoring and Reporting Program has been established for the project entitled **SRWTP WATER RECLAMATION FACILITY PHASE II EXPANSION PROJECT (Control Number:** 2009-70058).

PURPOSE

The purpose of this program is to assure diligent and good faith compliance with the Mitigation Measures which have been recommended in the environmental document, and adopted as part of the project or made conditions of project approval, in order to avoid or mitigate potentially significant effects on the environment.

NOTIFICATION AND COMPLIANCE

It shall be the responsibility of the project applicant to provide written notification to the Environmental Coordinator, in a timely manner, of the completion of each Mitigation Measure as identified on the following pages. The Department of Environmental Review and Assessment (DERA) will verify that the project is in compliance. Any non-compliance will be reported to the project applicant, and it shall be the project applicant's responsibility to rectify the situation by bringing the project into compliance and re-notifying the Environmental Coordinator.

PAYMENT

It shall be the responsibility of the project applicant to reimburse DERA for all expenses incurred in the implementation of the Mitigation Monitoring and Reporting Program (MMRP), including any necessary enforcement actions.

COMPLETION

Pursuant to Section 20.02.060 of the Sacramento County Code, upon the determination of the Environmental Coordinator that compliance with the terms of the approved Mitigation Monitoring and Reporting Program has been achieved, and that there has been full payment of all fees for the project, the Environmental Coordinator shall record and issue a Program Completion Certificate for the project.

STANDARD PROVISIONS

The project applicant shall submit one copy of all Project Plans and Construction Specifications and/or revisions to the Department of Environmental Review and Assessment prior to board approval to advertise Plans and Specifications. If the Department of Environmental Review and Assessment determines that the Plans are not in full compliance with the adopted MMRP, the Plans shall be returned to the project applicant with a letter specifying the items of non-compliance, and instructing the applicant to revise the Plans, and then resubmit one copy of the revised Plans to the Department of Environmental Review and Assessment prior to board approval to advertise.

Additionally, the project applicant shall notify the Department of Environmental Review and Assessment **no later than 48 hours** prior to the start of construction and no later than 24 hours after its completion. The applicant shall notify the Department of Environmental Review and Assessment no later than 48 hours prior to any/all Final Inspection(s) by the County of Sacramento.

The project applicant shall notify the Department of Environmental Review and Assessment (DERA) of any pre-construction meetings. Upon notification, a determination will be made as to whether or not DERA will need to attend the meeting.

Comply with the Mitigation Monitoring and Reporting Program for this project, including the payment of 100% of the Sacramento County Department of Environmental Review and Assessment staff costs, and the costs of any technical consultant services incurred during implementation of that Program.

☐ MITIGATION MEASURE A: SWAINSON'S HAWK AND OTHER RAPTORS NESTING HABITAT

If construction, grading, or project-related improvements are to occur between March 1 and September 15, a focused survey for Swainson's hawk and other raptor nests on the site and on nearby trees shall take place within ½ mile of the site, and shall be conducted by a qualified biologist within 14 days prior to the start of construction work (including clearing and grubbing). If active nests are found, the Department of Environmental Review and Assessment and the California Department of Fish and Game (CDFG) shall be contacted to determine appropriate protective measures. If no active nests are found during the focused survey, no further mitigation will be required.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Department of Environmental Review and Assessment for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Department of Environmental Review and Assessment):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Department of Environmental Review and Assessment

Signature: ______________________________ **Date:** ____________________

ATTACHMENT A.5

Comment Letter from CVFPB

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD

3310 El Camino Ave., Rm. LL40
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-0685 FAX: (916) 574-0682

July 28, 2009

Joyce Horizumi
Sacramento County
827 Seventh Street, Room 220
Sacramento, CA 95814

Dear Ms. Horizumi:

State Clearinghouse (SCH) Number: 2009062105
SRWTP Water Reclamation Facility Phase II Expansion Project

Staff for the Department of Water Resources has reviewed the subject document and provides the following comments:

The proposed project is located within the jurisdiction of the Central Valley Flood Protection Board (Formerly known as The Reclamation Board). The Board is required to enforce standards for the construction, maintenance and protection of adopted flood control plans that will protect public lands from floods. The jurisdiction of the Board includes the Central Valley, including all tributaries and distributaries of the Sacramento River and the San Joaquin River, and designated floodways (Title 23 California Code of Regulations (CCR), Section 2).

A Board permit is required prior to starting the work within the Board's jurisdiction for the following:

- The placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee (CCR Section 6);

- Existing structures that predate permitting or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the encroachment has not been clearly established or ownership and use have been revised (CCR Section 6);

- A vegetation plan including, but not limited to the sites, vegetation type (i.e. common and scientific name), number, planting spacing and irrigation method that will be within each project area (CCR Section 131).

The permit application and Title 23 CCR can be found on the Central Valley Flood Protection Board's website at http://www.cvfpb.ca.gov/. Contact your local, federal and state agencies, as other permits may apply.

If you have any questions please contact me at (916) 574-0651 or by email jherota@water.ca.gov.

Sincerely,

James Herota
Staff Environmental Scientist
Floodway Protection Section
Division of Flood Management

cc:

Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, CA 95814

Attachment E

Water Recycling Opportunities Study – Executive Summary (February 2007)

SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

WATER RECYCLING OPPORTUNITIES STUDY

EXECUTIVE SUMMARY | FEBRUARY 2007

ACKNOWLEDGMENTS

Water Recycling Advisory Committee

The Water Recycling Advisory Committee (WRAC) was formed in 2005 as a means of gaining valuable insight into the Water Recycling Opportunities Study (WROS) and providing an opportunity for stakeholders to learn more about planned water recycling program activities. The WRAC ensured concerned agencies, organizations, communities and other stakeholders were able to inform, comment on and improve the WROS as it was being developed.

The WROS has benefited greatly from the input and participation of the WRAC. The Sacramento Regional County Sanitation District (SRCSD) extends its appreciation to the following organizations for their role in making this program one that is visionary, strategic and attainable:

- Building Industry Association
- California Department of Health Services
- City of Elk Grove
- City of Folsom
- City of Rancho Cordova
- City of Roseville
- City of Sacramento, Department of Parks and Recreation
- City of Sacramento, Department of Utilities
- City of West Sacramento
- City of West Sacramento, Facility Development & Maintenance
- Cordova Recreation and Parks District
- County of Sacramento, Department of Environmental Review and Assessment
- California Department of Water Resources-Office of Water Use Efficiency
- El Dorado Irrigation District
- Elk Grove Unified School District
- Environmental Council of Sacramento
- Regional Water Authority
- Sacramento County Environmental Management Department
- Sacramento County Regional Parks
- Sacramento County Water Agency
- Sacramento Regional County Sanitation District
- The Cosumnes Community Services District (formerly Elk Grove Community Services District)
- The Nature Conservancy

Project Team

SRCSD wishes to acknowledge the WROS Project Team.

SRCSD MANAGEMENT AND PROJECT TEAM

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John Dodds
Gerald Fejarang
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Marcia Maurer
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Keith Wallace
Mike Watson

Larry Walker Associates

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Lucy Eidam
Joshua Newcom
Cinamon Vann

Somach, Simmons & Dunn

Andrew Hitchings
Paul Simmons

SRCSD Consultants

Craig Johns
Robert Shanks

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ABBREVIATIONS AND ACRONYMS

ADWF	Average Dry Weather Flow
AF/year	Acre-feet per year
ARB IRWMP	American River Basin Integrated Regional Water Management Plan
Bart Cavanaugh	Bartley Cavanaugh Golf Course
B/C	benefit/cost
BCE	Business Case Evaluation
Bill Conlin	Bill Conlin Park
BOS	Board of Supervisors
Cal-Am	California-American Water Company
Capital Golf	Capital Golf Department
CDP 3.0	Criterium Decision Plus 3.0
CEQA	California Environmental Quality Act
Cherry Island/ Gibson Ranch	Cherry Island Golf Course, Cherry Island Soccer Field Complex, Gibson Ranch County Park, Antelope Greens Golf Course, and Northbrook Park
CVRWQCB	Central Valley Regional Water Quality Control Board
Delta Shores	Delta Shores Development
DHS	California Department of Health Services
DWR	California Department of Water Resources
EID	El Dorado Irrigation District
EID WRMP	El Dorado Irrigation District Water Recycling Master Plan
EIR	Environmental Impact Report
Elk Grove	City of Elk Grove
EMB	Effluent Management Benefits
ESP	Elverta Specific Plan
EUAC	Equivalent Uniform Annual Cost
EUAC/AF	Equivalent Uniform Annual Cost per acre-foot
Folsom	City of Folsom
FRWA	Freeport Regional Water Authority
Glenborough Development	Glenborough Development, also know as Glenborough at Easton and Easton Place, and Glenborough Planning Areas
GSWC	Golden State Water Company
hp	horsepower
IRWM	Integrated Regional Water Management
kWh	kilowatt-hour
LNWI	Lower Northwest Interceptor
MBR	Membrane Bio-Reactor

MCDA	Multi-Criteria Decision Analysis
MF	microfiltration
MG	million gallons
MGD	million gallons per day
ml	milliliter
MOU	Memorandum of Understanding
MPN	Most Probable Number
NCMWC	Natomas Central Mutual Water Company
NJV	Natomas Joint Vision
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
Parks & Rec	City of Sacramento Parks and Recreation Department
PCC	Probable Construction Cost
POA	Principles of Agreement
Rancho Cordova	City of Rancho Cordova
Regional Parks	County of Sacramento Department of Regional Parks
RLECWD	Rio Linda/Elverta Community Water District
RO	reverse osmosis
RWA	Regional Water Authority
RWQCB	Regional Water Quality Control Board
SCWA	Sacramento County Water Agency
SGA	Sacramento Groundwater Authority
SOI	Sphere of Influence
SRCSD	Sacramento Regional County Sanitation District
SRWTP	Sacramento Regional Wastewater Treatment Plant
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TM	Technical Memorandum
TNC	The Nature Conservancy
TOC	Total Organic Carbon
TPCC	Total Probable Capital Cost
UF	ultrafiltration
UNWI	Upper Northwest Interceptor
West Sacramento	City of West Sacramento
WRAC	Water Recycling Advisory Committee
WRF	Water Reclamation Facility
WROS	Water Recycling Opportunities Study

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SECTION 1

INTRODUCTION

The Sacramento Regional County Sanitation District (SRCSD) is considering implementation of a large-scale Water Recycling Program. In January 2004, the SRCSD Board of Directors approved the concept of this program which includes the following goals:

- Increase water recycling throughout the Sacramento region on the scale of 30 to 40 million gallons per day (MGD) over the next 20 years.
- Increase utilization of recycled water to expand SRCSD's effluent management options beyond continued discharge to the Sacramento River.
- Increase utilization of recycled water to meet growing non-potable demands, allowing Sacramento area water purveyors to reduce demands on their existing high quality water supplies and reduce the need for additional water supplies in the future.

To evaluate the feasibility of implementing a large-scale Water Recycling Program, SRCSD began preparation of its Water Recycling Opportunities Study (WROS) in November 2004. The WROS serves to (1) study areas throughout the Sacramento Region and SRCSD service area to identify potential water recycling opportunities, (2) engage potential water recycling partners and stakeholders, (3) develop, assess, and prioritize potential water recycling projects, and (4) provide a strategy to further develop and implement the projects initially selected to move forward in achieving the stated goals of the large-scale Water Recycling Program.

The WROS and large-scale Water Recycling Program build on SRCSD's existing small-scale Water Recycling Program, which was developed in the mid-1990s and began service to communities in southern Sacramento County in 2003. This small-scale program allowed SRCSD to gain experience in developing and operating its existing Water Reclamation Facility (WRF) at the Sacramento Regional Wastewater Treatment Plant (SRWTP).

The WROS is the culmination of 2 years of effort, and is one of many steps toward implementation of a large-scale Water Recycling Program. For some of the most promising water recycling projects identified in the WROS, the next step in implementation will include additional "feasibility-level" analysis. The purpose of the feasibility-level analysis is to further develop the technical, institutional, and financial aspects of the projects to allow SRCSD and its potential water recycling partners to decide whether or not to move forward with implementation. Provided one or more of the projects proves viable for SRCSD and associated water purveyors and land use authorities, additional implementation steps are described, in general, in the last section of this document.

This Executive Summary contains an overview of the WROS, while the groundwork supporting the findings presented herein is compiled in a series of detailed Technical Memoranda (TM) that are bound separately in **Appendices A** through **F**.

Setting

California

Recycled water has been successfully used in California since the turn-of-the-century, beginning with the landscape irrigation of Golden Gate Park in the early 1900s. Today, non-potable use continues around the state with the irrigation of agricultural crops and landscapes, industrial uses such as cooling towers at thermal generation plants, and habitat restoration/ protection.

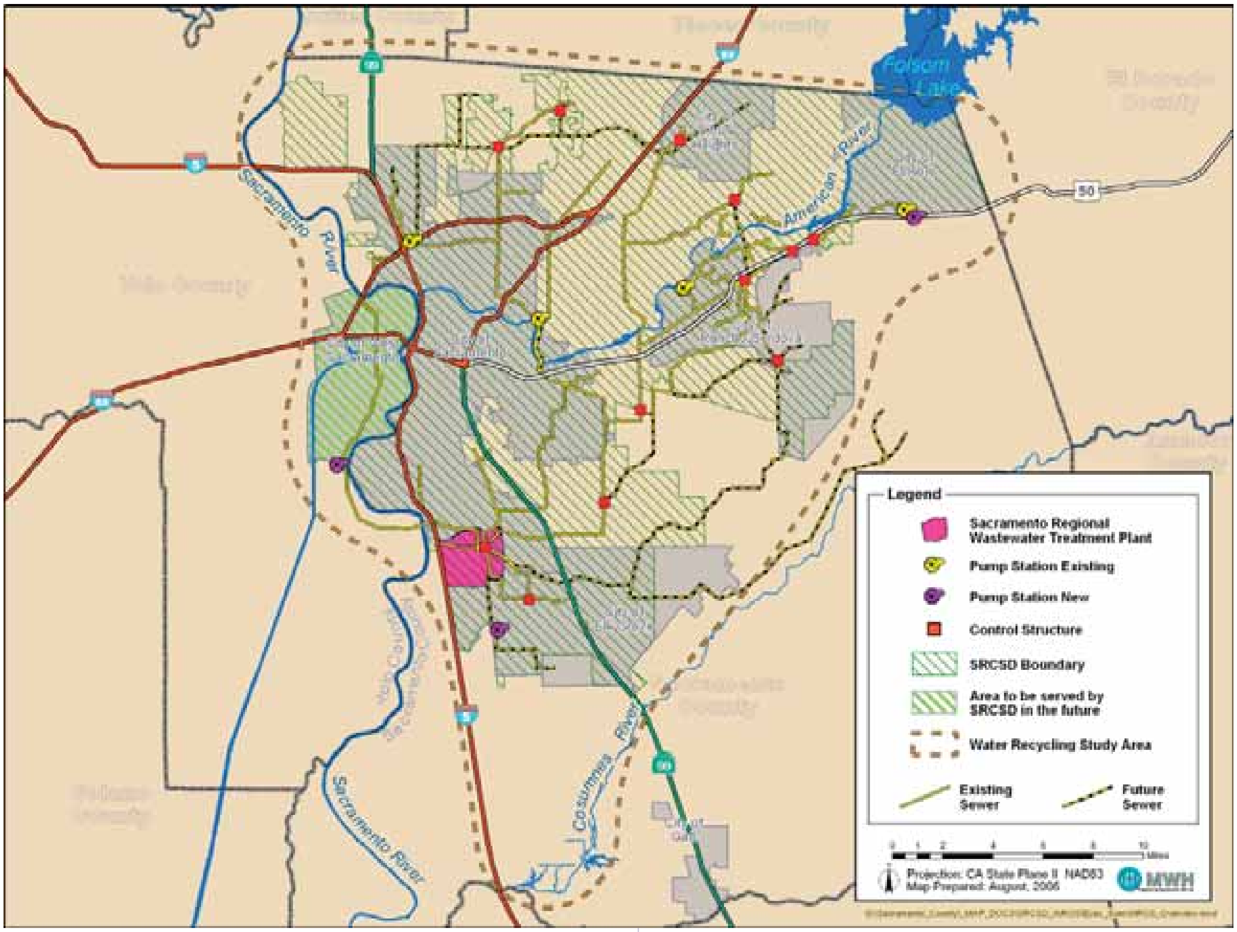

Figure 1-1 | SRCSD Water Recycling Opportunities Study Area Map

Both California laws and local ordinances have stressed the importance of water recycling as a viable source of water supply. At a state level, water recycling law:

- Authorizes land use authorities and other public agencies to require the installation of separate systems for the use of recycled water on private property.
- States that the continued use of potable water for landscape irrigation and certain other non-potable water uses is an unreasonable use of drinking water if recycled water is available and usable for such purposes.
- Calls for increasing water recycling statewide to one million acre-feet per year (AF/year) or over 325 billion gallons per year.

Water recycling ordinances for both cities and counties exist nationally, including in California. Such ordinances commonly require installing recycled water distribution system, or "purple pipe."

Regulation of water recycling is vested by State law in the State Water Resources Control Board (SWRCB) and California Department of Health Services (DHS). Permits are issued to each water recycling project by one of the nine Regional Water Quality Control Boards (RWQCB) that are part of the SWRCB. These permits include water quality protections as well as public health protections by incorporating criteria established by DHS. The criteria issued by DHS are found in Title 22 of the California Code of Regulations. DHS does not have enforcement authority for the Title 22 criteria; the RWQCBs enforce them through enforcement of their permits containing the applicable criteria. To protect public drinking water supplies, DHS also has regulations to prevent cross connections between recycled water systems and potable water systems. Local health departments and DHS have enforcement authority over the DHS cross connection prevention regulations.

Table 1-1| Sacramento County Population Projections

Year	Population	Increase from 2000	Percentage Increase from 2000
2000	1,230,465	---	---
2010	1,555,848	325,383	26%
2020	1,946,679	716,214	58%
2030	2,293,028	1,062,563	86%
2040	2,579,720	1,349,255	110%
2050	2,959,427	1,728,962	141%

Data Source: California Department of Finance, Demographic Research Unit (May 2004). Used for consistency with statewide projections.

SRCSD

SRCSD was established in 1973 and began providing regional wastewater services in 1982 by treating sewage collected from an area that currently encompasses all urbanized areas of Sacramento County and will soon include parts of Yolo County (see **Figure 1-1**). Over the past decade, the regional land use profile has transformed from primarily agricultural to urban in many parts of the SRCSD service area.

Water service for this same geographic region is provided by a host of purveyors, including cities, public and private municipal water utilities, and irrigation districts. Numerous "self-suppliers" are also present in the region (e.g., golf courses, parks, and agricultural interests).

The current institutional separation of the water and wastewater service functions presents challenges to integrated resources planning efforts such as the SRCSD large-scale Water Recycling Program. Additional complexity results from the fact that land use authority also is dispersed among several agencies in the region.

Region

Recycled water is used to meet non-potable water demands by water purveyors throughout the greater Sacramento area (e.g., Sacramento County Water Agency (SCWA), City of Roseville, El Dorado Irrigation District (EID), Rancho Murieta Community Services District, City of Galt, and City of Lincoln).

Water recycling is, and will continue to be, an important component of regional water resources planning. An example of regional planning is the American River Basin Integrated Regional Water Management Plan (ARB IRWMP)* – a comprehensive planning document prepared on a region-wide scale that identifies priority water resources projects and programs with multiple benefits. The ARB IRWMP relies upon specific and focused local and sub-regional planning efforts, such as the SRCSD WROS, for its foundation, and investigates a broad spectrum of water resources issues including water supply, flood management, water quality, environmental restoration, environmental justice, stakeholder involvement, and far-reaching community and statewide interests. Water recycling is incorporated into the plan's regional objectives, water management strategies, priorities, and necessary projects/programs. Development and implementation of these local and regional projects/programs, such as the large-scale Water Recycling Program, are essential to the continued success of this, and other, integrated regional efforts as well as eligibility for grant funding opportunities (e.g., Propositions 50 and 84).

** The ARB region encompasses all of Sacramento County and most of Placer and El Dorado counties, except the areas in the Tahoe Basin which are part of a separate planning effort. Adopted in May 2006, the ARB IRWMP is being implemented and updated by the Regional Water Authority (RWA), Freeport Regional Water Authority (FRWA), SCWA, participants, stakeholders, and other agencies/organizations.*

Drivers

Fundamental drivers for the SRSCD large-scale Water Recycling Program are population growth, potentially costly effluent disposal requirements, and concerns of other stakeholders.

Population Growth

The 2006 population of California is about 36 million, and the California Department of Finance predicts that by 2020, the population will be nearly 44 million. In water and wastewater terms, this increase of 8 million more people in the State translates to an additional annual water demand of roughly 2.5 million AF/year and 670 MGD of additional wastewater treatment and disposal.

In Sacramento County, population projections are just as challenging for the water and wastewater municipalities. A projected population increase of 400,000 during the next decade (see **Table 1-1**) translates to an additional need for approximately 125,000 AF/year of water supply and 33 MGD of wastewater treatment and disposal.

Water recycling has the potential to transform wastewater effluent into a regional asset, providing a drought-proof water supply for irrigation and industrial use and freeing up high-quality potable water for other uses. Statewide and regional population projections and the potential for using wastewater effluent sources make a compelling argument for consideration of a large-scale Water Recycling Program.

Potentially Costly Effluent Disposal Requirements

The general regulatory trend in the Central Valley is for increasingly stringent permit requirements. For the last few years the Central Valley Regional Water Quality Control Board (CVRWQCB) has issued permits to several dischargers that have resulted in these facilities having to install advanced treatment to meet these requirements.

The SRWTP, however, discharges under vastly different conditions than many of the other dischargers in the Central Valley. Most other dischargers discharge to either effluent dominated water bodies (EDW) or stagnant water bodies. As a result, dilution does not occur, and advanced treatment is necessary to meet the more stringent requirements. The SRWTP discharges to the Sacramento River which has substantially higher flows than most EDWs or stagnant water bodies. SRCSD's SRWTP 2020 Master Plan Environmental Impact Report (EIR) utilized a sophisticated modeling effort to evaluate its impact on water quality and determined that continued discharge of secondary treated effluent would not impact the beneficial uses of the Sacramento River. If the CVRWQCB does not consider dilution in setting effluent limits in the renewal of the National Pollutant Discharge Elimination System (NPDES) permit, the SRWTP may be faced with the same stringent permit requirements as dischargers to EDWs or stagnant water bodies.

A large-scale Water Recycling Program could help SRCSD meet otherwise costly waste discharge requirements by reducing the discharge to the Sacramento River (See **Figure 1-2**). Water recycling could defer or reduce the need for future increases in the permitted capacity of SRWTP beyond the current planning horizon and could potentially impact the imposition of additional treatment requirements in the future.

The current NPDES permit for the SRWTP was adopted in August 2000 and expired on August 1, 2005. The SRWTP's application for permit renewal was submitted to the CVRWQCB, as required, in February 2005. Until the CVRWQCB issues a revised permit, the August 2000 permit remains in effect. In the permit renewal application, SRCSD also requested a capacity increase from a permitted average dry weather flow (ADWF) of 181 MGD to 218 MGD, in response to planned and legal permitted growth via the local and county general planning process through the year 2020. SRCSD staff is currently discussing the permit renewal and capacity increase with the CVRWQCB staff. One potential outcome could be the need for SRCSD to implement some type of advanced treatment to meet more stringent requirements.

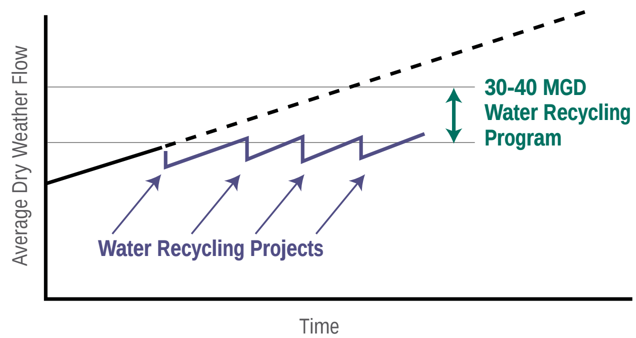

Figure 1-2| Water Recycling Creates Potential to Reduce Effluent Discharge to Sacramento River

Concerns of Other Stakeholders

SRCSD has faced challenges from different downstream entities (e.g., water purveyors, environmental organizations, etc.). The water purveyors and environmental organizations submitted significant comments during the 2000 NPDES Permit Renewal efforts. A group of water purveyors has recently filed a legal challenge against SRCSD's SRWTP 2020 Master Plan Environmental Impact Report (EIR). The water purveyors are concerned with specific constituent loadings that may impact their raw water supply (e.g., total organic carbon (TOC), total dissolved solids (TDS), pathogens, and nutrients). The 2020 Master Plan EIR found, through extensive water quality modeling, that the impact of these constituents on downstream water supplies was not significant. Removal of these constituents to the degree requested by the water purveyors would require SRCSD to install costly advanced treatment processes. The primary concern of the environmental organizations was with the impacts of the SRWTP discharge on aquatic life uses in the vicinity of the discharge to the Sacramento River. These organizations argued for more stringent effluent limitations on toxic pollutants and argued against the consideration of dilution in setting effluent limits.

Developing a large-scale Water Recycling Program may be favorable to SRCSD in future discussions with the CVRWQCB and downstream interests.

Objectives

Given the drivers described above, the objectives of WROS are as follows:

Identify, prioritize, and sequence water recycling projects – A primary element of the WROS is the identification and development of potential water recycling projects to increase recycled water production and usage capacities to 30 to 40 MGD over the next 20 years. The WROS provides a systematic approach to identifying water recycling opportunities, defining projects, and screening and prioritizing those projects.

Identify potential water recycling partners – SRCSD's central focus is the conveyance, treatment, and disposal of wastewater in a safe, environmentally sustainable, and cost-effective manner. SRCSD is not a water purveyor and thus must look to partner with water purveyors and land use authorities in the region to implement a large-scale Water Recycling Program. The WROS identifies potential partners associated with specific water recycling opportunities and projects.

Determine the best balance between water recycling and continued discharge to the Sacramento River – One of the primary goals of the WROS is to consider the balance between continued effluent discharge to the Sacramento River and development of a large-scale Water Recycling Program. The WROS identifies potential costs and benefits of water recycling and considers future potential waste discharge requirements that may be imposed by the CVRWQCB on existing and future SRWTP effluent flow.

Provide technical document to support California Environmental Quality Act (CEQA) compliance – If SRCSD wishes to move forward with a large-scale Water Recycling Program, it will be necessary to perform a comprehensive review of the Program elements to satisfy CEQA requirements. The preferred approach is through preparation of a tiered environmental document. The first tier would be a programmatic EIR addressing large-scale planning issues (e.g., consistency with general plans, growth inducement, and general types and locations of recycled water use). If the program level plan were approved, the second tier would be project-specific environmental documents to focus on the impacts directly related to construction and operation of particular water recycling facilities. The WROS provides technical information to support the programmatic-level EIR.

Develop recommended steps for program implementation – Implementation of a large-scale Water Recycling Program that may include short-term and long-term strategies with multiple partners and jurisdictions can become quite complex. The WROS provides a roadmap outlining and sequencing the major steps for short-term and long-term implementation strategies.

Status Quo Assumption

While the WROS examines a number of potential scenarios related to SRCSD's future NPDES permit requirements, this analysis is intended only to quantify the sensitivity of the benefits and costs of implementing a large-scale Water Recycling Program. The WROS makes no prediction as to the outcome of the NPDES permit negotiations, but instead, for the purposes of the evaluation, assumes a status quo condition. If future permit conditions are different than existing conditions, the benefits of water recycling related to effluent management should be re-examined.

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SECTION 2

APPROACH

SRCSD has structured development of the recommended projects and the WROS in several steps (see **Figure 2-1**). Input from stakeholder representatives, elected officials, potential project partners, technical experts, and SRCSD Management has helped shape the direction of the WROS along the way. The structure of this Executive Summary follows that of the WROS approach.

The WROS approach was facilitated by the completion of four distinct but integrated tracks of activities including technical, outreach, briefings, and fast track projects (see **Figure 2-2**).

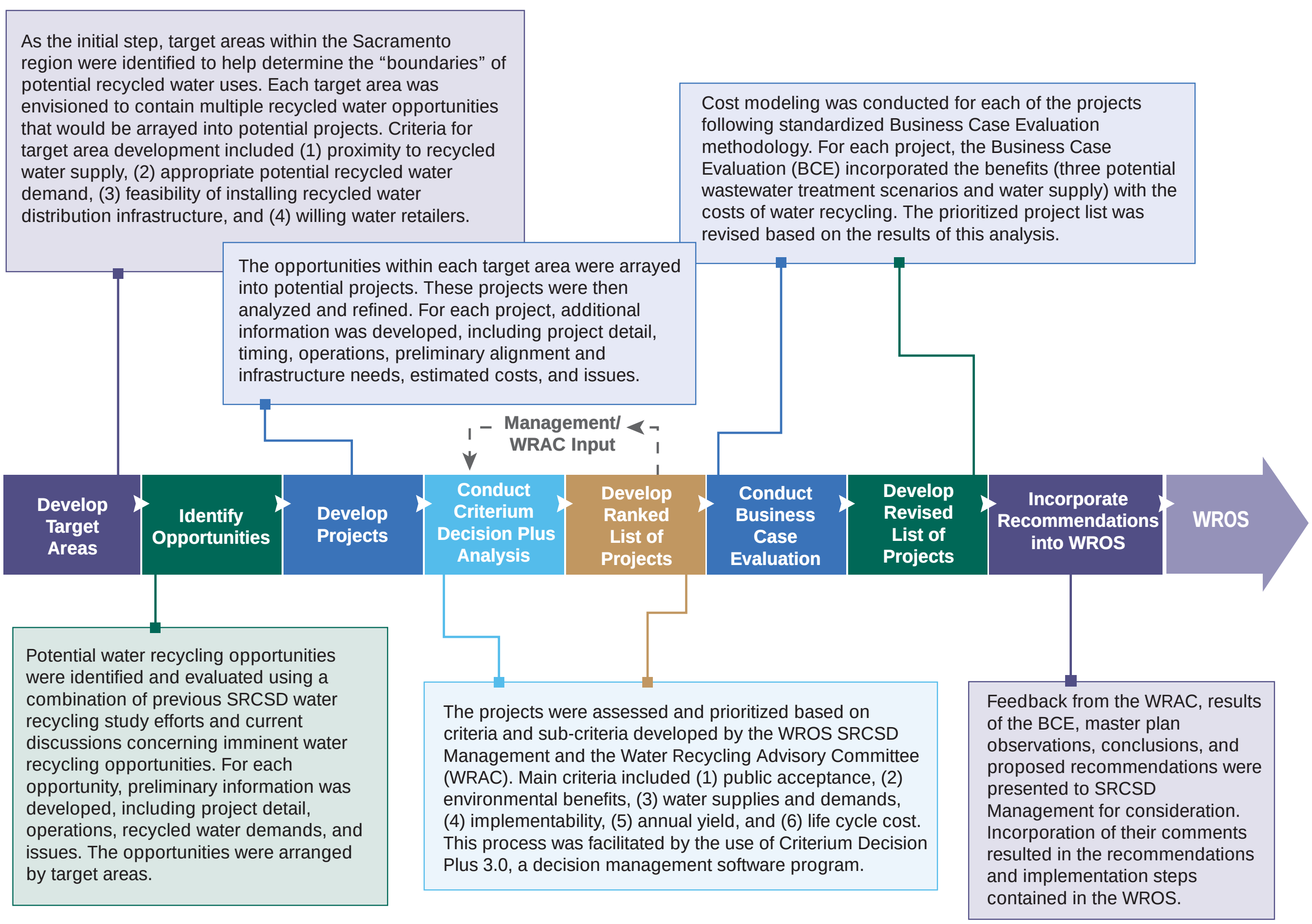


Figure 2-1 | SRCSD Water Recycling Opportunities Study Approach

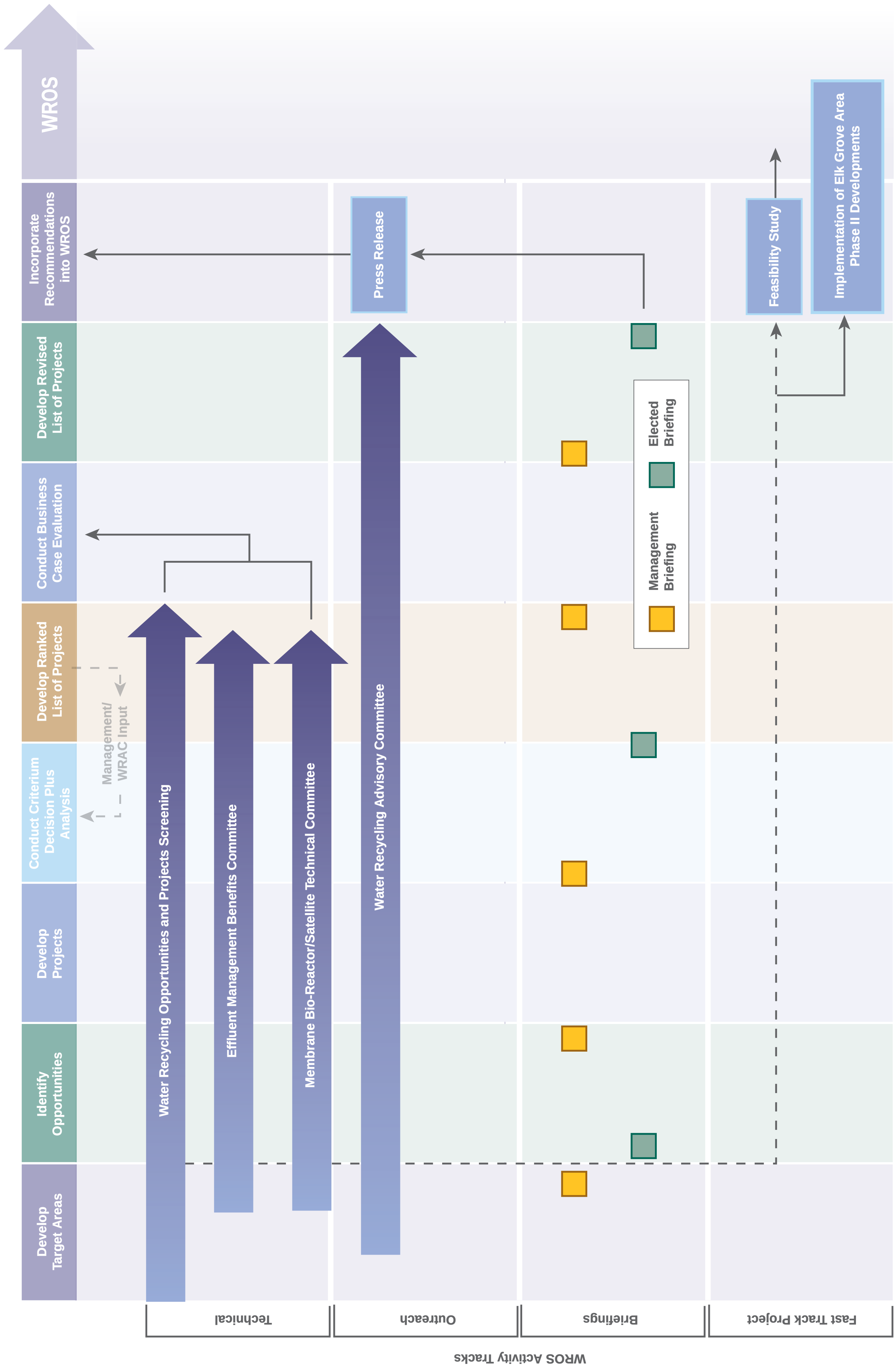
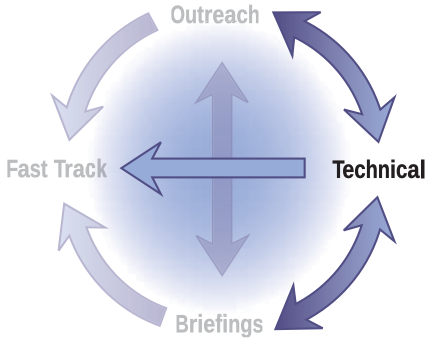


Figure 2-2 | Integrated Activity Tracks for Water Recycling Opportunities Study Completion

1. Technical

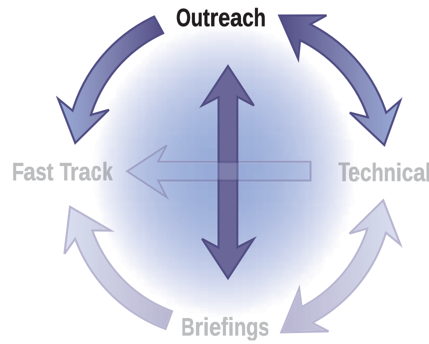


Throughout the process of developing and screening the water recycling opportunities and projects, the WROS incorporated data and feedback from other concurrent efforts (e.g., committees, briefings, fast track activities) into the analyses. Other technical efforts included the following:

Effluent Management Benefits (EMB) Committee – This committee was formed to identify and evaluate, to the degree possible, the current and predicted future benefits (e.g., cost savings, regulatory compliance) of reducing SRWTP effluent discharge through water recycling. The committee evaluated three potential future SRWTP treatment scenarios: (1) continuation of existing treatment (e.g., disinfected secondary achieving a median total coliform concentrations of 23 Most Probable Number (MPN)/100 milliliter (ml)), (2) addition of membrane filtration, and (3) addition of membrane filtration, nutrient removal, and temperature treatment (e.g., cooling towers). The results were fed into the Business Case Evaluation (BCE) and overall WROS analyses (see **Appendix B1**).

Membrane Bio-Reactor (MBR)/Satellite Plant Technical Committee – This committee assessed the feasibility of centralized and decentralized (satellite facilities) recycled water opportunities and projects. Efforts included evaluation of treatment processes, identification of concerns related to remote recycled water treatment facilities, cost estimation, and analysis of impacts on the interceptor system. The results were integrated into the overall WROS analyses (see **Appendix B2**).

2. Outreach



The outreach effort was defined by a comprehensive plan that identified three tiers of stakeholders (potential partners, interested parties, and other stakeholders) and outlined three objectives (increase stakeholder awareness of opportunities for water recycling through SRCSD, obtain and respond to feedback from stakeholders on perceptions of SRCSD's water recycling demonstration project, and generate agreements among audiences that result in tangible water recycling projects). Strategies included a newly developed water recycling report, a revamped Web site, fact sheets, and media outreach during key milestones such as discussion of a water recycling ordinance with the SRCSD Board of Directors. (See **Appendix C1** for more detailed information on the WROS outreach program.)

Stakeholder interaction also was a critical component of the WROS outreach. Over 20 stakeholder interviews were held during the course of the WROS outreach to elicit input to help direct the development of opportunities and projects.

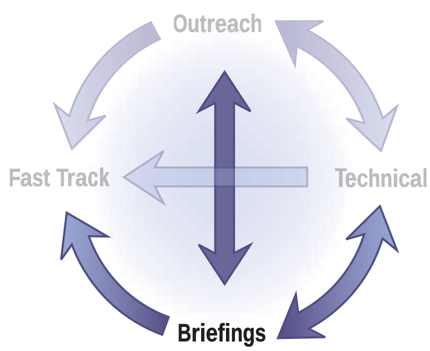
Development and implementation of the Water Recycling Advisory Committee (WRAC) took the stakeholder interaction process a step further.

The WRAC was comprised of over 30 representatives, including water suppliers, county and state regulators, stakeholders with water recycling experience, park districts, development interests, and environmental interests.

The WRAC provided opportunities for stakeholder input on key aspects of the WROS.

Over the course of five meetings, WRAC participants were provided information about the larger scale Water Recycling Program and development of the WROS. In addition, WRAC participants were given the opportunity to review and provide input on key aspects of the WROS, including potential water recycling opportunities and projects, prioritization criteria used to rank those projects, the outcome of the prioritization process, project cost estimates, and the WROS. (See **Appendix C** for more detailed information on the WRAC, including a database of participants and meeting recaps.)

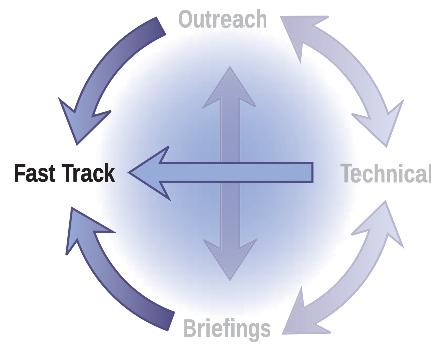
3. Briefings (Management and Elected Officials)



Management briefings – These briefings were conducted at regular intervals during the planning effort. SRCSD Management was provided with information on strategic water recycling issues raised during the course of WROS development, analysis of potential projects, and stakeholder involvement. Management shared ideas, provided feedback, and ensured consistency with the overall SRCSD vision.

Elected officials briefings – These briefings were conducted at strategic points during the planning effort to communicate key aspects of the WROS to the SRCSD Board of Directors and local elected officials.

4. Fast Track Projects



Early in the WROS process, it was recognized that attractive recycled water opportunities and projects would likely be identified during WROS development that would need to be pursued independent of the WROS schedule. This separate process allowed for the "fast track" analysis of such opportunities and projects to: (1) establish the need to condition new developments with recycled water infrastructure, consistent with applicable processes and planning timelines, (2) make use of construction time frames and activities associated with the other projects (e.g., coordinating the recycled water transmission pipeline for the South County Agriculture and Habitat Project with SRCSD's South Interceptor Project), and (3) meet the needs of potential partners. The WROS worked in conjunction with local land use authority staff and building industry and other stakeholders, as needed, to evaluate fast track projects (e.g., South County Agriculture and Habitat, Elk Grove Area Phase II Developments, etc.). These projects were incorporated into the WROS.

SECTION 3

DEVELOPMENT OF TARGET AREAS, OPPORTUNITIES, AND PROJECTS

Ensuring the stated goals of the large-scale Water Recycling Program are achievable through implementation of the WROS, and evaluating the feasibility of that implementation, required preliminary development of potential projects comprising the WROS, including type, size, alignment and infrastructure needs, timing, operations, cost, and probable issues.

The WROS employed a three-step approach to defining potential projects. This section summarizes the three steps – (1) development of target areas, (2) identification of water recycling opportunities, and (3) development of potential recycled water projects – and concludes with brief project descriptions. Detailed descriptions of the three steps and potential projects are included in **Appendix A**.

Development of Target Areas

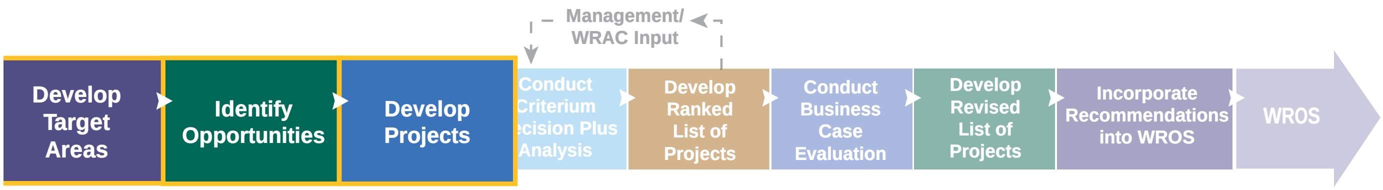
Given the geographic scope of the Sacramento region, the first step in defining potential projects was to determine areas within the region to target for water recycling. The initial screening process used four criteria to determine the appropriate “target areas”. This process is depicted in **Figure 3-1** and the criteria are described below.

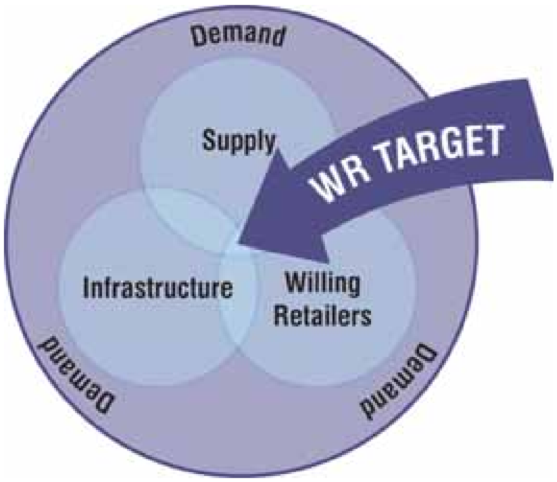
Geographical proximity to recycled water supply – This criterion recognized the feasibility of a centralized recycled water supply from SRWTP or a decentralized (i.e., satellite treatment facility along major gravity sewer interceptor) recycled water supply within the target area.

Buffer zones around supply sources were established to delineate geographical proximity to the recycled water supply.

Appropriate potential recycled water demand – This criterion included present and future developments that would encourage non-potable recycled water use with a focus on large irrigation demands, such as golf courses, parks, landscape medians, and agricultural irrigation. Irrigation demands typically increase during the long, dry summer seasons in the Sacramento region, and recycled water could be used to supplement available supplies during this period.

Feasibility of installing recycled water distribution infrastructure – This criterion addressed the feasibility of installing necessary infrastructure and delivering recycled water to potential users. In general, retrofitting existing irrigation systems to deliver recycled water was not cost-effective; therefore, this criterion tends to favor areas of new development where recycled water systems could be installed along with all other infrastructure.





Intersecting the screening criterial discussed target areas are developed.

Figure 3-1 |Initial Screening Criteria for Target Areas

Willing water retailers and land use authorities – As a potential large-volume wholesaler of recycled water, SRCSD must partner with willing water retailers and interact with various land use authorities. This criterion recognized that the region includes many water purveyors with varying interests related to water supply, operation, expenditures, etc., and that land use authorities in the region have different policies regarding recycled water (or lack thereof).

By geographically overlaying the above criteria on a map of the Sacramento region, five target areas were identified, as shown in **Figure 3-2**. These areas became the focus of further development in the WROS; the remainder of the Sacramento region could be examined in the future if SRCSD decides to further expand its Water Recycling Program.

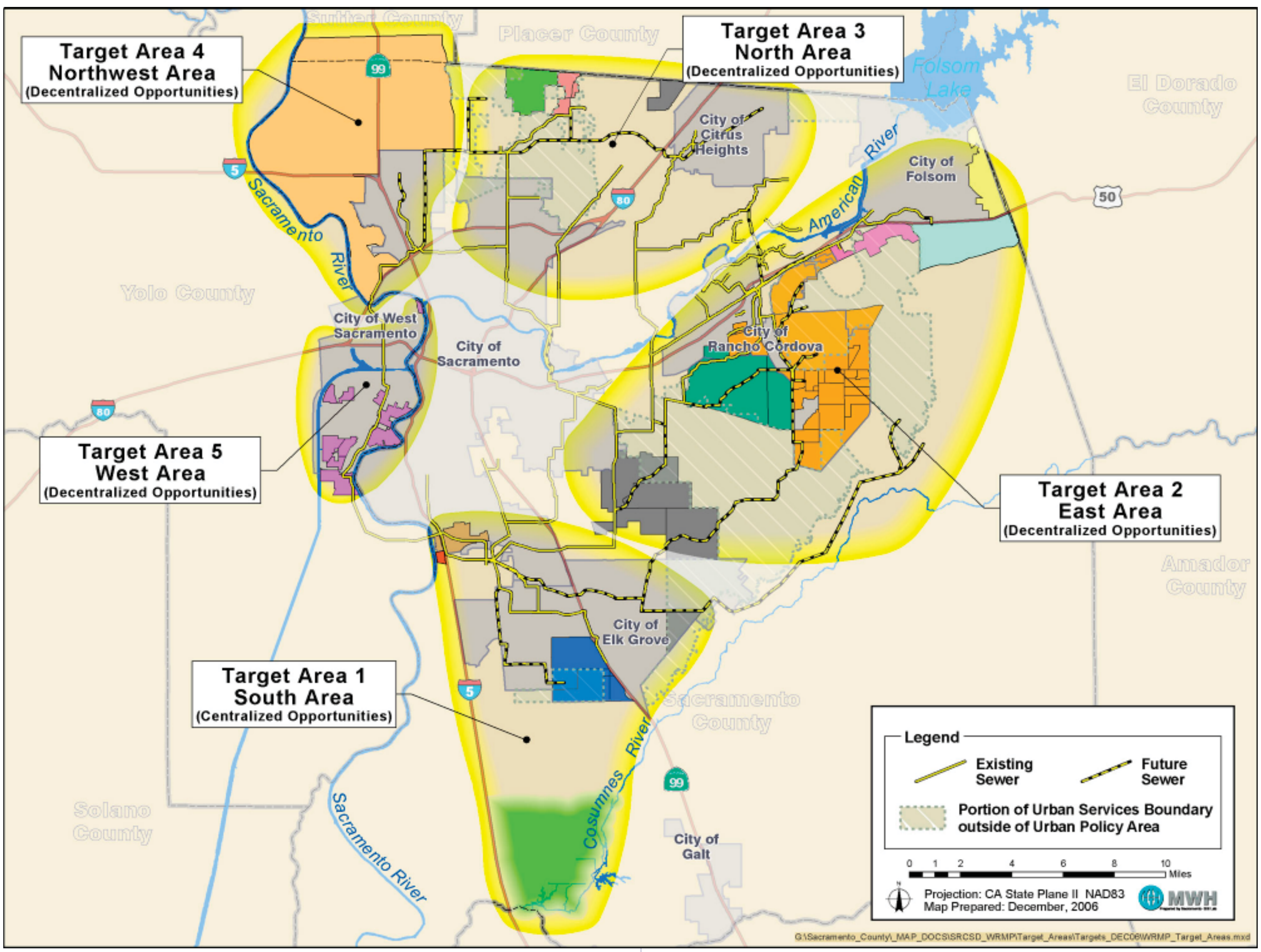


Figure 3-2 | Identified Target Areas for Water Recycling in the Sacramento Region

Identification of Water Recycling Opportunities

The second step in defining potential projects involved refining specific water recycling opportunities within each target area. For each opportunity, information was developed in the following five categories: type of recycled water use, recycled water demand, location, opportunity timing, and potential participants.

Type of recycled water use – Two types of water recycling needs were identified in the WROS: urban and agricultural irrigation. Urban irrigation (Scenarios C and D) would be supplied with disinfected tertiary recycled water conforming with Title 22 requirements for unrestricted use. Agricultural irrigation (animal feed crops only, such as alfalfa) would be supplied with disinfected secondary-23 recycled water.

Scenario C – *Scenario C recycled water use would require installation of a dual plumbed system – one potable (drinking water) system and one "purple pipe" system for urban irrigation use only in new parks, golf courses, school fields, streetscapes, etc. Although intended for restricted, disinfected tertiary recycled water, the purple pipe system could be supplied with potable water, untreated surface water or groundwater, or remediated groundwater, depending on availability.*

Scenario D – *Scenario D recycled water use would include Scenario C plus extension of the distribution system within a development to provide restricted, disinfected tertiary recycled water for residential irrigation (frontyard and backyard irrigation).*

Recycled water demand – Recycled water demands were developed using the required irrigation area, rate of water application from a typical irrigation system, and amount of evapotranspiration anticipated to occur in the area. For this analysis, annual average demands, average day demands, and maximum day demands were estimated for each opportunity.

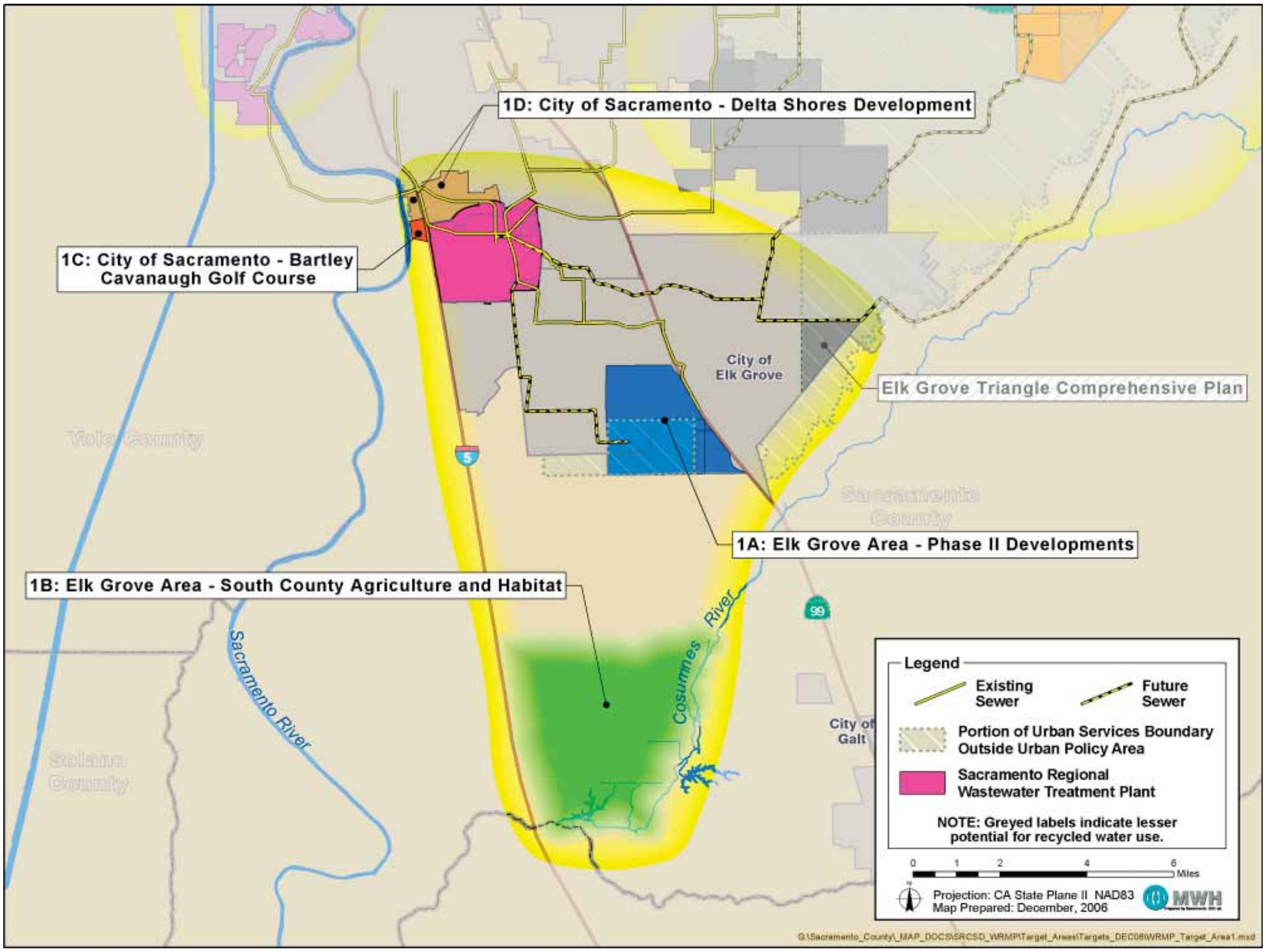
Location – The geographic location of potential water recycling use determined whether an opportunity would be supplied by a centralized source of recycled water from SRCSD's WRF or a decentralized satellite treatment facility.

Opportunity timing – Opportunities for water recycling were identified for existing, short-term, or long-term potential recycled water users. New developments often represented greatest potential water recycling opportunities.

Other developments were preliminarily analyzed and determined to have lesser potential for recycled water use for various reasons (e.g., status of existing planning, design, and/or approval processes, previously defined sources of water). These developments were not carried forward in the WROS analysis because of implementation considerations and the significant costs associated with recycled water retrofits. Exceptions included areas such as Bartley Cavanaugh Golf Course, where the need for a supplemental water supply exists and irrigation infrastructure is available.

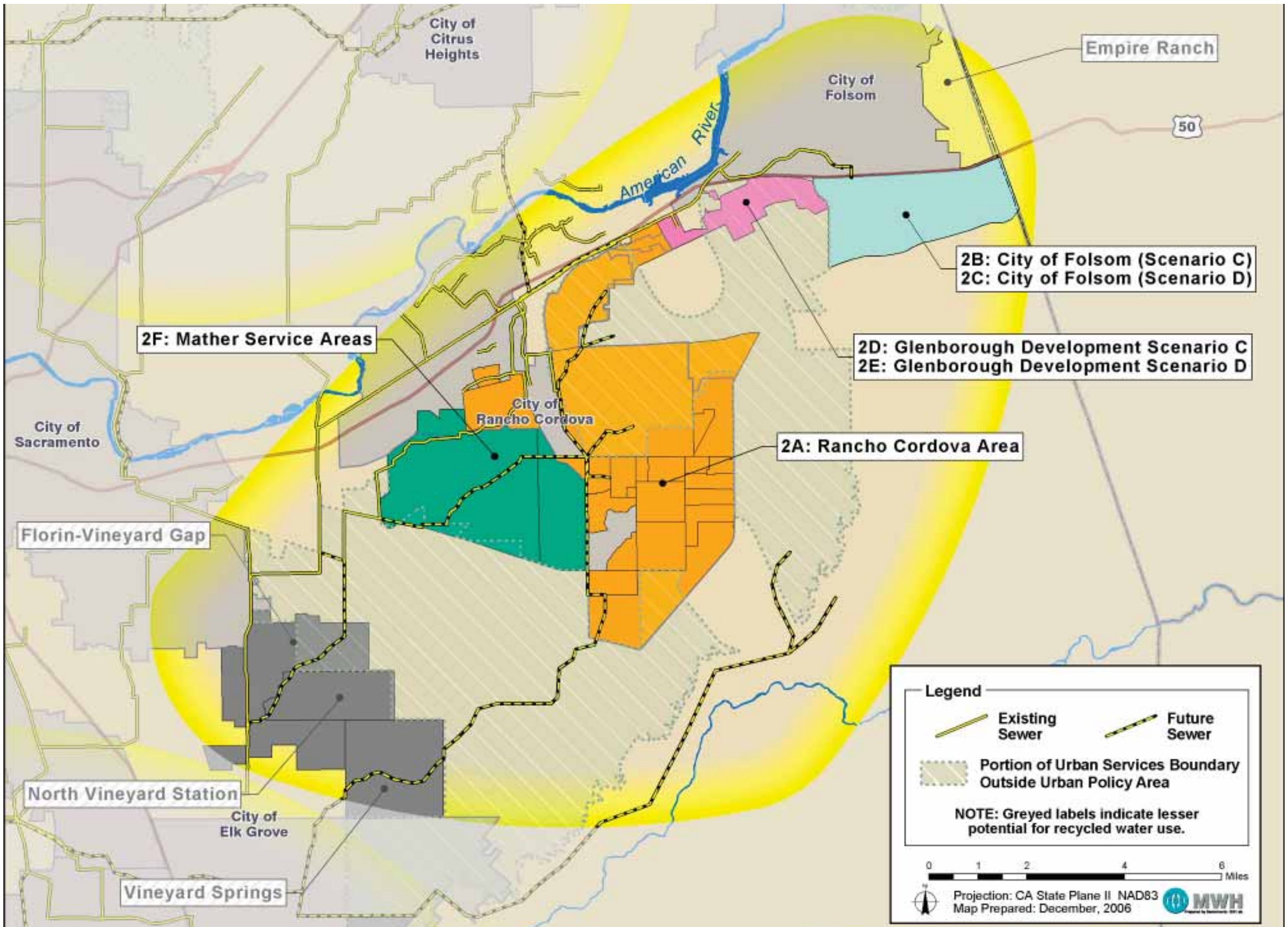
Potential participants – The WROS identified agencies whose participation would be required to implement an opportunity (e.g., water purveyors, land use authorities, school districts, park districts).

Potential opportunities are grouped by target areas and summarized in **Figures 3-3** through **3-7**.



Location(s)		Type(s) of Use	Average Day Demand (MGD)	Peak Day Demand (MGD)	Participants
1A	**Elk Grove Area - Phase II Developments**	Urban Irrigation (Disinfected Tertiary)	2.3	5.8	SRCSD, Sacramento County Water Agency, City of Elk Grove
1B	**Elk Grove Area - South County Agriculture and Habitat**	Agricultural Irrigation (Disinfected Secondary-23)	9.3	16.5	SRCSD, Sacramento County Water Agency, City of Elk Grove
1C	**City of Sacramento - Bartley Cavanaugh Golf Course**	Urban Irrigation (Disinfected Tertiary)	0.3	0.7	SRCSD, City of Sacramento, Capital Golf Department
1D	**City of Sacramento - Delta Shores Development**				
	Delta Shores Development	Urban Irrigation (Disinfected Tertiary)	0.6	1.4	SRCSD, City of Sacramento, City Parks and Recreation Department
	Bill Conlin Park		0.1	0.1	

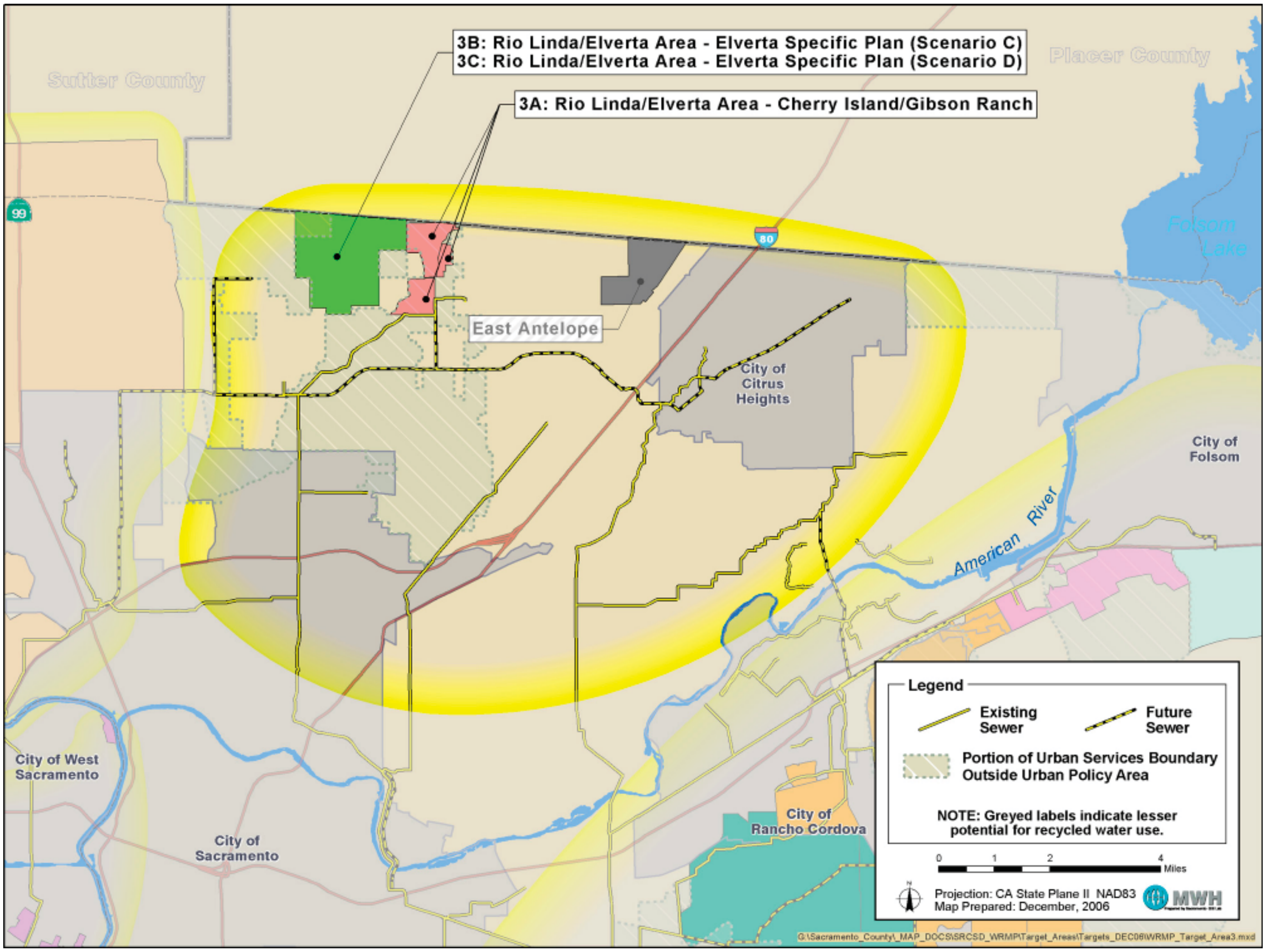
Figure 3-3 | Target Area 1 - South Area (Centralized Opportunities)



Location(s)		Type(s) of Use	Average Day Demand (MGD)	Peak Day Demand (MGD)	Participants
2A	**Rancho Cordova Area**				
	North Area	Urban Irrigation (Disinfected Tertiary)	0.7	1.9	SRCSD, Sacramento County Water Agency, Golden State Water Company, California American Water Company, City of Rancho Cordova, City of Folsom Utilities
	Central Area		1.8	4.7	
	South Area		1.3	3.2	
2B	**City of Folsom (Scenario C)**	Urban Irrigation (Disinfected Tertiary)	2.9	7.3	SRCSD, City of Folsom
2C	**City of Folsom (Scenario D)**	Urban Irrigation (Disinfected Tertiary)	11.2	28.2	SRCSD, City of Folsom
2D	**Glenborough Development (Scenario C)**[1]	Urban Irrigation (Disinfected Tertiary)	0.3	0.9	SRCSD, City of Folsom
2E	**Glenborough Development (Scenario D)**	Urban Irrigation (Disinfected Tertiary)	1.9	4.9	SRCSD, City of Folsom
2F	**Mather Service Areas**				
	Mather Parks	Urban Irrigation (Disinfected Tertiary)	1.9	4.7	SRCSD, Sacramento County Water Agency, County of Sacramento Department of Regional Parks, Sacramento County Board of Supervisors
	Mather Golf Course	Urban Irrigation (Disinfected Tertiary)	0.5	1.2	

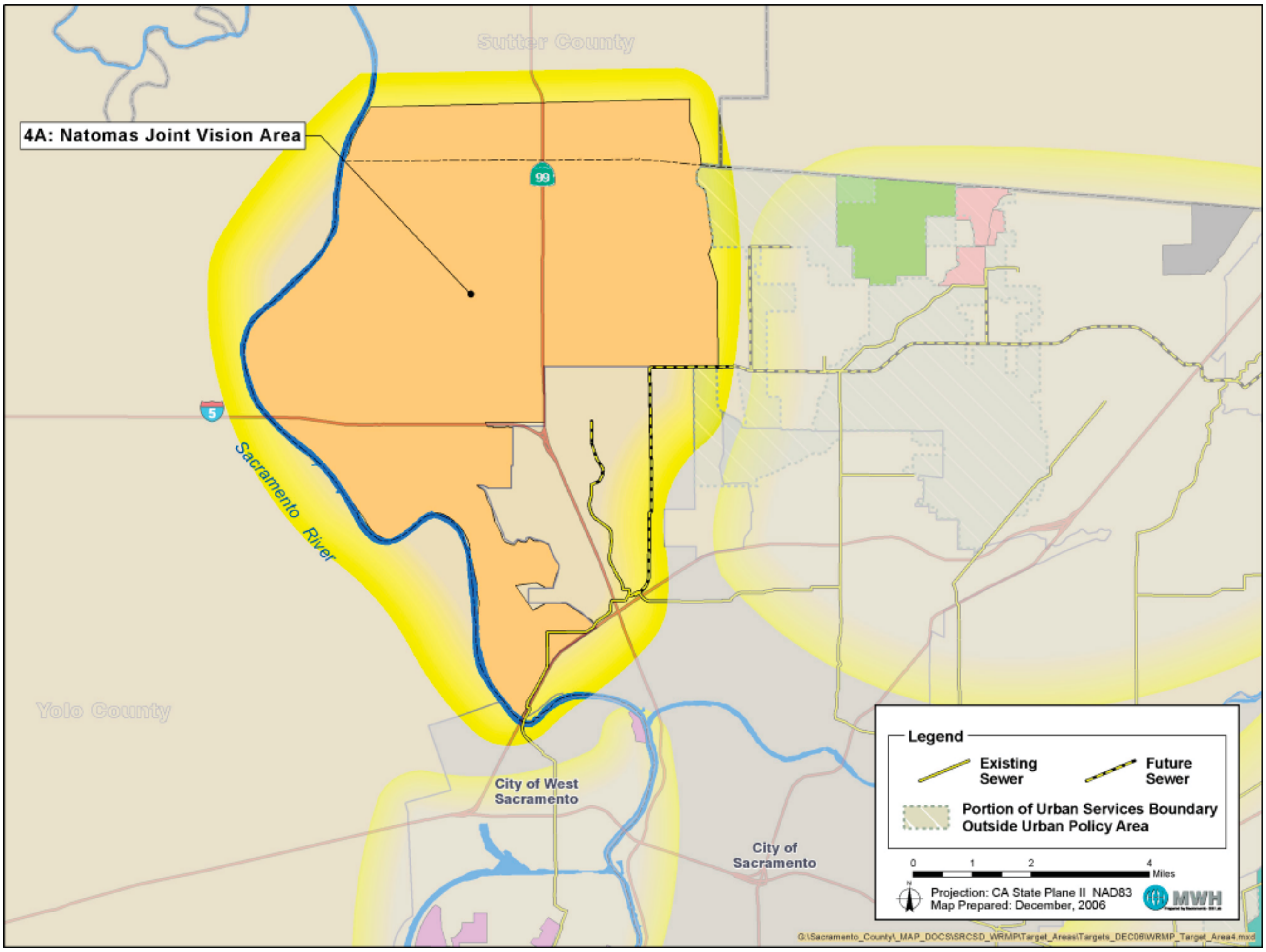
Note:
[1] Also known as Glenborough at Easton and Easton Place, and Glenborough Planning Areas.

Figure 3-4| Target Area 2 - East Area (Decentralized Opportunities)



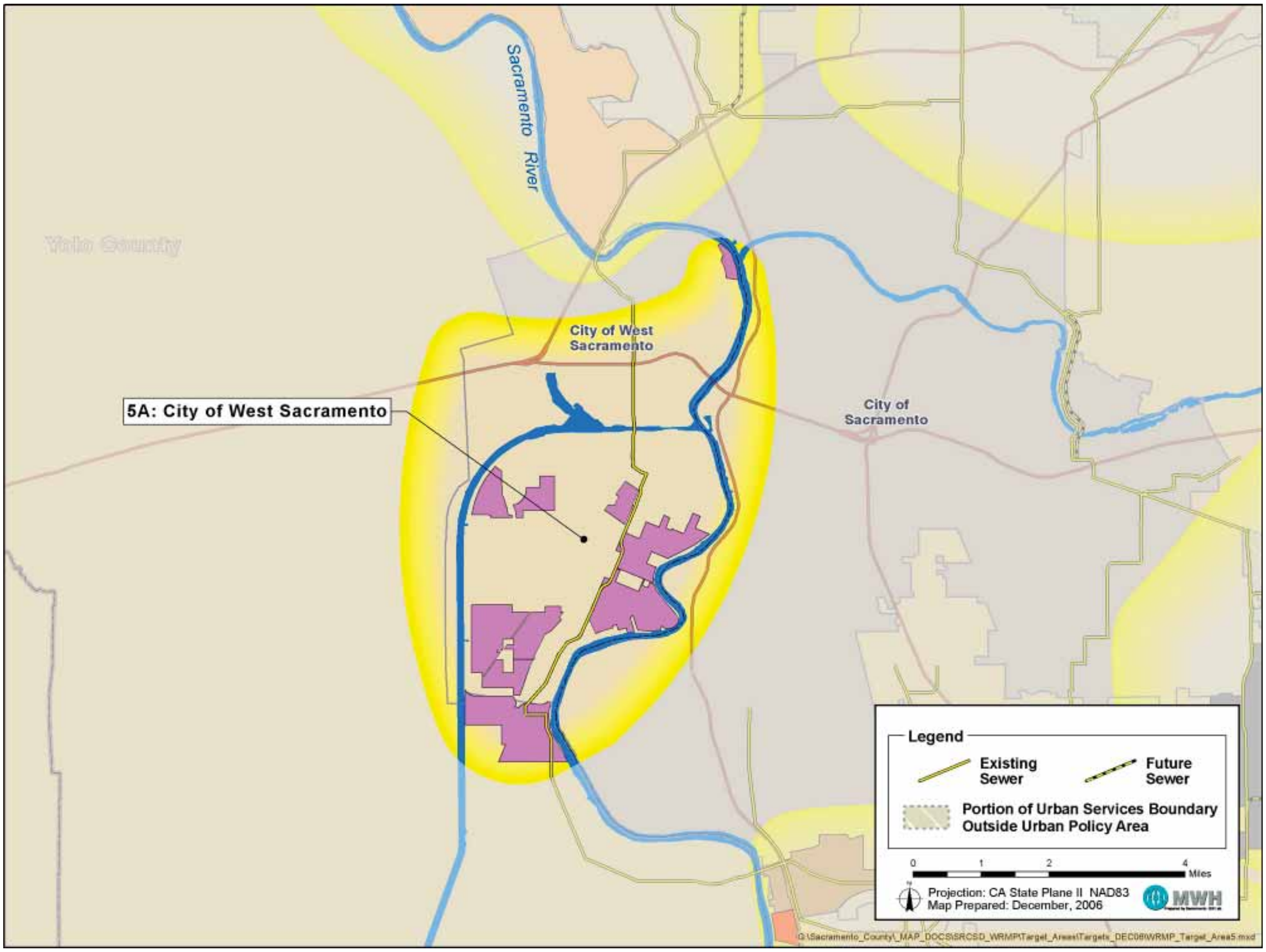
	Location(s)	Type(s) of Use	Average Day Demand (MGD)	Peak Day Demand (MGD)	Participants
3A	**Rio Linda/Elverta Area-Cherry Island/Gibson Ranch**	Urban Irrigation (Disinfected Tertiary)	1.3	3.2	SRCSD, County of Sacramento Department of Regional Parks, Sacramento County Board of Supervisors
3B	**Rio Linda/Elverta Area-Elverta Specific Plan (Scenario C)**	Urban Irrigation (Disinfected Tertiary)	0.3	0.7	SRCSD, County of Sacramento Department of Regional Parks, Sacramento County Board of Supervisors
3C	**Rio Linda/Elverta Area-Elverta Specific Plan (Scenario D)**	Urban Irrigation (Disinfected Tertiary)	1.8	3.6	SRCSD, County of Sacramento Department of Regional Parks, Sacramento County Board of Supervisors

Figure 3-5 | Target Area 3 - North Area (Decentralized Opportunities)



	Location(s)	Type(s) of Use	Average Day Demand (MGD)	Peak Day Demand (MGD)	Participants
4A	**Natomas Joint Vision Area**	Urban Irrigation (Disinfected Tertiary)	4.4	11.1	SRCSD, Sacramento County Board of Supervisors, City of Sacramento, Natomas Central Mutual Water Company

Figure 3-6 | Target Area 4 - Northwest Area (Decentralized Opportunities)



	Location(s)	Type(s) of Use	Average Day Demand (MGD)	Peak Day Demand (MGD)	Participants
5A	**City of West Sacramento**				
	Southport Framework Plan	Urban Irrigation (Disinfected Tertiary)	0.8	2.1	SRCSD, City of West Sacramento
	University Park		0.1	0.3	
	Central Park		0.4	1.1	
	Sports Complex		0.1	0.3	

Figure 3-7 | Target Area 5 - West Area (Decentralized Opportunities)

Development of Potential Water Recycling Projects

A water recycling project was developed to meet the recycled water demand for the identified opportunities shown in Figures 3-3 through 3-7. Some of the identified projects were combined into larger projects to provide recycled water to several opportunities. The project location, size, appearance, treatment technology, and reliability depended on the recycled water source and type of use.

Centralized vs. Decentralized Supply

As discussed earlier, the WROS assessed the feasibility of a centralized recycled water supply or a decentralized (satellite facility) recycled water supply within each project area. Centralized projects considered expanding the existing WRF at SRWTP. Decentralized projects involved an MBR satellite facility.

For the purpose of the WROS, required treatment facilities were designed to meet 80 percent of peak day demand. During peak demand periods, it was assumed that the recycled water supply would be supplemented with other supplies (e.g., raw or potable surface water or groundwater).

MBR *is a biological reactor with an inclusive membrane filtration system that couples conventional activated sludge processes with low-pressure membranes in the same unit or vessel. The membrane portion of an MBR consists of a microfiltration (MF) or ultrafiltration (UF) membrane, eliminating the need for final clarifiers that are required in conventional activated sludge processes.*

MBR satellite facility *is a treatment technology to extract sewage flow from an existing sewer interceptor and discharge residuals back to the sewer interceptor to be treated at the downstream SRWTP. A satellite facility could be used to provide recycled water at the point of reuse. Depending on the interceptor flow rate, the MBR satellite facility could be designed to provide recycled water based on the users' demand pattern or steady flow making the design flexible with minimal need for redundant units.*

Costs

The estimated costs for each potential project include both the capital costs and annual Operations and Maintenance (O&M) for the required facilities. Probable Construction Cost (PCC) was estimated using nine cost components and a construction contingency. The PCC was then used to develop the Total Probable Capital Cost (TPCC) by incorporating costs associated with construction management, engineering and administration, environmental documentation and permitting, and legal. The O&M cost incorporated the annual costs required to operate the water recycling facilities, including labor, chemicals, and power. TPCC was spread over a 40-year life cycle to calculate the Equivalent Uniform Annual Cost (EUAC) assuming a 3 percent nominal discount rate. For comparative purposes, the overall cost of a potential project, or EUAC per acre-foot (EUAC/AF), was calculated and presented for each potential project to enable evaluation of the net return of TPCC on an annualized or amortized basis. These costs components are shown in **Table 3-1**.

The identified water recycling projects within the target areas are summarized in **Table 3-2**. Italicized projects include two or more individual projects. Demands are additive while the costs are not.

Additional details about the potential projects, their locations, and required infrastructure can be found in **Attachment 1** of this Executive Summary and **Appendix A3**.

Table 3-1 | Cost Components for Potential Projects

+	*Treatment Costs*: Expansion of the existing SRCSD WRF or construction of an MBR satellite facility
+	*Supplemental Water Supply Costs*: MBR satellite facilities only – allocation of additional funds to supplement water supply during peak demands (facilities designed to supply 80% of peak day demand)
+	*Land Requirement Costs*: WRF expansion occurs on existing SRCSD property; therefore, land acquisition is not required. MBR satellite facilities require a land acquisition of approximately 1.0 acre per 1.0 MGD
+	*Right-of-Way Acquisition Costs*: Required for projects with transmission piping alignments outside the public right-of-way
+	*Transmission Piping Costs*: Installation of transmission infrastructure
+	*Pump Station Costs*: Estimated using the peak day recycled water demand
+	*Storage Costs*: Storage of recycled water during periods of low demand
+	*In-Track Distribution Piping Costs*: Distribution piping along streets
+	*On-Site Irrigation Piping Costs*: Additional costs above and beyond the cost for on-site potable water supply
=	**Subtotal**
+	30% of Subtotal for Contingency
=	**PCC**

+	30% of PCC for Engineering, Construction Management, and Administrative Costs
+	3% (or 5%) of PCC for Environmental Documentation, Permitting, and Mitigation Costs[1]
+	2% (or 5%) of PCC for Legal Cost[2]
=	**TPCC**

+	Power Cost ($0.10 per kWh)
+	O&M of WRF & Satellite Filtration Plant (9.00% of TPCC)
+	O&M of Pump Station (5.00% of TPCC)
+	O&M of Transmission Piping (0.50% of TPCC)
+	O&M of Distribution Piping (In-Track) (3.00% of TPCC)
+	O&M of Distribution Piping (On-Site) (3.00% of TPCC)
+	O&M of Groundwater Well (9.00% of TPCC)
+	O&M of Storage Facilities (1.00% of TPCC)
+	O&M of Agricultural Facilities ($100,000 allowance)
=	**Total Annual O&M Costs**

+	EUAC of Capital Costs
+	Total Annual O&M Costs
=	**Total EUAC**
/	Average Annual Recycled Water Demand (AF)
=	**EUAC/AF**

[1] *Assumes 3% for all potential projects except 5% for South County Agricultural Lands*
[2] *Assumes 2% for all potential projects except 5% for South County Agricultural Lands*

KEY	
AF – acre-foot	O&M – Operations and Maintenance
EUAC/AF – Equivalent Uniform Annual Cost per acre-foot	PCC – Probable Construction Cost
kWh – kilowatt-hour	TPCC – Total Probable Capital Cost
MBR – Membrane Bio-Reactor	WRF – Water Reclamation Facility
MGD – million gallons per day	

Table 3-2 | Identified Water Recycling Projects Within Target Areas

	Potential Water Recycling Projects	Recycled Water Demands		Estimated Costs [2]	
		Average Day Demand (MGD)	Peak Day Demand [1] (MGD)	Capital Costs	EUAC/AF
Target Area 1 - South Area (Centralized Opportunities)	Elk Grove Area - *Phase II Developments*	*2.3*	*5.8*	*$48M*	*$728*
	Elk Grove Area - South County Agricultural Lands	9.3	16.5	$48M	$245
	Elk Grove Area - Phase II Developments & South County Agricultural Lands	*11.6*	*22.3*	*$89M*	*$354*
	City of Sacramento - Bartley Cavanaugh Golf Course	0.3	0.7	$5M	$966
	City of Sacramento - Delta Shores Development	0.7	1.5	$13M	$1,284
	City of Sacramento - Bartley Cavanaugh Golf Course & Delta Shores Development	*1.0*	*2.2*	*$15M*	*$1,025*
Target Area 2 - East Area (Decentralized Opportunities)	Rancho Cordova Area	3.8	9.8	$89M	$2,554
	City of Folsom & Glenborough Development (Scenario C)	1.7	4.4	$83M	$3,010
	City of Folsom & Glenborough Development (Scenario D)	8.6	21.9	$465M	$3,252
	Mather Service Areas	2.4	5.9	$55M	$1,781
	Rancho Cordova Area & Mather Service Areas	*6.2*	*15.7*	*$224M*	*$2,357*
	Rancho Cordova Area, City of Folsom, Glenborough Development & Mather Service Areas	*7.8*	*20.0*	*$318M*	*$2,515*
Target Area 3 - North Area (Decentralized Opportunities)	Rio Linda/Elverta Area - Cherry Island/ Gibson Ranch	1.3	3.2	$32M	$1,866
	Rio Linda/Elverta Area - Elverta Specific Plan	0.3	0.7	$17M	$4,430
	Rio Linda/Elverta Area - Cherry Island/ Gibson Ranch & Elverta Specific Plan	*1.6*	*3.9*	*$41M*	*$1,902*
	Rio Linda/Elverta Area - Elverta Specific Plan & Natomas Joint Vision Area	*4.7*	*11.8*	*$177M*	*$2,469*
Target Area 4 - Northwest Area (Decentralized Opportunities)	Natomas Joint Vision Area	4.4	11.1	$158M	$2,358
Target Area 5 - West Area (Decentralized Opportunities)	City of West Sacramento	1.5	3.8	$63M	$2,609

Notes:
The italicized projects include two or more individual projects. The demands are additive while the cost is not.
[1] The design flow of the different water recycling facilities assumed 80% of the peak day demand.
[2] Estimated costs based on ENR #7768 (San Francisco and 20-Cities for March 2005).

KEY	
EUAC/AF - Equivalent Uniform Annual Cost per acre-foot	MGD - million gallons per day

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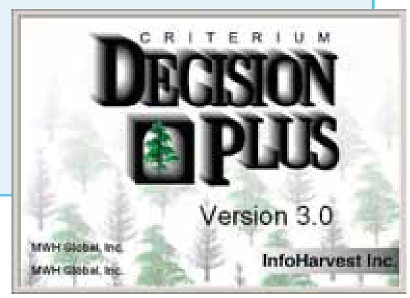
SECTION 4

PROJECT PRIORITIZATION

To facilitate the process of prioritizing the 18 potential projects, the WROS employed a Multi-Criteria Decision Analysis (MCDA) approach. This approach is used to select one of a number of alternatives based on how well those alternatives rate against a chosen set of criteria and sub-criteria and a scoring system. The WROS used the tool Criterium Decision Plus 3.0 (CDP 3.0).

The prioritization criteria and sub-criteria used to evaluate each potential project were developed to reflect the issues associated with project implementation. The process included (1) identifying the criteria and sub-criteria, establishing a hierarchy, and formulating descriptions, (2) determining an objective scoring system for the criteria or sub-criteria, which were used to rate each potential project, and (3) designating weights to reflect the importance of (a) the criteria relative to each other, and (b) the sub-criteria within the criteria. This iterative process involved the WROS, SRCSD Management, and the WRAC – the resulting criteria, sub-criteria, scoring, and weights were input into CDP 3.0. Detailed information on this process is presented in **Appendix D1**.

CDP 3.0 was used to prioritize the potential projects. CDP 3.0 is a desktop software Microsoft Windows® decision manager that allows the user to complete basic multi-criteria decision analyses involving complex problems with numerous criteria in timely manner. This software package facilitated managing decision-oriented data, making decisions, developing decision-making guidelines, and communicating recommendations.



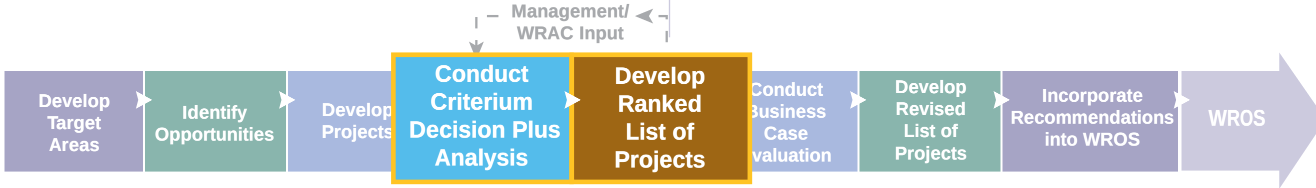
Prioritization Criteria and Scoring System

The criteria, sub-criteria, and scoring system are summarized below.

Criterion 1: Public Acceptance

This criterion had four components:

Type of use – This sub-criterion considered the type(s) of recycled water use – agricultural irrigation, urban irrigation (Scenario C), urban irrigation (Scenario D), or a combination of uses. The highest score was associated with agricultural irrigation; the lowest with urban irrigation, Scenario D.



Level of treatment – This sub-criterion considered the minimum level of recycled water treatment required for the potential project's use – reverse osmosis (RO), Title 22 tertiary-treated recycled water, or Title 22 disinfected secondary-23 recycled water. Higher levels of treatment were awarded higher scores.

Potential construction impacts – This sub-criterion considered the potential impacts on parcels near the construction areas, assuming a 100-foot offset. The greater the number of parcels associated with a potential project, the higher the anticipated potential construction impacts and the lower the associated score.

Potential operational impacts – This sub-criterion considered the potential residential impacts within a 1,000-foot radius of the treatment facility (centralized or decentralized). The greater the number of residential parcels associated with a potential project, the higher the anticipated potential construction impacts and the lower the associated score.

Criterion 2: Environmental Benefits

This criterion considered a potential project's environmental benefits to designated aquatic and terrestrial habitat for listed species. The highest score was awarded to projects with direct benefits; the lowest to projects without direct benefits.

Criterion 3: Water Supplies and Demands

This criterion and two components:

Unmet water demands – This sub-criterion considered the water purveyor's need for additional water supplies to meet projected 2030 water demands. The highest score was awarded to projects where the water purveyor's existing water supply portfolio was not sufficient to meet future demands; the lowest to projects with sufficient existing water supplies.

Timing – This sub-criterion considered the timing of the potential project. The highest score was associated with near-term project (i.e., implementation anticipated in less than 5 years); the lowest with long-term projects (i.e., implementation anticipated in more than 10 years).

Criterion 4: Implementability

This criterion had four components:

Environmental and regulatory requirements – This sub-criterion considered the complexity of the process to obtain the necessary environmental and regulatory approvals. The highest score was associated with Scenario C use; the lowest with Scenario D use.

Legal issues – This sub-criterion considered legal aspects of the potential project, including, but not limited to, water rights, rights-of-way, basin transfers, and interpretation of waste discharge regulations. The greater the number of potential legal issues, the lower the associated score.

Other potential providers of recycled water – This sub-criterion considered the existence of other providers that could reasonably serve recycled water to the potential project. The highest score was awarded to projects for which no other provider exists; the lowest to projects with other providers.

Availability of outside funding – This sub-criterion considered the availability of potential project funding outside the partners. Grant funding guidelines similar to existing federal and state programs was assumed. The highest score was awarded to projects that met the eligibility criteria of existing funding programs; the lowest to projects that did not.

Criterion 5: Annual Yield

This criterion considered the anticipated annual yield (in AF) of the potential project. SRCSD's preference is for a WRP with a few, large projects rather than several, small projects. The greater the annual yield, the larger the potential project and the higher the associated score.

Criterion 6: Life Cycle Cost

This criterion considered the annualized capital and O&M costs of the potential project over a 40-year life cycle as EUAC/AF. The greater the EUAC/AF, the lower the associated score.

The six criteria were categorized as either "non-financial" (Public Acceptance, Environmental Benefits, Water Supplies and Demands, Implementability, and Annual Yield) or "financial" (Life Cycle Cost) in nature.

Weights

The weighting process was accomplished in two stages: (1) percentages (or "weights") were allocated to each of the non-financial criteria, totaling 100, and (2) percentages were allocated to both the non-financial and financial categories, totaling 100. The WROS/SRCSD Management assigned criteria weights as a group. For the WRAC, the average of the weights submitted by the WRAC participants was used for each criterion. A comparison of the criteria weights developed by both groups is presented in **Figure 4-1**. Maximum and minimum values are indicated for the WRAC input to show the range of responses.

Prioritized Projects

Each potential project was assessed using the criteria, sub-criteria, and scoring system. This information and the assigned weights were input into CDP 3.0. The tool was used to rank projects based on the weights from both the WROS/SRCSD Management and the WRAC. Both weighting configurations resulted in the same prioritization. The normalized scores and projects are presented in descending order in **Figure 4-2**. **Table 4-1** summarizes the prioritized potential projects, recycled water demands, and estimated costs.

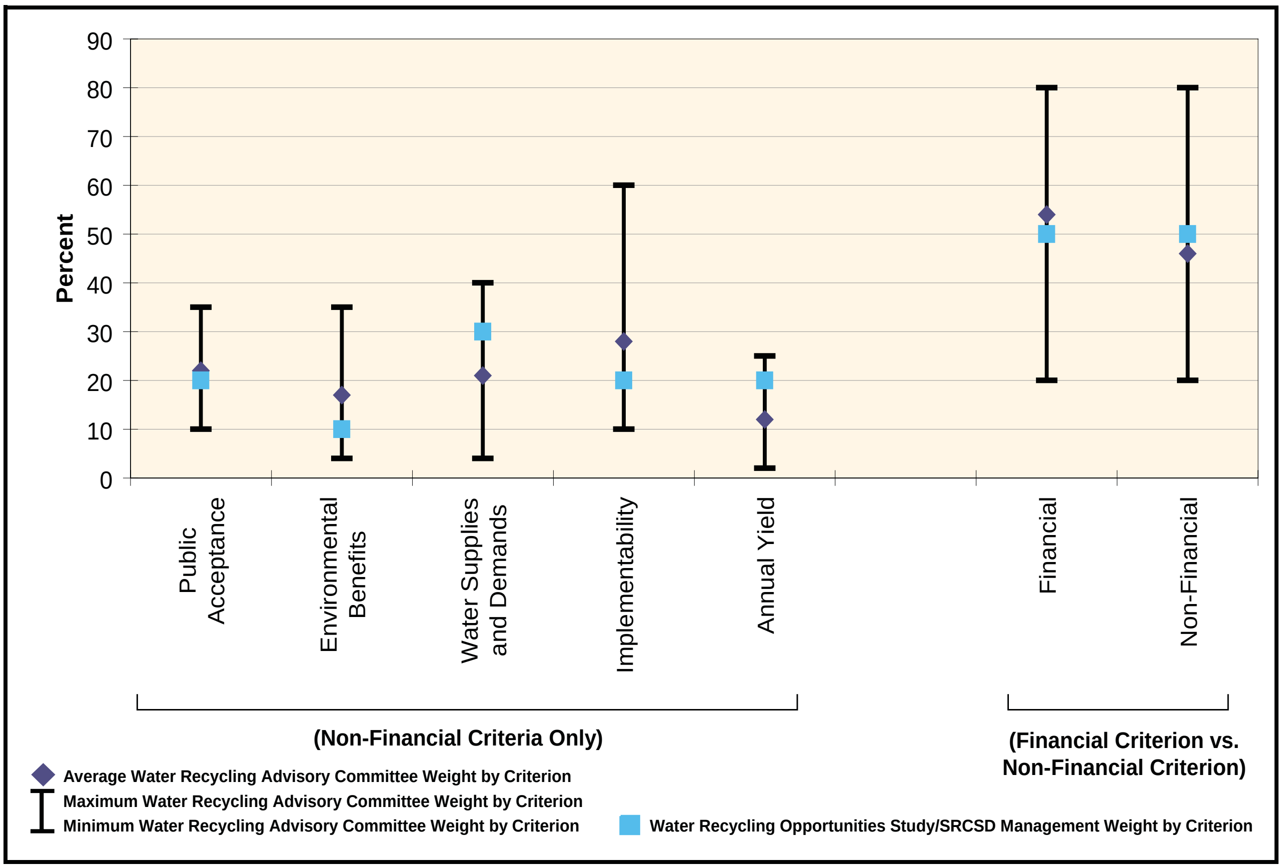
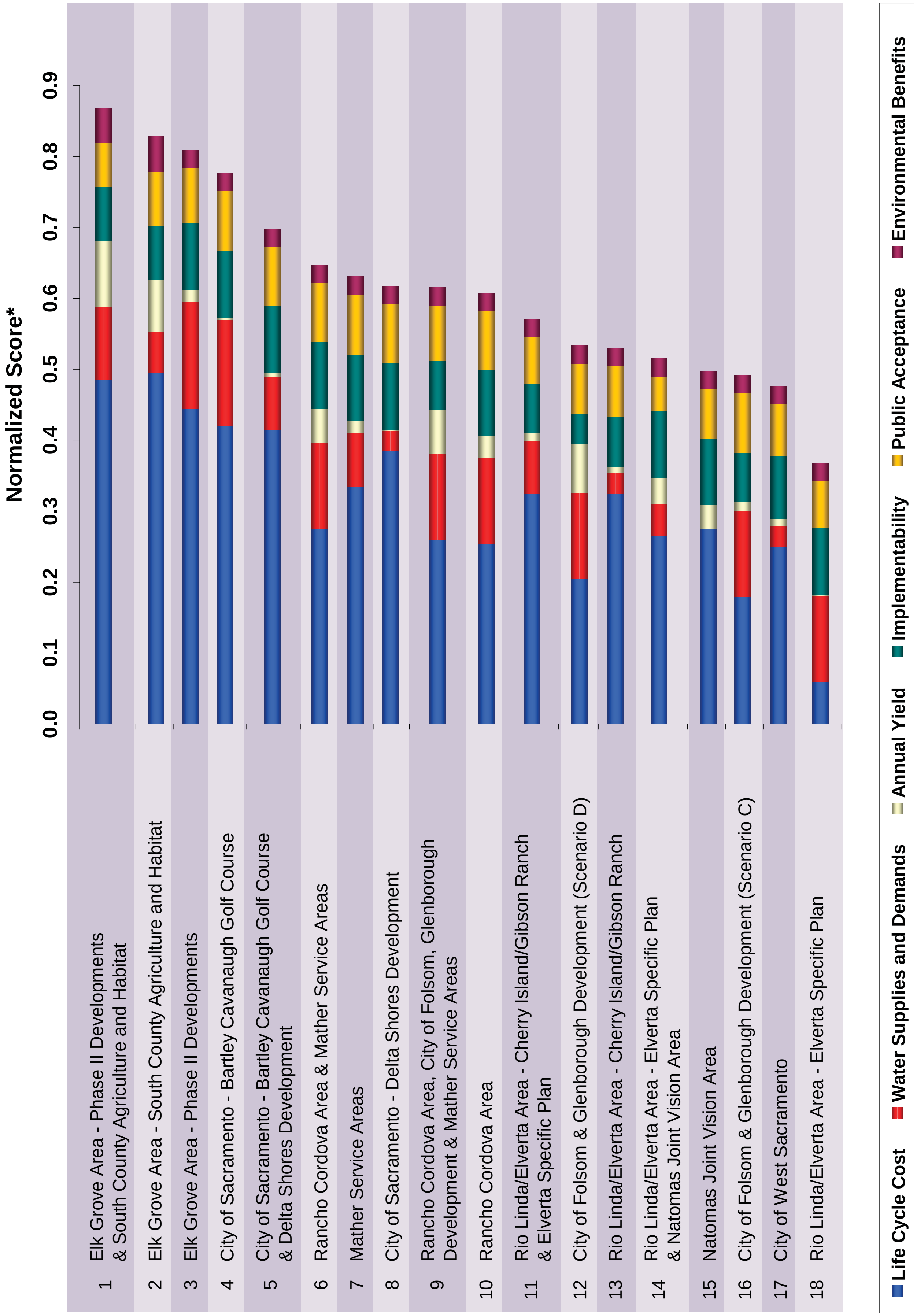


Figure 4-1 | Comparison of Weighting Factors Developed by the Water Recycling Opportunities Study/SRCSD Management and Water Recycling Advisory Committee



Exported data from CDP 3.0 to Excel has a conversion error of 0.01

Figure 4-2 | Criterium Decision Plus 3.0 Normalized Scores for Potential Water Recycling Projects

Table 4-1 | Summary of Prioritization of Potential Water Recycling Projects

Potential Water Recycling Projects	CDP 3.0 Ranking	Recycled Water Demands			Estimated Costs	
		Average Day Demand (MGD)	Peak Day Demand (MGD)	Annual Demand (AF/year)	Capital Costs	EUAC/AF
Elk Grove Area - Phase II Developments & South County Agriculture and Habitat	1	11.6	22.3	13,014	$89M	$354
Elk Grove Area - South County Agriculture and Habitat	2	9.3	16.5	10,438	$48M	$245
Elk Grove Area - Phase II Developments	3	2.3	5.8	2,576	$48M	$728
City of Sacramento - Bartley Cavanaugh Golf Course	4	0.3	0.7	591	$5M	$966
City of Sacramento - Bartley Cavanaugh Golf Course & Delta Shores Development	5	1.0	2.2	985	$15M	$1,025
Rancho Cordova Area & Mather Service Areas	6	6.2	15.7	6,899	$224M	$2,357
Mather Service Areas	7	2.4	5.9	2,598	$55M	$1,781
City of Sacramento - Delta Shores Development	8	0.7	1.5	394	$13M	$1,284
Rancho Cordova Area, City of Folsom, Glenborough Development & Mather Service Areas	9	7.8	20	8,819	$318M	$2,515
Rancho Cordova Area	10	3.8	9.8	4,301	$89M	$2,554
Rio Linda/Elverta Area - Cherry Island/Gibson Ranch & Elverta Specific Plan	11	1.6	3.9	1,713	$40M	$1,902
City of Folsom & Glenborough Development (Scenario D)	12	8.6	21.9	9,701	$465M	$3,252
Rio Linda/Elverta Area - Cherry Island/Gibson Ranch	13	1.3	3.2	1,411	$32M	$1,866
Rio Linda/Elverta Area - Elverta Specific Plan & Natomas Joint Vision Area	14	4.7	11.8	5,230	$177M	$2,469
Natomas Joint Vision Area	15	4.4	11.1	4,928	$157M	$2,358
City of Folsom & Glenborough Development (Scenario C)	16	1.7	4.4	1,920	$83M	$3,010
City of West Sacramento	17	1.4	3.8	1,736	$63M	$2,609
Rio Linda/Elverta Area - Elverta Specific Plan	18	0.3	0.7	302	$17M	$4,430

KEY

AF/year – acre-feet per year
CDP 3.0 – Criterium Decision Plus 3.0
EUAC/AF – Equivalent Uniform Annual Cost per acre-foot
MGD – million gallons per day
O&M - Operations and Maintenance
TPCC - Total Probable Capital Cost

The estimated cost for each potential project is intended to be inclusive of all treatment, storage, transmission, distribution, and on-site irrigation system capital costs. For comparative purposes, the overall cost of a potential project, or EUAC/AF, was calculated and includes the annual O&M cost for the public facilities portion of the project.

For the WROS, estimated costs are not apportioned amongst the potential partners. For selected projects, these costs will be further refined and apportioned through future studies.

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SECTION 5

BUSINESS CASE EVALUATION

As discussed in **Section 4**, the WROS identified 18 potential recycled water projects. The potential projects are located in different geographic areas and have different water recycling demands (**Section 3**). The potential projects would deliver recycled water for sale to retail customers.

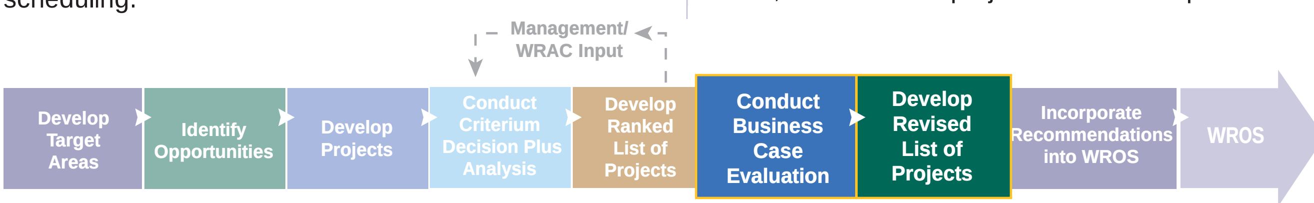
> ***Because local government has fiduciary responsibility to serve constituent customers, the customers' perspectives were considered to identify business case benefits and costs. Said another way, the study objective was to determine which potential water recycling project(s) would best serve customers regardless of who might be the customers' water purveyor, wastewater service provider, or other interested parties of local government.***

It is conceivable that all 18 potential projects could be implemented in some fashion. On first glance, this might appear to be a comprehensive response to total water resource management. But before such an undertaking would start, there must be discernment about the order of which potential projects should be implemented sooner vs. later, and further to verify that the potential projects to be implemented are economically sound--that is, that they provide to the community more benefit than they cost the community. For these dual purposes, the Business Case Evaluation (BCE) was performed to assess the relative attractiveness of the economics of the potential projects and to further rank the projects in economic terms for project scheduling.

It is important to note that while economic assessment is a critical step in the process to consider public investment in utility facilities, it is not the only parameter of importance. Providing for sustainable growth, promoting the appropriate uses of natural resources, and considering the larger societal benefits of water recycling should also play a part in the decision-making process. This BCE does not attempt to quantify these environmental and social benefits.Further, this BCE is project specific and does not attempt to consider broader regional economic benefits such as job-creation, economic growth, etc.

The principal business reasons for interest in potential projects have to do with cost and avoided cost. It is assumed that all potable water supplies would meet (or exceed) minimum levels of service with respect to water quality, quantity, safety, etc., and that all water recycling water potential projects would meet or exceed similar levels of service for the intended and lawful uses that the customers would use the recycled water to satisfy.

Cost parameters associated with the potential projects include features that have relative benefits and costs to the customer in the event of implementation. Therefore, it was appropriate to consider benefit/cost (B/C) ratios as a measurement of business attractiveness for implementation. B/C ratios greater than 1.0 indicate a project would provide net benefit to customers upon implementation and that the project should be implemented. The B/C ratio is also a ranking parameter; the higher the B/C ratio, the earlier the project should be implemented



because the benefits would be greater compared to the costs. Note that this parameter does not mean that the potential project that would generate the most recycled water is necessarily the best project. Often, smaller projects have greater margins of relative benefit compared to larger projects.

Because the potential projects are of different capacities, all cost data were reduced from aggregate project costs to unit costs of recycled water produced (for sale) by the projects. All costs were computed on a dollar per acre-foot per year of demand basis similar to pricing of potable water. Capital costs were converted to EUAC for this purpose, using cost of capital values for discount rate and life cycle time frame (i.e., constant across all potential projects) for economic term in the computation.

Benefits

Cost parameters that would ***benefit*** customers include the following:

- Avoidance of the allocated cost of water supply, treatment, and transmission facilities that would not have to be built (or would be built later) because recycled water facilities would supply that demand.
- Avoidance of operation and maintenance costs associated with the volume of potable water replaced by the use of recycled water
- Avoidance of capital and/or O&M costs associated with wastewater treatment. During the EMB evaluation, potential avoided costs of wastewater treatment was calculated for three potential future treatment scenarios:
    - Continuation of existing treatment processes at the SRWTP
    - Addition of membrane filtration
    - Addition of membrane filtration, nutrient removal, and temperature control

The BCE model calculated benefits using avoided wastewater treatment costs for each scenario above based on the type of potential water recycling project (centralized or decentralized (i.e., satellite facility)). Two important assumptions pertaining to avoided wastewater treatment costs are as follows:

Load vs. Concentration – SRCSD's current NPDES permit contains both mass load-based and concentration-based effluent limits on most contaminants of concern. However, while water recycling would reduce the overall pollutant load to the river, it could marginally increase the effluent concentrations of these same pollutants. The WROS assumes any such marginal changes would not control the timing of and investment in potential additional advanced treatment facilities (i.e., membrane filtration and nutrient removal).

Recycled Water Use Pattern – The anticipated recycled water use identified in the WROS generally follows an irrigation pattern with maximum usage in summer months and little or no recycled water use in winter months. Therefore, water recycling would reduce effluent flow and pollutant load to the river during dry months, but not winter months. The benefits of water recycling assume dry month flow and load permit conditions would control the timing of and investment in potential additional advanced treatment facilities (i.e., membrane filtration and nutrient removal).

Costs

Cost parameters that would ***cost*** customers include the following:

- The unit cost of new recycled water facilities (e.g., treatment plant, storage reservoirs, connecting pipelines) that would have to be built to supply water demand (otherwise met by potable water facilities).
- The cost of operation and maintenance of the recycled water facilities

Once the selection of the preferred project(s) is made, implementation considerations may introduce inter-agency cost allocations and/or subsidies as marketing measures to ensure project viability.

Benefits and Costs Analysis Results

Table 5-1 presents a comparison of the B/C ratios for the three wastewater treatment scenarios and the rankings from the prioritization process using CDP 3.0 (Section 4) for all potential projects. Projects are sorted based on the "Continuation of Existing Treatment" scenario. Regardless of the treatment scenario, the three projects with B/C ratios greater than 1.0 also have the highest CDP 3.0 rankings.

Figures 5-1 through **5-3** show the relative magnitude of Equivalent Uniform Annual Costs and Benefits for each water recycling project. Longer bars indicate projects with greater costs and/or benefits. The position of the midpoint of these bars relative to the zero value on the X-axis represents whether the project results in a net economic benefit or cost to the community. Finally, the figures also illustrate the relative amount of water supply benefit versus wastewater treatment a particular project provides. However, non-financial benefits (e.g. environmental, contribution towards continued economic growth) to the Sacramento Region and SRCSD service area are not represented in the figures.

Table 5-1 | Benefit Cost Ratios Comparison

		SRWTP Treatment Scenarios		
Potential Water Recycling Project	**CDP 3.0 Ranking**	**Continuation of Existing Treatment**	**Addition of Membrane Filtration**	**Addition of Membrane Filtration + Nutrient Removal ***
Elk Grove Area – South County Agriculture and Habitat	2	1.12x	2.09x	2.32x
Elk Grove Area – Phase II Developments & South County Agriculture and Habitat	1	1.04x	1.71x	1.87x
Elk Grove Area – Phase II Developments	3	1.02 x	1.35 x	1.42 x
Mather Service Areas	7	0.46 x	0.60 x	0.63 x
City of Sacramento – Bartley Cavanaugh Golf Course	4	0.37 x	0.61 x	0.67 x
City of Folsom & Glenborough Development (Scenario C)	16	0.36 x	0.44 x	0.46 x
Rancho Cordova Area, City of Folsom, Glenborough Development, & Mather Service Areas	9	0.36 x	0.45 x	0.47 x
Rancho Cordova Area & Mather Service Areas	6	0.35 x	0.45 x	0.48 x
City of Sacramento – Bartley Cavanaugh Golf Course & Delta Shores Development	5	0.34 x	0.57 x	0.62 x
City of Folsom & Glenborough Development (Scenario D)	12	0.33 x	0.41 x	0.42 x
Rancho Cordova Area	10	0.32 x	0.42 x	0.44 x
Rio Linda/Elverta Area – Cherry Island/Gibson Ranch	13	0.31 x	0.44 x	0.47 x
Rio Linda/Elverta Area – Cherry Island/Gibson Ranch & Elverta Specific Plan	11	0.31 x	0.43 x	0.46 x
City of Sacramento – Delta Shores Development	8	0.28 x	0.46 x	0.51 x
Natomas Joint Vision Area	15	0.25 x	0.35 x	0.37 x
Rio Linda/Elverta Area – Elverta Specific Plan & Natomas Joint Vision Area	14	0.24 x	0.33 x	0.36 x
City of West Sacramento	17	0.22 x	0.32 x	0.34 x
Rio Linda/Elverta Area – Elverta Specific Plan	18	0.13 x	0.18 x	0.20 x

** Temperature Treatment cost was not included because it is determined to be unbeneficial to water recycling projects because the maximum recycled water usage would be in summer months and little or no recycled water use in winter months.*

KEY
CDP 3.0 - Criterion Decision Plus 3.0

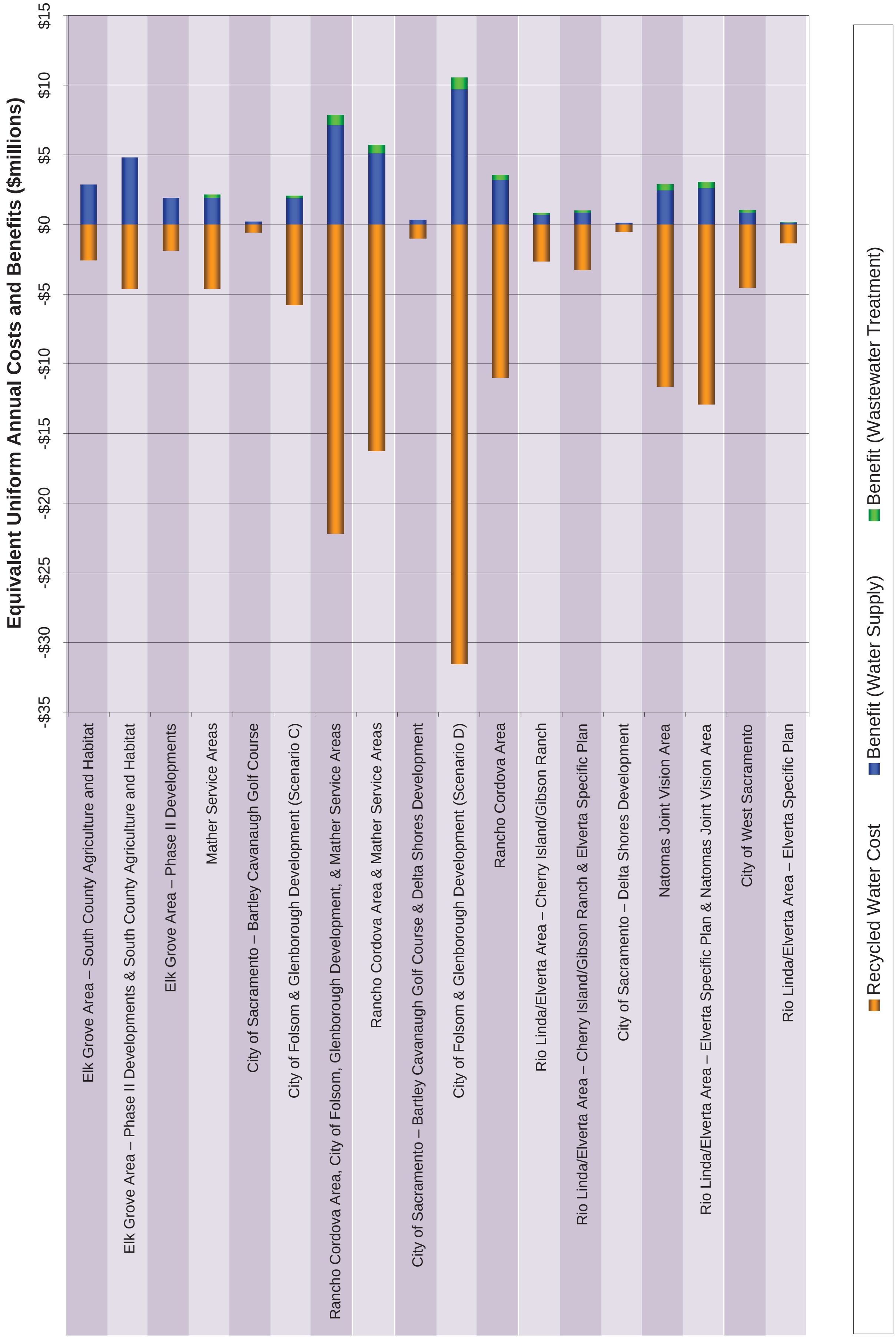


Figure 5-1 | Water Recycling Benefits and Costs (Continuation of Existing Treatment)

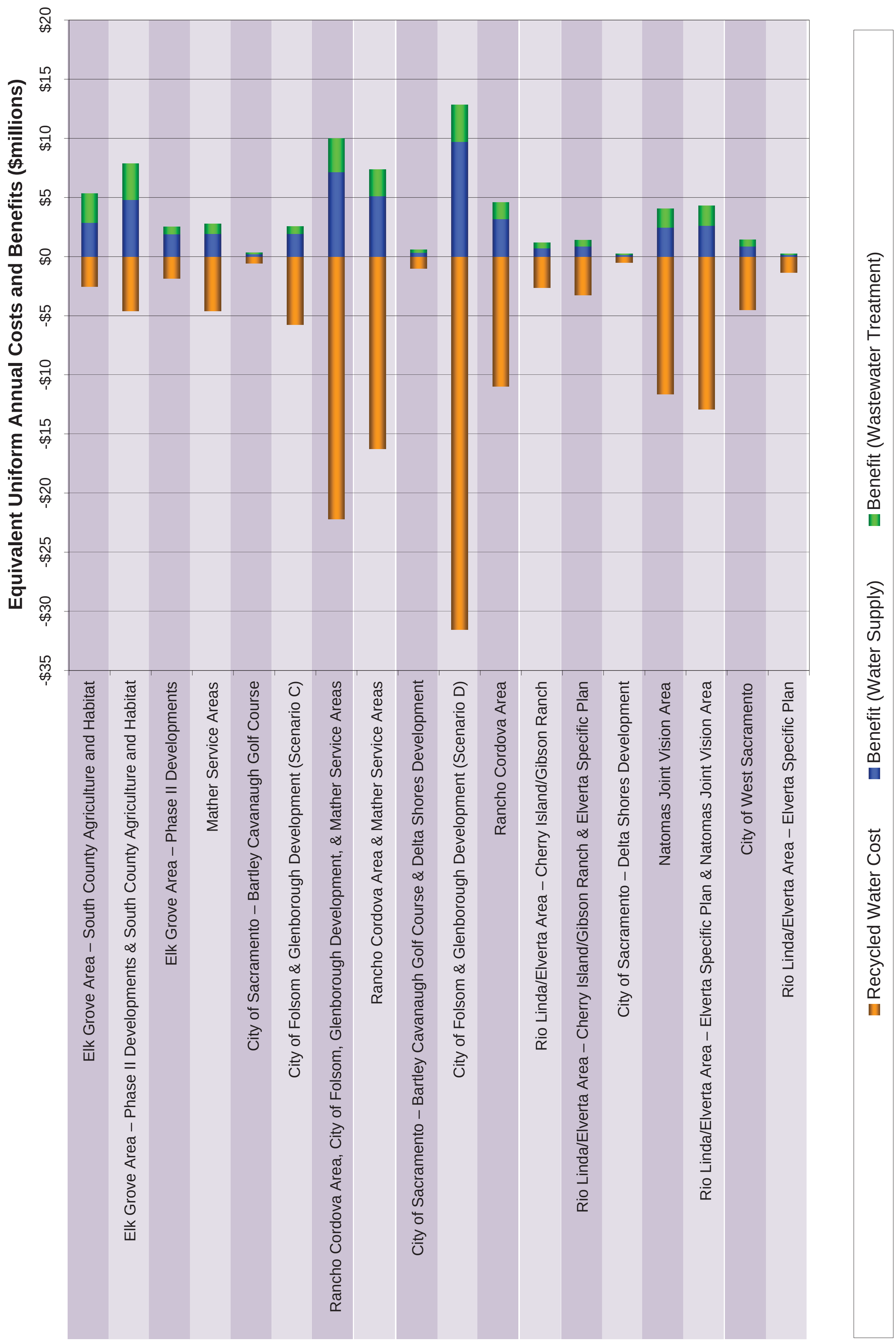


Figure 5-2 | Water Recycling Benefits and Costs (Addition of Membrane Filtration)

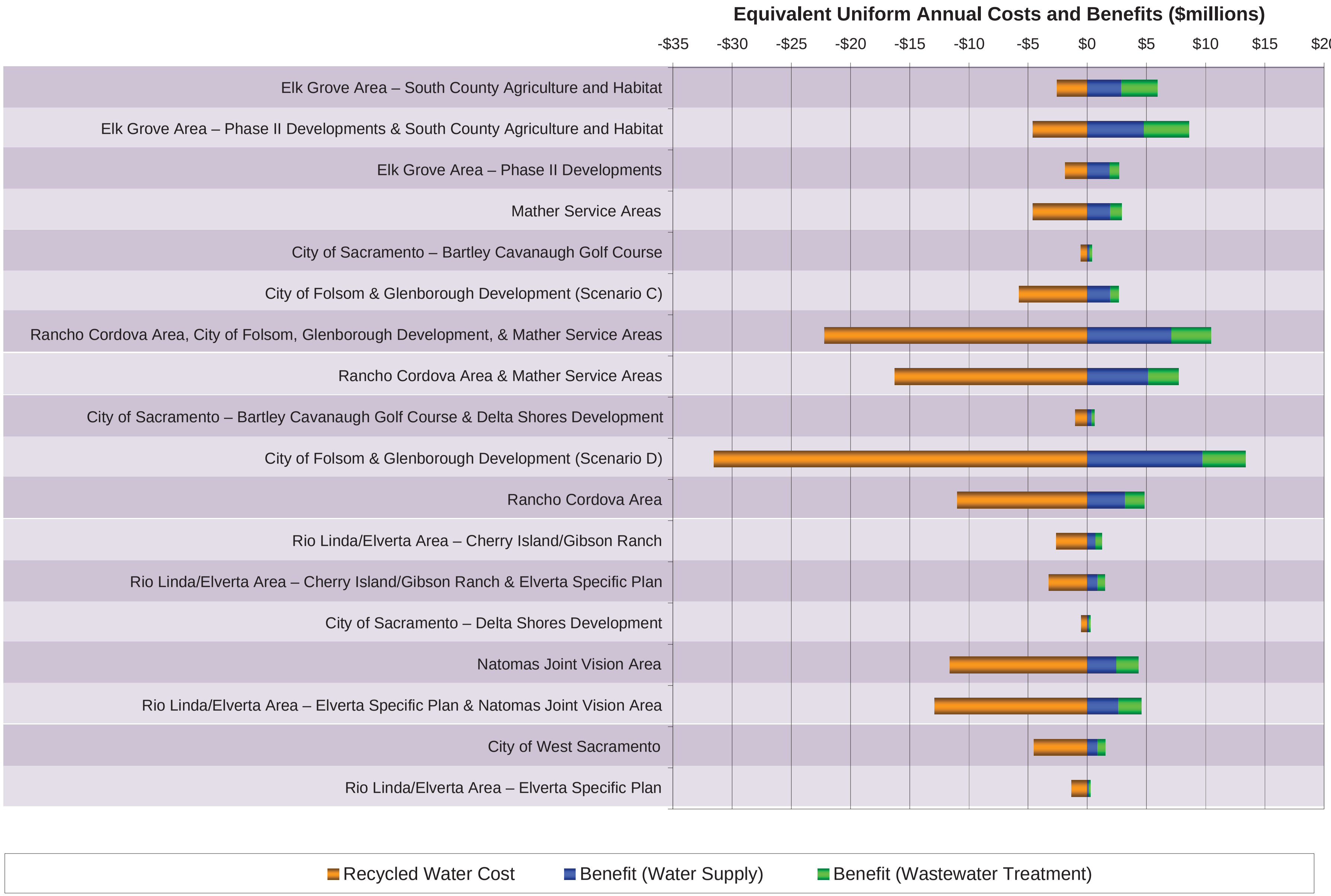


Figure 5-3 | Water Recycling Benefits and Costs (Addition of Membrane Filtration + Nutrient Removal)

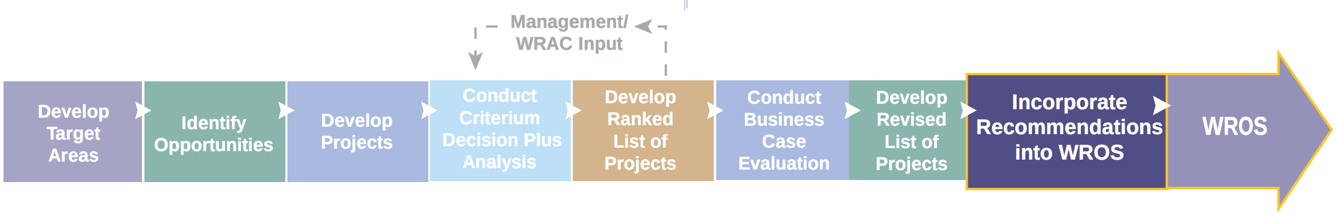
SECTION 6

OBSERVATIONS AND CONCLUSIONS, RECOMMENDATIONS, AND IMPLEMENTATION PLAN

Key observations and conclusions of the WROS are summarized below; the recommendations and implementation plan were derived from these observations and conclusions.

Observations and Conclusions

1. State law declares that the continued use of potable water for landscape irrigation and certain other non-potable water uses is an unreasonable use of potable water if recycled water is available and usable for such purposes (California Water Code section 13552.2). Further, California Water Code section 13577 calls for increasing water recycling statewide to 1 million af/year (or roughly 1 billion gallons per day) by 2010.
2. To justify a significant investment in water recycling, SRCSD, water purveyors, and land use authority decision-makers will need to look beyond today's economics and consider the social and environmental benefits associated with preserving the highest water quality sources for potable uses by providing recycled water for appropriate uses such as irrigation.
3. The economic analysis does not consider the cost of the next, as yet unidentified, increment of water supply that will be needed to meet the demands of the Sacramento region beyond the current planning horizon. It is anticipated that the future cost of water will be substantially greater than current costs.
4. A large-scale water recycling program could extend the Sacramento region's potable water supply.
5. Water purveyors in the Sacramento region have varying abilities to meeting future municipal and industrial demands. While some purveyors have sufficient water supplies in all year types (e.g., wet, dry) to meet projected demands, others have no identified water supply for projected growth through 2030 in all year types and/or beyond 2030.
6. Many opportunities exist within the Sacramento region to use recycled water in lieu of potable surface water or groundwater for irrigation and other non-potable uses.
7. It is likely that a group of three to six individual water recycling projects would be required to achieve 30 to 40 MGD of recycled water use. These projects would likely consist of centralized and satellite treatment facilities, and would collectively form a large-scale Water Recycling Program.
8. A large-scale Water Recycling Program would require a significant capital expenditure. Generally, the cost of potable water in the Sacramento region today is less expensive than the cost of producing recycled water. However, increased water demands due to population growth and changes in weather patterns are expected to make water recycling a more attractive commodity in the future.
9. The requirements contained in SRCSD's future NPDES permits could affect the economic attractiveness of a large-scale Water Recycling Program.



10. Retrofitting residential development with a purple pipe distribution system to supply recycled water to parks, landscape medians, and other large urban irrigation sites is 3 to 4 times more expensive than installing the system with the initial base infrastructure. Therefore, it is likely that any development built in the Sacramento region without purple pipe installed as part of the base infrastructure becomes a missed opportunity.

11. Based on the B/C ratios (see **Table 5-1**), the "Elk Grove Area – Phase II Developments" and the "Elk Grove Area – South County Agriculture and Habitat" are the recycled water projects that appear to be most economically attractive at this time. Other promising projects identified in the WROS include the East Area (Target Area 2) projects and the City of Sacramento projects.

Water Recycling Opportunities Study Recommendations

The preceding observations and conclusions led to the following recommendations:

1. **Implement the Elk Grove Area – Phase II Developments Project.** This project was originally envisioned as an expansion to the small-scale Water Recycling Program completed in April 2003. However, challenges with the operation of the WRF at the SRWTP, development timing and transmission pipeline were outstanding issues. As part of the WROS process, these issues were resolved between meetings with SRCSD and SCWA staff, allowing the Elk Grove Area – Phase II Developments Project to proceed.

2. **Continue preparation of a Feasibility Study for the Elk Grove Area – South County Agriculture and Habitat Project.** The purpose of this study is to further develop the South County Agriculture and Habitat Project identified in the SRCSD WROS to provide SRCSD and its potential partners with sufficiently detailed project information to make a decision on whether to proceed with the recycled water transmission pipeline and necessary on-site improvements. This effort will:

    a. Confirm potential recycled water demand

    b. Identify potential recycled water transmission pipeline routes

    c. Identify likely on-site irrigation practices

    d. Confirm regulatory requirements

    e. Develop a conceptual operations plan

    f. Estimate the capital and operational cost of the required facilities

    g. Develop a financing plan and revenue program

3. **Continue preparation of a Feasibility Study for East Area (Target Area 2) Projects.** The purpose of this study is to further develop the east Sacramento County satellite treatment facility projects identified in the SRCSD WROS to provide SRCSD and its potential partners with sufficiently detailed project information to make a decision on whether to proceed with implementation of a satellite reclamation facility project. The feasibility study will:

    a. Confirm recycled water demands and place of use

    b. Explore options for interim alternative non-potable water supply to charge the purple pipe system prior to the satellite treatment facility coming online

    c. Identify potential sites for satellite treatment facilities

    d. Provide a feasibility-level design of required facilities

    e. Provide a conceptual operations plan

    f. Estimate the capital and operational cost of the required facilities

    g. Provide a financing plan and revenue program to allow SRCSD and its partners to determine if they wish to proceed with project implementation

4. **Continue preparation of a Feasibility Study for the City Projects.** The purpose of this study is to further develop the City of Sacramento recycled water projects identified in the WROS to provide SRCSD and its potential partners with sufficiently detailed project information to make a decision on whether to proceed with implementation. The feasibility study will:

    a. Confirm recycled water demands

    b. Provide a feasibility-level design of required facilities

    c. Estimate the capital and operational cost of the required facilities

    d. Provide a financing plan and revenue program to allow SRCSD and its partners to determine if they wish to proceed with project implementation

5. Continue to coordinate with and, where appropriate, participate in other regional water recycling and integrated resources efforts (e.g., ARB IRWMP).

Implementation Plan

A general description of the steps necessary to implement the WROS recommendations is provided below.

Elk Grove Area – Phase II Developments

The primary steps for implementation of the "Elk Grove Area – Phase II Developments" project are as follows:

1. Modify existing SRCSD/SCWA Wholesale Agreement to address modifications to the Phase II facilities (SRCSD and SCWA activity)
2. Prepare the preliminary and final design to upgrade and expand the existing Water Reclamation Facility at the SRWTP (SRCSD activity)
3. Prepare the preliminary and final design of the Phase II recycled water transmission pipeline (SCWA activity)
4. Prepare preliminary and final design for the Phase II recycled water storage and pumping facilities (SCWA activity)
5. Prepare environmental document for project components (SRCSD and SCWA activity)
6. Acquire necessary rights-of-way for recycled water transmission pipeline construction, maintenance, and operation (SCWA activity)
7. Construct Phase II facilities (SRCSD and SCWA activity)
8. Prepare operation and staffing plan for the Phase II facilities (SRCSD and SCWA activity)
9. Acquire additional RWQCB and DHS approvals and permits to operate system (SRCSD and SCWA activity)
10. Continue public outreach campaign to inform constituents about construction and operation of the Phase II recycled water facilities (SRCSD and SCWA activity)

Feasibility Study Projects

In addition to implementation of the "Elk Grove Area – Phase II Developments" project, the WROS recommends that three water recycling alternatives be developed to a feasibility-study level. These are the "Elk Grove Area – South County South County Agriculture and Habitat" project, the East Area (Target Area 2) projects, and the City of Sacramento projects.

Provided one or more of these alternatives proves favorable to SRCSD and associated water purveyors and land use authorities, the general steps for implementation of these water recycling projects are as follows:

1. Develop Principles of Agreement between project partners addressing:
   a. Apportionment of benefits
   b. Cost allocation
   c. Operational responsibilities
2. Implement financing plan and revenue program to fund the capital and operating costs of the recycled water facilities
3. Condition development to require use of recycled water and install necessary on-site facilities
4. Prepare preliminary and final design of required facilities
5. Prepare and certify project-specific EIR
6. Prepare Operating Agreement with project partners
7. Construct required recycled water facilities
8. Continue public outreach campaign to inform constituents about construction and operation of the recycled water system
9. Further evaluate financial and economic benefits

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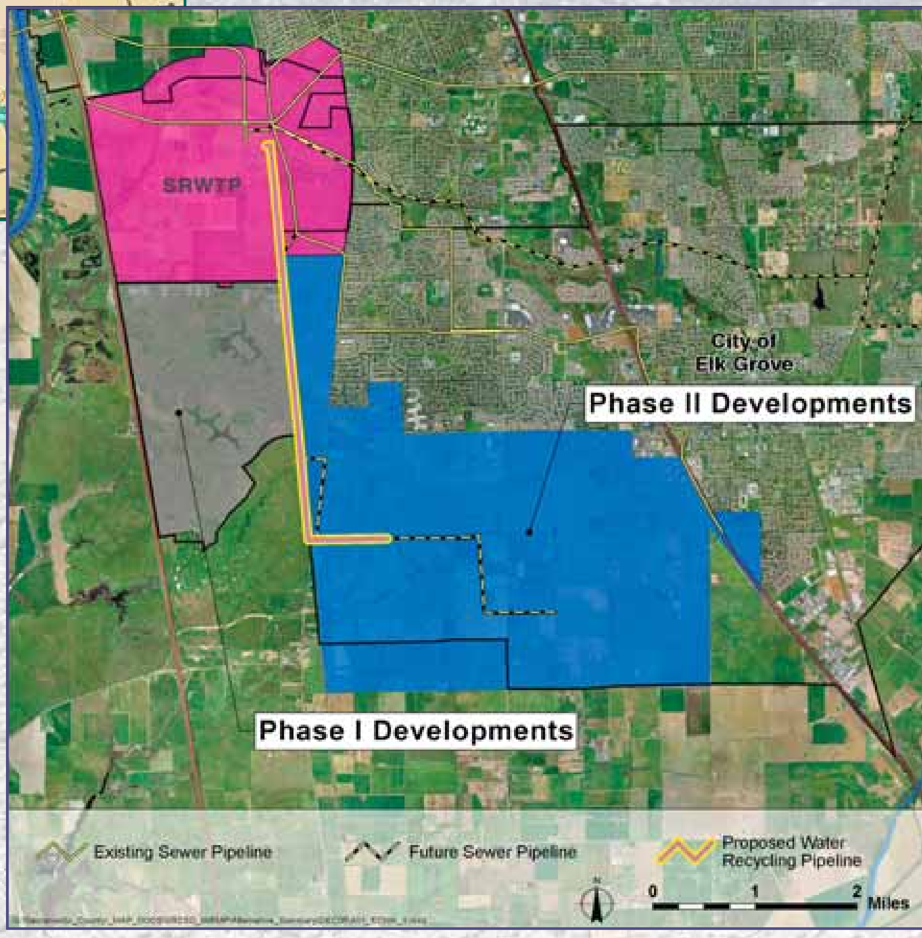
ATTACHMENT 1

POTENTIAL PROJECTS OVERVIEW

- Elk Grove Area – Phase II Developments
- Elk Grove Area – South County South County Agriculture and Habitat
- Elk Grove Area – Phase II Developments & South County Agriculture and Habitat
- City of Sacramento – Bartley Cavanaugh Golf Course
- City of Sacramento – Delta Shores Development
- City of Sacramento – Bartley Cavanaugh Golf Course & Delta Shores Development
- Rancho Cordova Area
- City of Folsom & Glenborough Development (Scenario C)
- City of Folsom & Glenborough Development (Scenario D)
- Mather Service Areas
- Rancho Cordova Area & Mather Service Areas
- Rancho Cordova Area, City of Folsom, Glenborough Development, & Mather Service Areas
- Rio Linda/Elverta Area – Cherry Island/Gibson Ranch
- Rio Linda/Elverta Area – Elverta Specific Plan
- Rio Linda/Elverta Area – Cherry Island/Gibson Ranch & Elverta Specific Plan
- Rio Linda/Elverta Area – Elverta Specific Plan & Natomas Joint Vision Area
- Natomas Joint Vision Area
- City of West Sacramento

Elk Grove Area Phase II Developments



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Phase II Developments	Urban Irrigation	2.3	5.8
Total		**2.3**	**5.8**

Estimated Costs	
Probable Capital Costs	$ 47.5 M
EUAC/AF	$ 728

STATUS OF PROJECT

Formulate Conceptual Opportunity | Develop/ Evaluate Opportunity | Formulate Project | Evaluate Project Feasibility

Elk Grove Area-Phase II Developments

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, SCWA, City of Elk Grove (Elk Grove)

General Description of Potential Project and Operations

- This project would include service to Phase II of the SRCSD/SCWA Demonstration Project (East Franklin and Laguna Ridge).
- In all years, SRCSD would take effluent from the SRWTP and produce recycled water at the WRF using new membrane filtration capacity. The recycled water would be delivered to Phase II via existing and new transmission pipelines. New groundwater wells would be used to supplement Phase II recycled water deliveries in peak months.
- This would be a centralized recycled water project, and would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be less than 5 years.

Project Elements

This project would require the following elements:

- 7 MGD expansion of the WRF at the SRWTP
- 105,153 linear feet of 6-inch to 20-inch diameter conveyance piping
    - 20,700 linear feet of transmission piping
    - 84,453 linear feet of in-track piping
    - On-site piping of 6,621 acres
- 5.0 million gallon (MG) aboveground storage facility
- 180 horsepower (hp) pump station capacity
- 20,700 feet of right-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- Phase II is within 2 to 3 miles of the SRWTP and WRF.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 2,576 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- Phase I recycled water system is complete and operational. Phase II developments have been conditioned and built with recycled water infrastructure.
- Transmission corridor could accommodate required pipelines.
- Coordination with South Interceptor Project has started.
- There are 98 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the existing treatment facility.

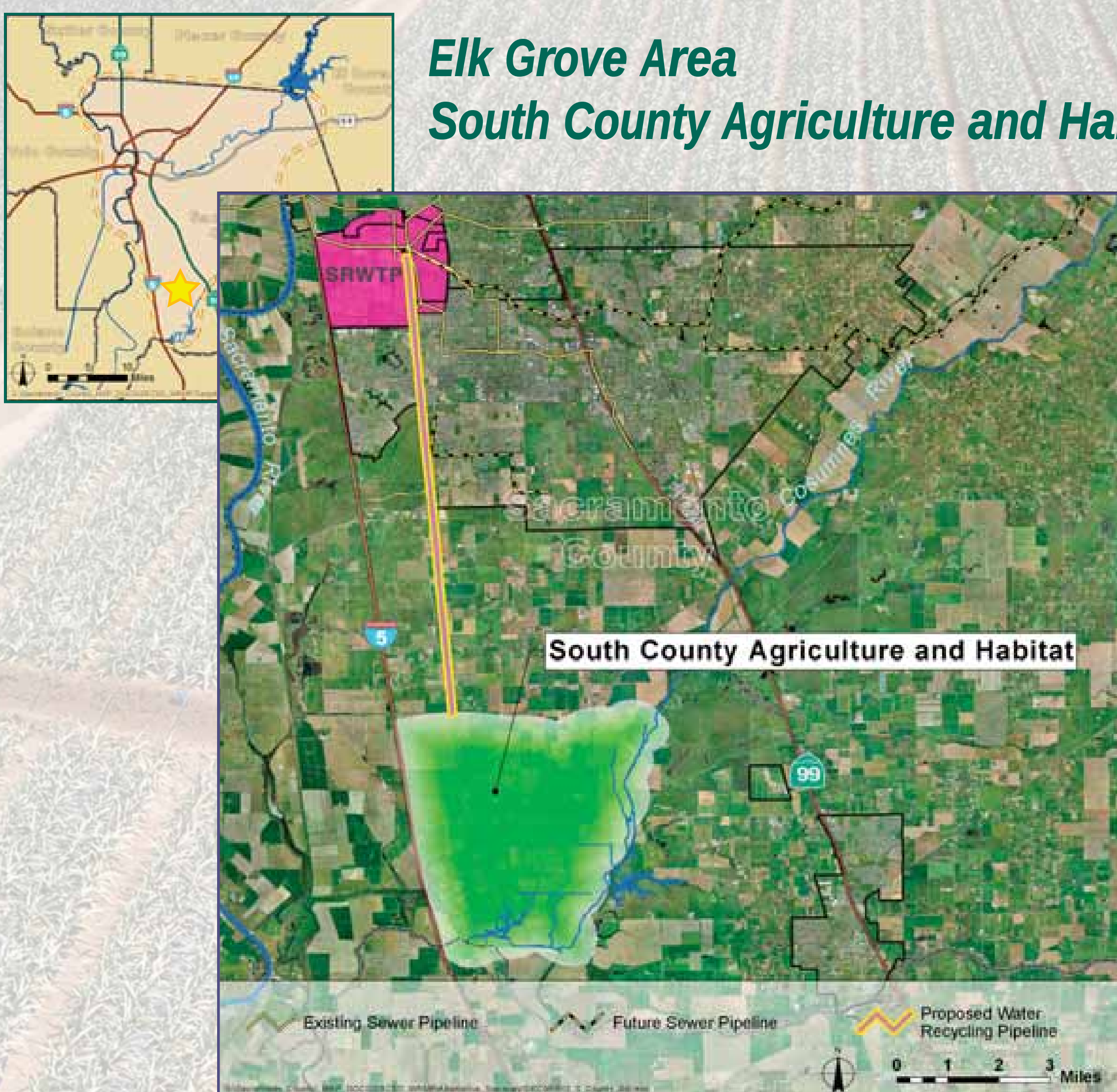
✔ **Willing Water Purveyors and Land Use Authorities**

- Phase II developments have been conditioned for recycled water delivery. Absent this supply, SCWA would need to identify and acquire an alternate water source for Scenario C uses.
- SRCSD and SCWA have entered into a contract (Wholesale Agreement) for delivery of recycled water to Phase I. The Wholesale Agreement would need to be amended to include Phase II.
- SRCSD, SCWA, and Elk Grove continue to discuss delivery of recycled water. Issues/topics include engineering refinements; cost/financing; application location(s); agreements; recycled water policy; legal, regulatory, environmental requirements; and stakeholder interaction.
- No other potential providers of recycled water were identified for this area.

Outstanding Issues

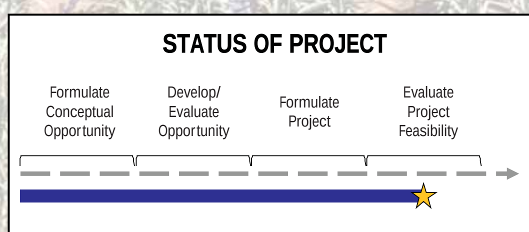
- SCWA staff indicate that iron/manganese issues with groundwater and recycled water mixing would need to be resolved.
- Funding through the Proposition 50 Integrated Regional Water Management (IRWM) Implementation grant program was approved by the California Department of Water Resources (DWR)/SWRCB.
- Wholesale Agreement between SRCSD and SCWA would need to be revised to account for 7-MGD total WRF capacity and 2-MGD supplemental water supplied by SCWA.

Elk Grove Area
South County Agriculture and Habitat



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
South County Agriculture and Habitat	Agricultural Irrigation	9.3	16.5
Total		**9.3**	**16.5**

Estimated Costs	
Probable Capital Costs	$ 47.9 M
EUAC/AF	$ 245



Elk Grove Area-South County Agriculture and Habitat

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, Elk Grove, The Nature Conservancy (TNC)

General Description of Potential Project and Operations

- This project would include service to southern Sacramento County permanent agriculture and habitat). It is assumed to include 1,800 irrigated acres (2,000 acres total area of development).
- In all years, SRCSD would deliver disinfected secondary-23 recycled water (per DHS California Code of Regulations, Title 22) from the SRWTP to the agriculture and habitat areas via new transmission pipelines.
- This would be a centralized recycled water project. It would be an agricultural project; therefore, none of the available scenarios would be applicable.
- Direct environmental benefits to aquatic and/or terrestrial habitat would be anticipated.
- The implementation period for this project would be less than 5 years.

Project Elements

This project would require the following elements:

- No additional treatment capacity
- 47,300 linear feet of 36-inch diameter conveyance piping
  - 47,300 linear feet of transmission piping
  - 0 linear feet of in-track piping
  - $2,000,000 for conversion of on-site piping
- 16.5 MG aboveground storage facility
- 301 hp pump station capacity
- 20,700 feet of right-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- South County Agriculture and Habitat is within 9 to 10 miles of the SRWTP.

Appropriate Potential Recycled Water Demand

- Annual Yield: 10,438 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- Transmission corridor could accommodate required pipelines.
- Coordination with South Interceptor Project has started.
- There are 147 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the existing treatment facility.

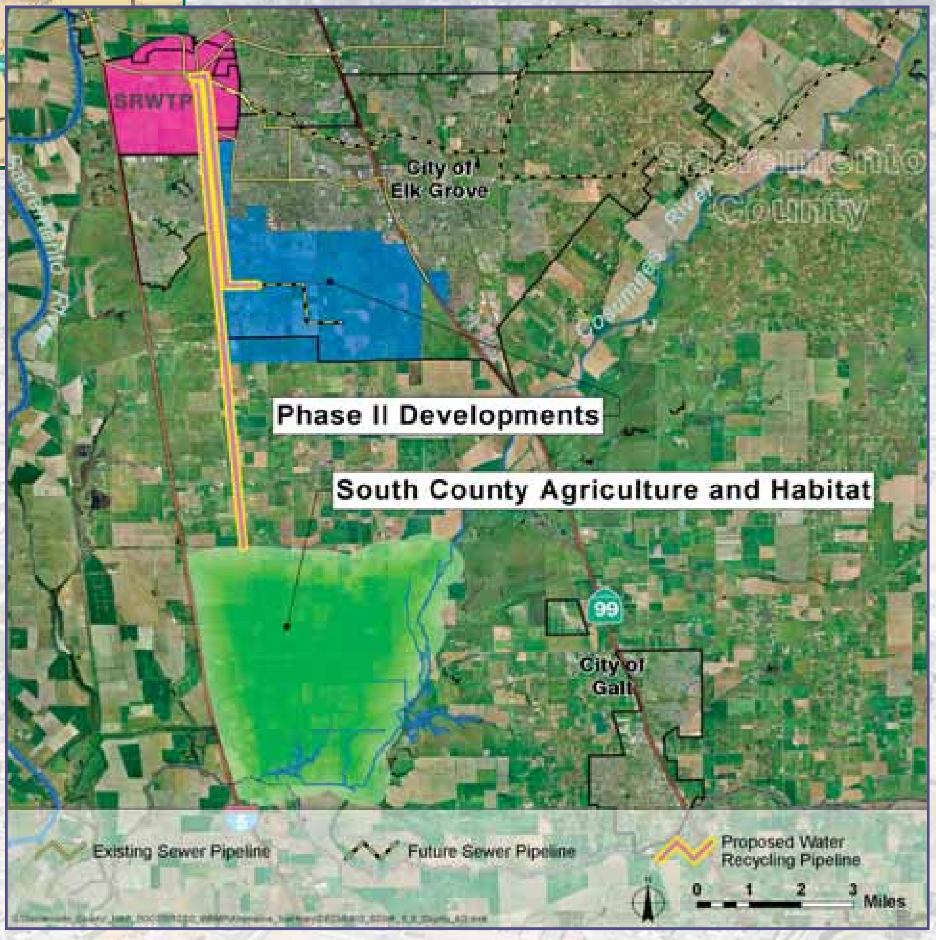
✔ **Willing Water Purveyors and Land Use Authorities**

- At present, South County Agriculture and Habitat is primarily irrigated using groundwater. This area is located within the Central Sacramento County Groundwater Basin and subject to the Sacramento Area Water Forum Agreement.
- SRCSD, Elk Grove, and TNC continue to discuss delivery of recycled water to South County Agriculture and Habitat. Issues/topics include engineering refinements; cost/financing; application location(s); agreements; recycled water policy; legal, regulatory, environmental requirements; stakeholder interaction.
- No other potential providers of recycled water were identified for this area.

Outstanding Issues

- Banking and exchange opportunity with South County Agriculture and habitat needs to be considered.
- Elk Grove purchase of mitigation lands and agreement with TNC would be required.
- Memorandum of Understanding (MOU) or Principles of Agreement (POA) between Elk Grove and SRCSD would need to be prepared.

Elk Grove Area - Phase II Developments & South County Agriculture and Habitat



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Phase II Developments	Urban Irrigation	2.3	5.8
South County Agriculture and Habitat	Agricultural Irrigation	9.3	16.5
Total		**11.6**	**22.3**

Estimated Costs	
Probable Capital Costs	$ 89.1 M
EUAC/AF	$ 354

STATUS OF PROJECT

Formulate Conceptual Opportunity	Develop/ Evaluate Opportunity	Formulate Project	Evaluate Project Feasibility

Elk Grove Area-Phase II Developments & South County Agriculture and Habitat

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, SCWA, Elk Grove, TNC

General Description of Potential Project and Operations

- This project would include service to the following:
  - Phase II of SRCSD/SCWA Demonstration Project (East Franklin and Laguna Ridge).
  - South County Agriculture and Habitat assumed to include 1,800 irrigated acres (2,000 acres of total area of development).
- In all years, SRCSD would perform the following:
  - Take effluent from the SRWTP and produce recycled water at the WRF using new membrane filtration capacity. The recycled water would be delivered to Phase II via existing and new transmission pipelines. New groundwater wells would be used to supplement Phase II recycled water deliveries in peak months.
  - Deliver disinfected secondary-23 recycled water (per DHS Title 22) from the SRWTP to South County Agriculture and Habitat areas via new transmission pipelines.
- This would be a centralized recycled water project. There would be no applicable scenario for South County Agriculture and Habitat. Phase II would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would be anticipated.
- The implementation period for this project would be less than 5 years.

Project Elements

This project would require the following elements:

- 7 MGD expansion of the WRF at the SRWTP
- 152,453 linear feet of 6-inch to 36-inch diameter conveyance piping
  - 68,000 linear feet of transmission piping
  - 84,453 linear feet of in-track piping
  - On-site piping of 6,621 acres (Phase II Developments) and $2,000,000 for conversion of on-site piping (South County Agriculture and Habitat)
- 21.5 MG aboveground storage facility
- 481 hp pump station capacity
- 20,700 feet of right-of-way

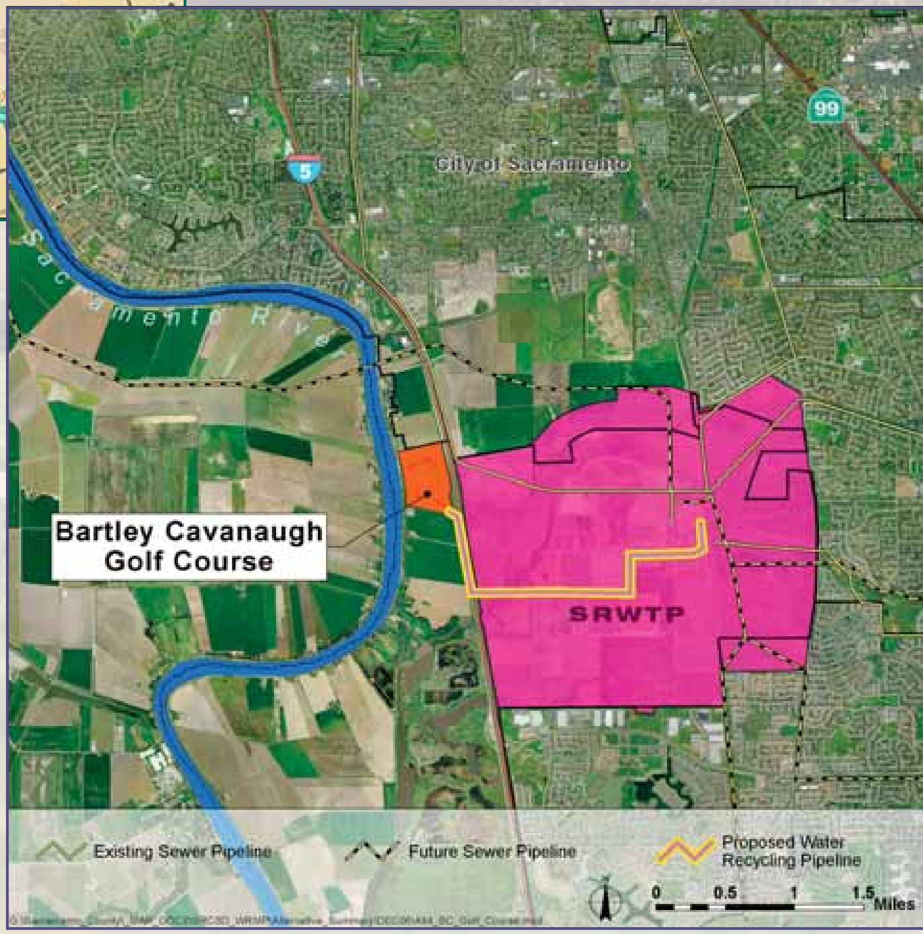
Screening Measures

✔ Met the individual screening measures discussed for “Elk Grove Area – Phase II Developments” and “Elk Grove Area – South County Agriculture and Habitat”.

Outstanding Issues

- Since this would be a combined project, the same issues discussed for “Elk Grove Area – Phase II Developments” and “Elk Grove Area – South County Agriculture and Habitat” would exist.

City of Sacramento - Bartley Cavanaugh Golf Course



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Bartley Cavanaugh Golf Course	Urban Irrigation	0.3	0.7
Total		**0.3**	**0.7**

Estimated Costs	
Probable Capital Costs	$ 5.5M
EUAC/AF	$ 966

STATUS OF PROJECT

Formulate Conceptual Opportunity | Develop/ Evaluate Opportunity | Formulate Project | Evaluate Project Feasibility

City of Sacramento Bartley Cavanaugh Golf Course

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, City of Sacramento, Capital Golf Department (Capital Golf)

General Description of Potential Project and Operations

- This project would include service to the existing Bartley Cavanaugh Golf Course (Bart Cavanaugh).
- In all years, SRCSD would take effluent from the SRWTP and produce recycled water at the WRF using new membrane filtration capacity. The recycled water would be delivered to Bart Cavanaugh via new transmission pipelines. Within Bart Cavanaugh, existing pipelines (currently distributing groundwater) would be used to supply recycled water for irrigation uses. Groundwater would continue to be used for potable needs.
- This would be a centralized recycled water project. It would involve retrofitting an existing golf course, so none of the available scenarios would be applicable.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be less than 5 years.

Project Elements

This project would require the following elements:

- 0.8 MGD expansion of the WRF at the SRWTP
- 14,700 linear feet of 10-inch diameter conveyance piping
    - 14,700 linear feet of transmission piping
    - 0 linear feet of in-track piping
    - On-site piping of 95 acres
- No storage facility would be required
- 128 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- Bart Cavanaugh is within 2 miles of the SRWTP and WRF.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 591 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- Existing Bart Cavanaugh groundwater distribution pipelines would be used for recycled water. Design of a transmission pipeline crossing beneath Interstate 5 is at the 90 percent stage and has been environmentally reviewed.
- There are 10 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the existing treatment facility.

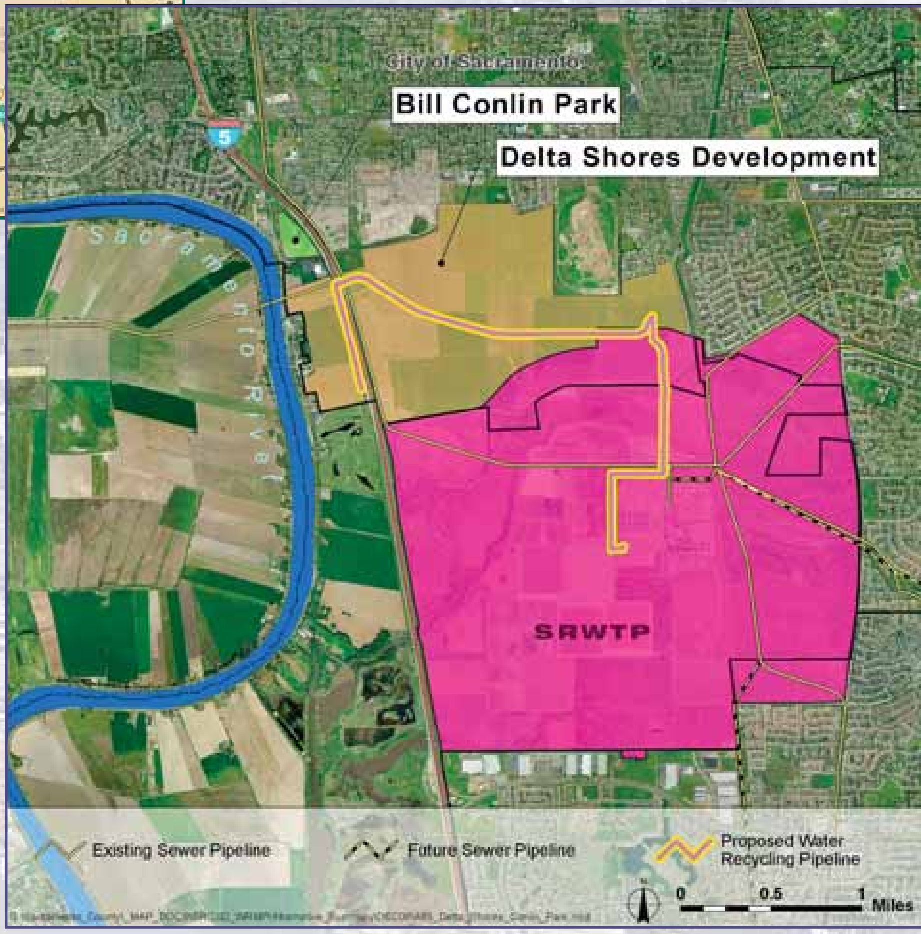
✔ **Willing Water Purveyors and Land Use Authorities**

- Bart Cavanaugh is currently supplied with groundwater. However, recent problems associated with groundwater pumping have prompted Capital Golf to investigate alternate sources of water for this facility. This area is located within the Central Sacramento County Groundwater Basin and subject to the Sacramento Area Water Forum Agreement.
- SRCSD, the City of Sacramento, and Capital Golf have developed water recycling planning studies, preliminary designs, and other documentation for Bart Cavanaugh. These entities continue to discuss delivery of recycled water to Bart Cavanaugh. Issues/topics include engineering refinements; cost/financing; agreements; recycled water policy; legal, regulatory, and environmental requirements; and stakeholder interaction. SRCSD, the City of Sacramento, and Capital Golf are expected to enter into a formal agreement on the terms and conditions of recycled water usage, if the project is determined to be feasible.
- No other potential providers of recycled water were identified for this area.

Outstanding Issues

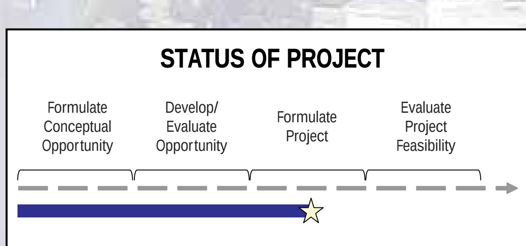
- Ongoing discussions with City of Sacramento staff on costs, SRCSD effluent benefits, etc.
- Funding through the Proposition 50 IRWM Implementation grant program was approved by DWR/SWRCB.

City of Sacramento - Delta Shores Development



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Delta Shores Development	Urban Irrigation	0.6	1.4
Bill Conlin Park	Urban Irrigation	0.1	0.1
Total		**0.6**	**1.5**

Estimated Costs	
Probable Capital Costs	$ 13.1M
EUAC/AF	$ 1,284



City of Sacramento-Delta Shores Development

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, City of Sacramento, City of Sacramento Parks & Recreation Department (Parks & Rec)

General Description of Potential Project and Operations

- This project would include service to the existing Bill Conlin Park (Bill Conlin), the new Delta Shores Development (Delta Shores), and a proposed regional park (in Delta Shores).
- In all years, SRCSD would take effluent from the SRWTP and produce recycled water at the WRF using new membrane filtration capacity. The recycled water would be delivered via the new transmission pipelines. Throughout Delta Shores, "purple pipe" would be installed by the developer(s), and it would be used to distribute recycled water for irrigation uses. Within Bill Conlin, existing pipelines (currently distributing surface water) would be used to supply recycled water for irrigation uses, and surface water would continue to be used for potable needs.
- This would be a centralized recycled water project. Delta Shores would be Scenario C. Bill Conlin would involve retrofitting areas; therefore, none of the available scenarios would be applicable.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 1.4 MGD expansion of the WRF at the SRWTP
- 42,300 linear feet of 6-inch to 18-inch diameter conveyance piping
  - 10,100 linear feet of transmission piping
  - 32,200 linear feet of in-track piping
  - On-site piping of 1,000 acres
- 1.5 MG aboveground storage facility
- 196 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- Delta Shores is within 2 miles of the SRWTP and WRF.
- Bill Conlin is within 3 miles of the SRWTP and WRF.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 394 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- Delta Shores is estimated to start construction in the 2008 to 2010 time frame. During this time, the developer(s) would install the recycled water distribution system. Preliminary routing for the transmission pipeline parallels the Union Pacific Railroad tracks.
- The existing Bill Conlin surface water distribution pipelines would be used for recycled water.
- There are 34 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the existing treatment facility.

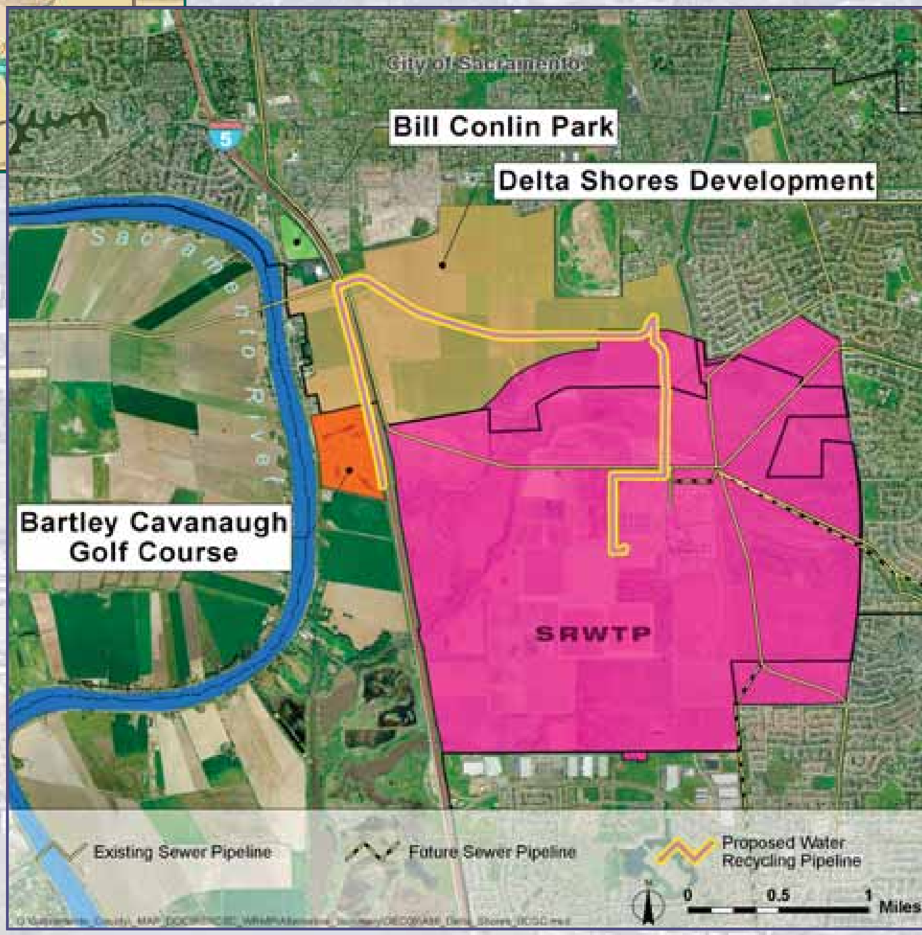
✔ **Willing Water Purveyors and Land Use Authorities**

- Although the City of Sacramento has sufficient water rights on the American and Sacramento rivers to serve Delta Shores and Bill Conlin with surface water only, it is exploring the use of recycled water for irrigation of parks, schools, business landscapes, streetscapes, and residential front and back yards.
- These areas are located within the Central Sacramento County Groundwater Basin and subject to the Sacramento Area Water Forum Agreement.
- SRCSD and the City of Sacramento have developed water recycling planning studies and other documentation, and these entities continue to discuss delivery of recycled water. Issues/topics include engineering refinements; cost/financing; agreements; recycled water policy; legal, regulatory, and environmental requirements; and stakeholder interaction.
- No other potential providers of recycled water were identified for this area.

Outstanding Issues

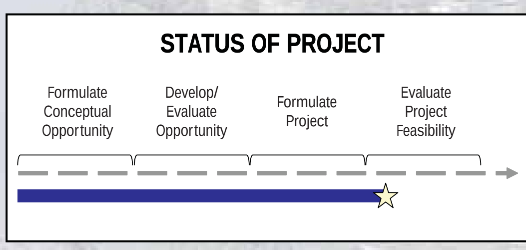
- Ongoing discussions with City of Sacramento staff on costs, SRCSD effluent benefits, etc.

City of Sacramento Bartley Cavanaugh Golf Course & Delta Shores Development



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Bartley Cavanaugh Golf Course	Urban Irrigation	0.3	0.7
Delta Shores Development	Urban Irrigation	0.6	1.4
Bill Conlin Park	Urban Irrigation	0.1	0.1
Total		**1.0**	**2.2**

Estimated Costs	
Probable Capital Costs	$ 15.5M
EUAC/AF	$ 1,025



City of Sacramento-Bartley Cavanaugh Golf Course & Delta Shores Development

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, City of Sacramento, Capital Golf, Parks & Rec

General Description of Potential Project and Operations

- This project would include service to the existing Bart Cavanaugh, existing Bill Conlin, new Delta Shores, and a proposed regional park (in Delta Shores).
- In all years, SRCSD would take effluent from the SRWTP and produce recycled water at the WRF using new membrane filtration capacity. The recycled water would be delivered via the new transmission pipelines to the following locations:
    - Bart Cavanaugh, where existing pipelines (currently distributing groundwater) would be used to supply recycled water for irrigation uses. Groundwater would continue to be used for potable needs.
    - Delta Shores, where "purple pipe" would be installed by the developer(s). This pipe would be used to distribute recycled water for irrigation uses. Recycled water would be stored in a new aboveground storage tank for system peaking.
    - Bill Conlin, where existing pipelines (currently distributing surface water) would be used to supply recycled water for irrigation uses, and surface water would continue to be used for potable needs.
- This would be a centralized recycled water project. Bart Cavanaugh and Bill Conlin would involve retrofitting an existing golf course and park (respectively); therefore, none of the available scenarios would be applicable. Delta Shores would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be less than 5 years.

Project Elements

This project would require the following elements:

- 2.2 MGD expansion of the WRF at the SRWTP
- 42,300 linear feet of 6-inch to 20-inch diameter conveyance piping
    - 10,100 linear feet of transmission piping
    - 32,200 linear feet of in-track piping
    - On-site piping of 1,095 acres
- 1.5 MG aboveground storage facility
- 251 hp pump station capacity
- No additional rights-of-way

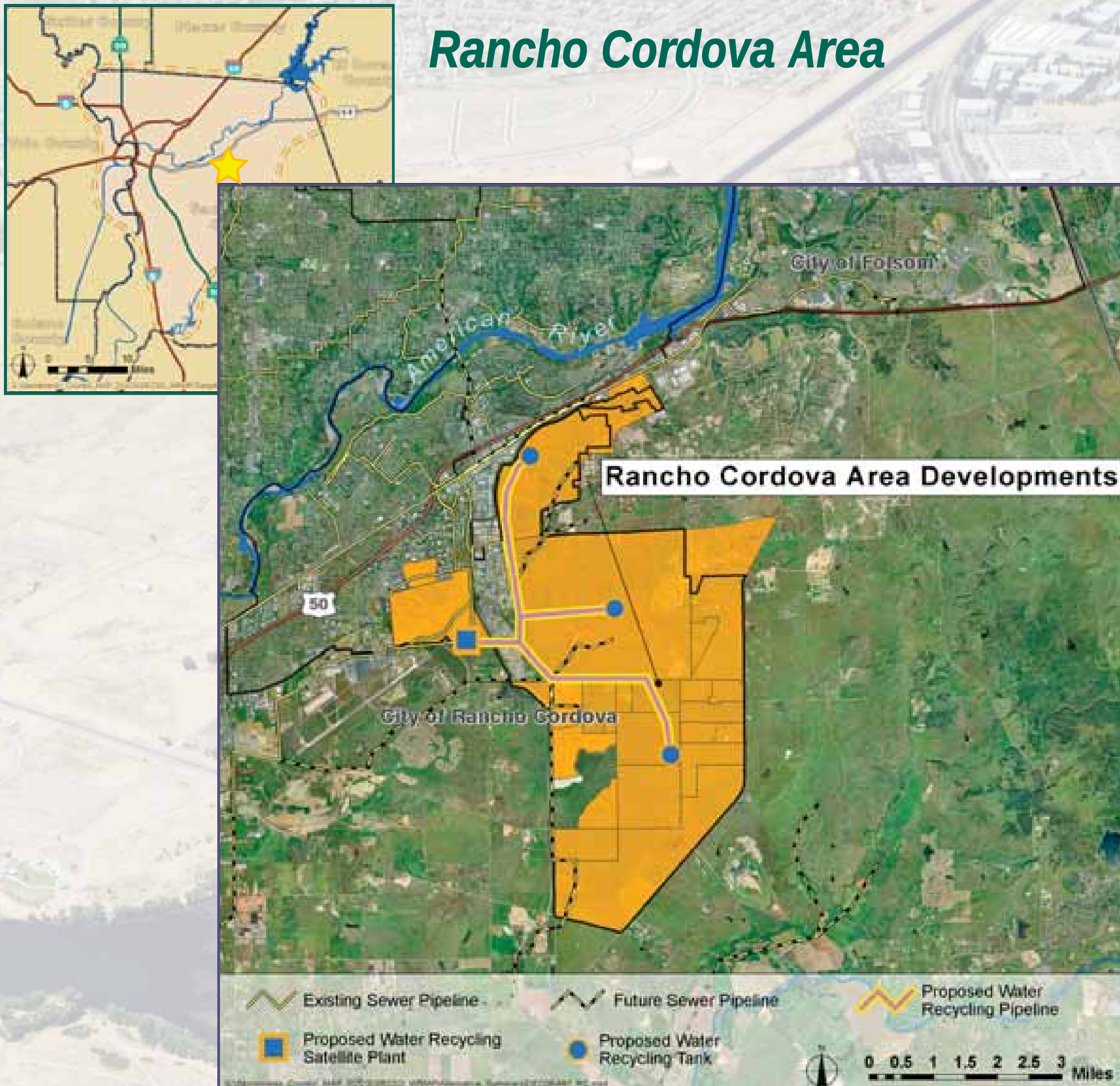
Screening Measures

✔ Met the individual screening measures discussed for "City of Sacramento – Bartley Cavanaugh Golf Course" and "City of Sacramento – Delta Shores Development".

Outstanding Issues

- Since this would be a combined project, the same issues discussed for "City of Sacramento – Bartley Cavanaugh Golf Course" and "City of Sacramento – Delta Shores Development" would exist.

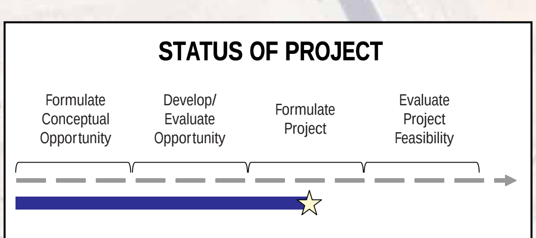
Rancho Cordova Area



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
North Area	Urban Irrigation	0.7	1.9
Central Area	Urban Irrigation	1.8	4.7
South Area	Urban Irrigation	1.3	3.2
Total		**3.8**	**9.8**

- Peak-to-average ratio: 2.5

Estimated Costs	
Probable Capital Costs	$ 89.2M
EUAC/AF	$ 2,554



Rancho Cordova Area

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, SCWA, Golden State Water Company (GSWC), California-American Water Company (Cal-Am), City of Rancho Cordova (Rancho Cordova), City of Folsom (Folsom)

General Description of Potential Project and Operations

- The configuration being evaluated would include service to three areas of new development within Rancho Cordova.
- In all years, SRCSD would divert wastewater from the Bradshaw/Folsom Interceptor System to a new satellite plant in Rancho Cordova. The satellite plant would provide tertiary treated recycled water to be delivered to three service areas via new transmission pipelines. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP. New groundwater wells would be used to supplement recycled water deliveries in peak months.
- This would be a decentralized recycled water project, and would be Scenario C. (Scenario D was also reviewed.)
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 8 MGD satellite MBR treatment facility
- 49,300 linear feet of 12-inch to 24-inch diameter conveyance piping
  - 49,300 linear feet of transmission piping
  - In-track piping of 8,680 acres
  - On-site piping of 8,680 acres
- 6.5 MG aboveground storage facility
- $500,000 for supplemental water supply
- 1,560 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- North service area is within 3 miles of the proposed satellite plant.
- Central service area is within 1.5 miles of the proposed satellite plant.
- South service area is within 3.5 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 4,301 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- Water supply and general planning has already taken place for the new developments, with water supplies identified without recycled water.
- However, the opportunity exists to install recycled water infrastructure for future use. Possibilities include Rio del Oro ("Non-Potable Water Study for Rio Del Oro Specific Plan"), Sunrise Douglas ("Recycled Water Master Plan for the Sunrise Douglas Community Plan Area"), and Westborough Development.
- There are 34 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the proposed treatment facility.

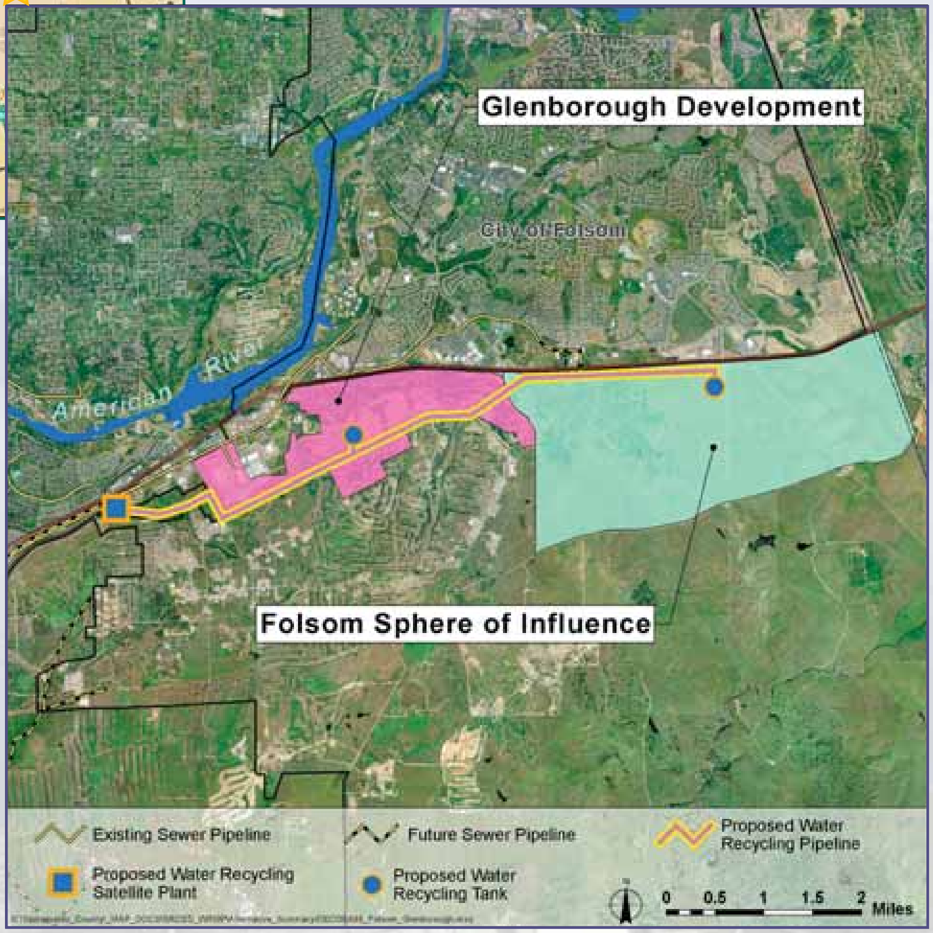
✔ **Willing Water Purveyors and Land Use Authorities**

- SRCSD, SCWA, and Rancho Cordova continue to discuss recycled water delivery to Rancho Cordova, but no specific Scenario C projects have been selected for further evaluation.
- No other potential providers of recycled water were identified for this area.

Outstanding Issues

- Rancho Cordova, SRCSD, and water purveyors are continuing efforts, as appropriate, and in conjunction with development of the WROS.
- Appropriate level of water recycling infrastructure (or "purple pipe") with new development conditioning is under discussion.

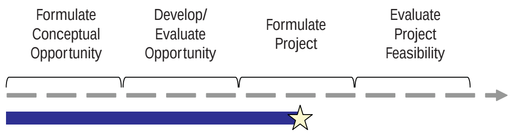
City of Folsom & Glenborough Development (Scenario C)



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Folsom Sphere of Influence	Urban Irrigation	1.4	3.5
Glenborough Development	Urban Irrigation	0.3	0.9
Total		**1.7**	**4.4**

Estimated Costs	
Probable Capital Costs	$ 82.7M
EUAC/AF	$ 3,010

STATUS OF PROJECT



City of Folsom & Glenborough Development (Scenario C)

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, Folsom, Sacramento County Board of Supervisors (BOS)

General Description of Potential Project and Operations

- The configuration being evaluated would include service to new developments within the South Folsom Sphere of Influence (SOI) area and Glenborough Development (aka Glenborough Place at Easton).
- In all years, SRCSD would divert wastewater from the Bradshaw/Folsom Interceptor System to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines to the place of use. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP. Where appropriate, new groundwater wells would be used to supplement recycled water deliveries in peak months.
- This would be a decentralized recycled water project, and would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 3.5 MGD satellite MBR treatment facility
- 36,250 linear feet of 8-inch to16-inch diameter conveyance piping
  - 36,250 linear feet of transmission piping
  - In-track piping of 5,000 acres
  - On-site piping of 5,000 acres
- 3.5 MG aboveground storage facility
- $500,000 for supplemental water supply
- 830 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- Folsom SOI area is within 5.5 miles of the proposed satellite plant.
- Glenborough Development is within 2.5 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 1,920 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- This would require conditioning through the land use approval process.
- There are 10 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the proposed treatment facility.

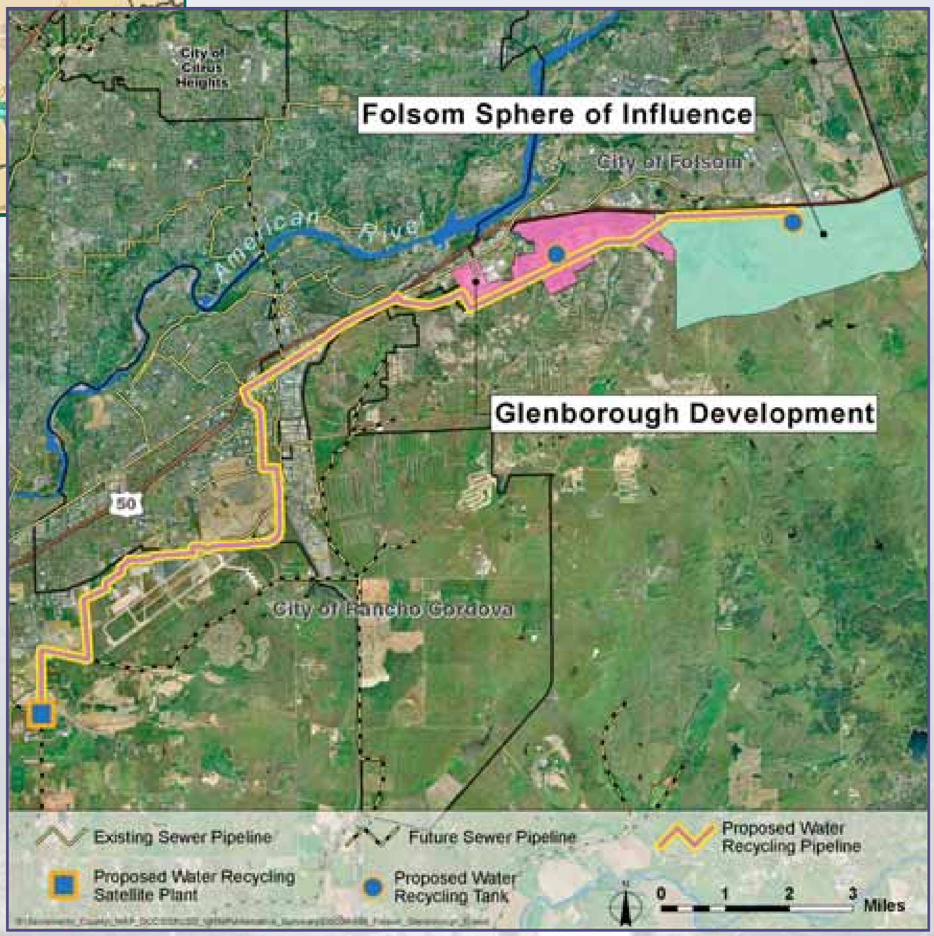
✔ **Willing Water Purveyors and Land Use Authorities**

- Because of the limited geographic extent of the groundwater basin, Folsom does not have direct access to groundwater. Thus, Folsom relies exclusively on diversions of surface water from Folsom Lake to meet its water demands in all year types. Folsom is subject to the Sacramento Area Water Forum Agreement. In the future, Folsom may not have adequate surface water available in drier years to meet demands within its existing service area boundaries.
- The Glenborough Development is outside Folsom's existing service area boundaries, and is awaiting finalization of Folsom as a water purveyor. Water recycling opportunities are currently being discussed with Glenborough developers and Sacramento County Planning.
- The water supply portfolio for the SOI area has not been identified.
- SRCSD and Folsom have preliminarily discussed delivery of recycled water to Folsom's new developments.
- Folsom is also considering recycled water from EID as an alternative supply, as described in the EID Water Recycling Master Plan (EID WRMP).

Outstanding Issues

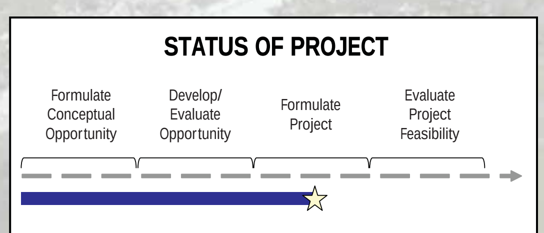
- Recycled water usage (sites and flow) estimates are being defined by Folsom's consultants.
- Source of adequate recycled water supply needs to be identified from Folsom or Bradshaw Interceptor.
- Discussion with Folsom Utilities Department management and Folsom City Council.
- For the Glenborough Development, coordination with Folsom should occur (when appropriate), and interaction with the Sacramento County planning process should continue.

City of Folsom & Glenborough Development (Scenario D)



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
City of Folsom Sphere of Influence	Urban Irrigation	6.7	17.0
Glenborough Developments	Urban Irrigation	1.9	4.9
Total		**8.6**	**21.9**

Estimated Costs	
Probable Capital Costs	$ 465.1M
EUAC/AF	$ 3,252



City of Folsom & Glenborough Development (Scenario D)

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, Folsom, Sacramento County BOS

General Description of Potential Project and Operations

- The configuration being evaluated would include service to new developments within the South Folsom SOI area, and Glenborough Development (aka Glenborough Place at Easton).
- In all years, SRCSD would divert wastewater from the Bradshaw/Folsom Interceptor System to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines to the place of use. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP. Where appropriate, new groundwater wells would be used to supplement recycled water deliveries in peak months.
- This would be a decentralized recycled water project, and would be Scenario D.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 18 MGD satellite MBR treatment facility
- 124,950 linear feet of 18-inch to 36-inch diameter conveyance piping
  - 124,950 linear feet of transmission piping
  - In-track piping of 5,000 acres
  - On-site piping of 5,000 acres
- 10.5 MG aboveground storage facility
- $500,000 for supplemental water supply
- 3,530 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- Folsom SOI area is within 13.5 miles of the proposed satellite plant.
- Glenborough Development is within 10.5 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 9,701 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- This would require conditioning through the land use approval process.
- There are 10 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the proposed treatment facility.

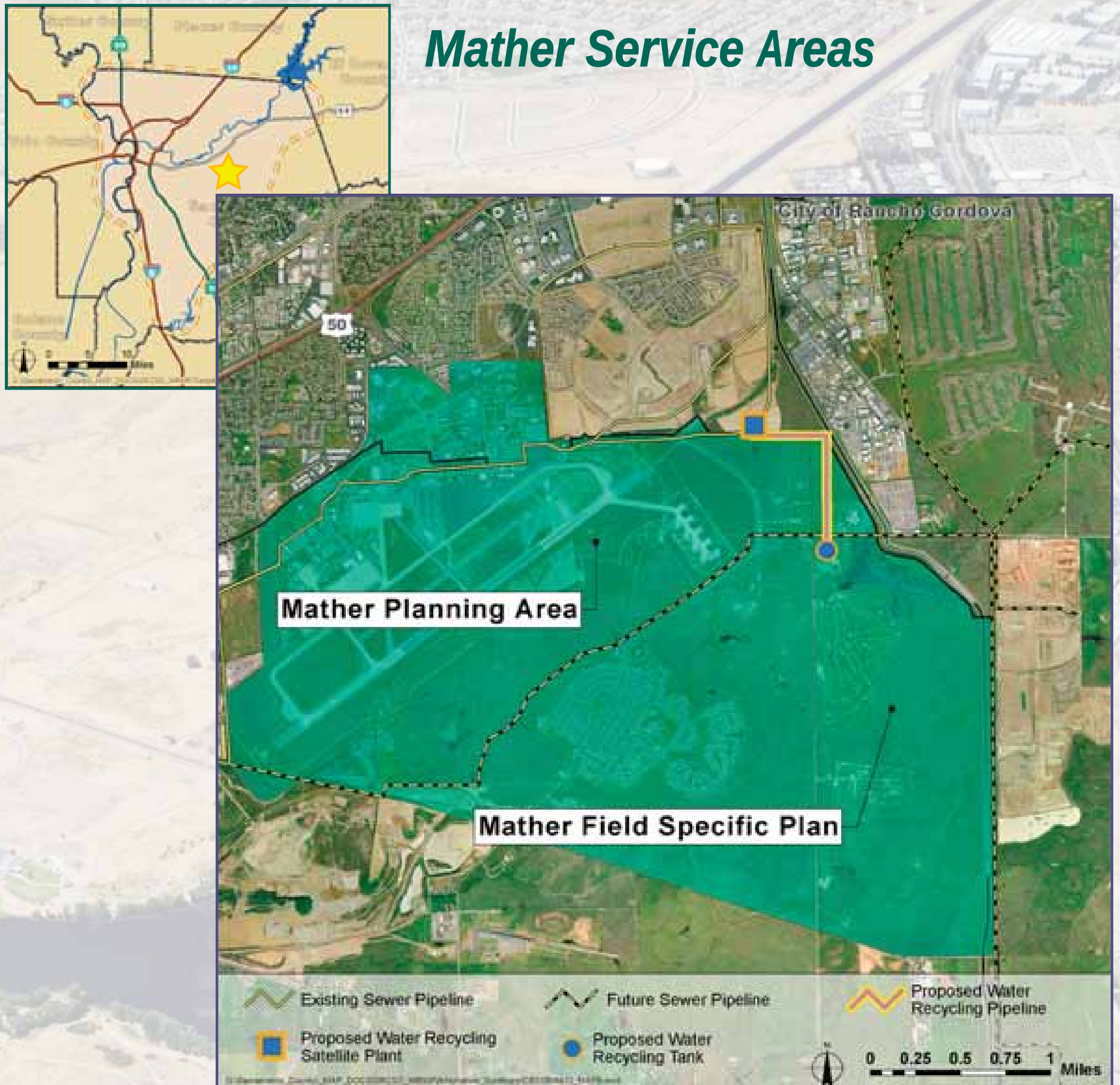
✔ **Willing Water Purveyors and Land Use Authorities**

- Because of the limited geographic extent of the groundwater basin, Folsom does not have direct access to groundwater. Thus, Folsom relies exclusively on diversions of surface water from Folsom Lake to meet its water demands in all year types. Folsom is subject to the Sacramento Area Water Forum Agreement. In the future, Folsom may not have adequate surface water available in drier years to meet demands within its existing service area boundaries.
- The Glenborough Development is outside Folsom's existing service area boundaries, and is awaiting finalization of Folsom as a water purveyor. Water recycling opportunities are currently being discussed with Glenborough developers and Sacramento County Planning.
- The water supply portfolio for the SOI area has not been identified.
- SRCSD and Folsom have preliminarily discussed delivery of recycled water to Folsom's new developments.
- Folsom is also considering recycled water from EID as an alternative supply, as described in the EID WRMP.

Outstanding Issues

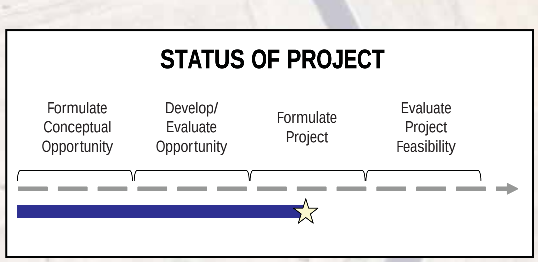
- Recycled water usage (sites and flow) estimates are being defined by Folsom's consultants.
- Source of adequate recycled water supply needs to be identified from Folsom or Bradshaw Interceptor.
- Discussion with Folsom Utilities Department management and Folsom City Council.
- For the Glenborough Development, coordination with Folsom should occur (when appropriate), and interaction with the Sacramento County planning process should continue.

Mather Service Areas



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Mather Parks	Urban Irrigation	1.9	4.7
Mather Golf Course	Urban Irrigation	0.5	1.2
Total		**2.4**	**5.9**

Estimated Costs	
Probable Capital Costs	$ 55.4M
EUAC/AF	$ 1,781



Mather Service Areas

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, SCWA, Sacramento County, County of Sacramento Department of Regional Parks (Regional Parks), Sacramento County BOS

General Description of Potential Project and Operations

- This project would include delivery of recycled water for irrigation of existing and proposed soccer fields and other recreational facilities at Mather Parks and the existing Mather Golf Course.
- In all years, SRCSD would divert wastewater from the Bradshaw/Folsom Interceptor System to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP. Water deliveries would include the following:
    - Mather Golf Course – Existing pipelines (currently distributing groundwater) would be used to supply recycled water for irrigation uses, and groundwater would continue to be used for potable needs and to supplement recycled water in peak months.
    - Mather Parks – “Purple pipe” would be installed for distribution of recycled water for irrigation uses and new groundwater wells would be installed to be used for potable water needs.
- This would be a decentralized recycled water project. None of the available scenarios would be applicable.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 5 MGD satellite MBR treatment facility
- 6,100 linear feet of 18-inch diameter conveyance piping
    - 6,100 linear feet of transmission piping
    - 0 linear feet of in-track piping
    - On-site piping of 789 acres
- 3.0 MG aboveground storage facility
- $500,000 for supplemental water supply
- 990 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- Mather Parks are within 0.5 miles of the proposed satellite plant.
- Mather Golf Course is within 1.5 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 2,598 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- This would require conditioning through the land use approval process.
- There are 5 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the proposed treatment facility.

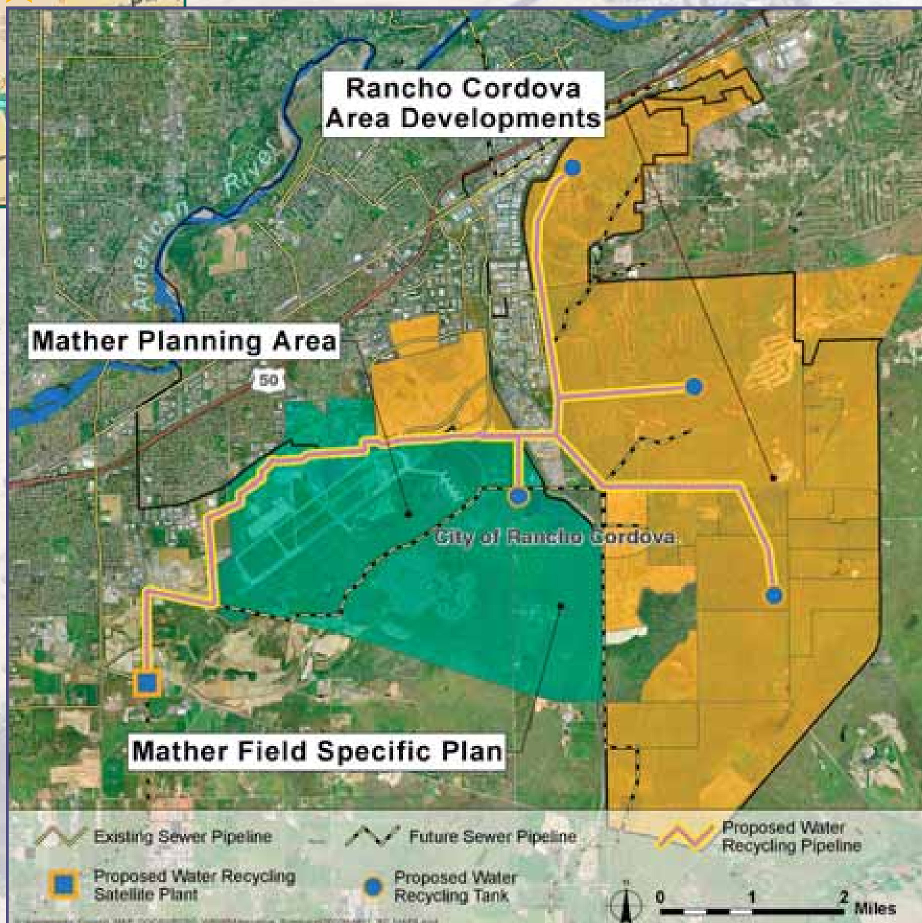
✔ **Willing Water Purveyors and Land Use Authorities**

- Water supplies (both potable and irrigation) for Mather Parks have not been identified but would be needed for development. Mather Golf Course is currently self-supplied with groundwater. However, the Mather Service Areas are located within the Central Sacramento County Groundwater Basin and are subject to the Sacramento Area Water Forum Agreement.
- Discussion of recycled water service to the Mather Service Areas has been initiated and involves Sacramento County and Regional Parks.
- No other potential providers of recycled water were identified for this area.

Outstanding Issues

- Quantify water recycling usage and existing groundwater extraction capacity estimates. Determine extent of adjacent contaminant plumes.
- Determine water purveyors for the service areas.

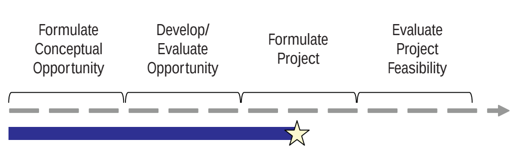
Rancho Cordova Area & Mather Service Areas



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Rancho Cordova Area (North)	Urban Irrigation	0.7	1.9
Rancho Cordova Area (Central)	Urban Irrigation	1.8	4.7
Rancho Cordova Area (South)	Urban Irrigation	1.3	3.2
Mather Parks	Urban Irrigation	1.9	4.7
Mather Golf Course	Urban Irrigation	0.5	1.2
Total		**6.2**	**15.7**

Estimated Costs	
Probable Capital Costs	$ 224.2M
EUAC/AF	$ 2,357

STATUS OF PROJECT



Rancho Cordova Area & Mather Service Areas

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, SCWA, GSWC, Cal-Am, Rancho Cordova, Folsom, Regional Parks, Sacramento County BOS

General Description of Potential Project and Operations

- This project would include delivery of recycled water to three areas of new development within Rancho Cordova, and for irrigation of existing and proposed soccer fields and other recreational facilities at Mather Parks and the existing Mather Golf Course.
- In all years, SRCSD would divert wastewater from the Bradshaw/Folsom Interceptor System to a new satellite plant located along Bradshaw Road south of Highway 16. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP. Water deliveries would include the following:
    - Rancho Cordova – "Purple pipe" would be installed for distribution of recycled water for irrigation uses, and new groundwater wells would be used to supplement recycled water deliveries in peak months.
    - Mather Golf Course – Existing pipelines (currently distributing groundwater) would be used to supply recycled water for irrigation uses, and groundwater would continue to be used for potable needs and to supplement recycled water in peak months.
    - Mather Parks – "Purple pipe" would be installed for distribution of recycled water for irrigation uses, and new groundwater wells would be installed to be used for potable water needs.
- This would be a decentralized recycled water project. Rancho Cordova would be Scenario C. There would be no applicable scenario for the Mather Service Areas.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 13 MGD satellite MBR treatment facility
- 89,860 linear feet of 10-inch to 30-inch diameter conveyance piping
    - 89,860 linear feet of transmission piping
    - In-track piping of 8,680 acres
    - On-site piping of 9,469 acres
- 9.5 MG aboveground storage facility
- $500,000 for supplemental water supply
- 2,100 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- North service area is within 7.5 miles of the proposed satellite plant.
- Central service area is within 6.5 miles of the proposed satellite plant.
- South service area is within 7.0 miles of the proposed satellite plant.
- Mather Parks are within 4.5 miles of the proposed satellite plant.
- Mather Golf Course is within 5.0 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 6,899 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- Rancho Cordova area – Water supply and general planning has already taken place for the new developments, with water supplies identified without recycled water. However, the opportunity may still exist to install recycled water infrastructure for future use. (Per SCWA, Rio Del Oro would be a possibility.)
- Mather Service Areas would require conditioning through the land use approval process.
- There are 35 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the proposed treatment facility.

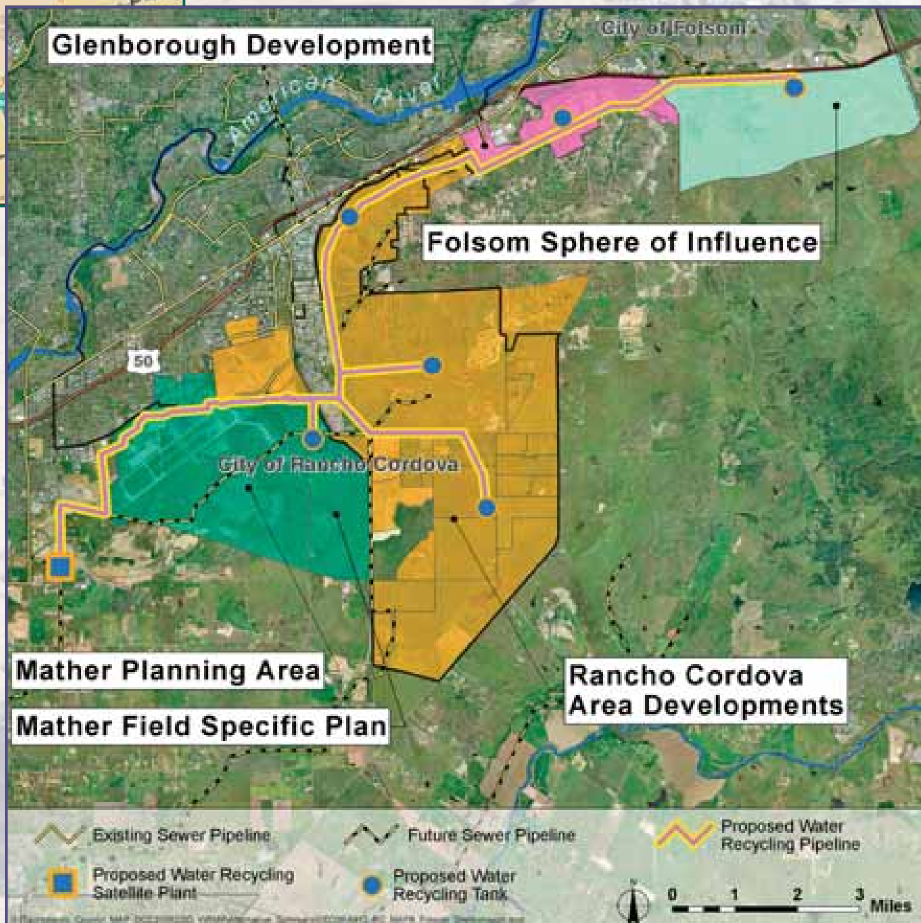
✔ **Willing Water Purveyors and Land Use Authorities**

- Met the same measures individually discussed for "Rancho Cordova Area" and "Mather Service Areas".

Outstanding Issues

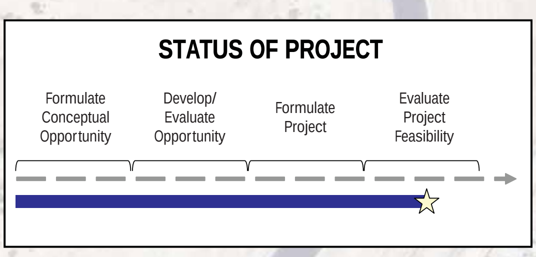
- Since this would be a combined project, the same issues discussed for "Rancho Cordova Area" and "Mather Service Areas" would exist.

Rancho Cordova Area, City of Folsom, Glenborough Development, & Mather Service Areas



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Rancho Cordova Area (North)	Urban Irrigation	0.7	1.9
Rancho Cordova Area (Central)	Urban Irrigation	1.8	4.7
Rancho Cordova Area (South)	Urban Irrigation	1.3	3.2
Folsom Sphere of Influence	Urban Irrigation	1.4	3.5
Glenborough Development	Urban Irrigation	0.3	0.9
Mather Parks	Urban Irrigation	1.9	4.7
Mather Golf Course	Urban Irrigation	0.5	1.2
Total		**7.8**	**20.0**

Estimated Costs	
Probable Capital Costs	$ 318.2M
EUAC/AF	$ 2,515



Rancho Cordova Area, City of Folsom, Glenborough Development, & Mather Service Areas

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, SCWA, GSWC, Cal-Am, Rancho Cordova, Folsom, Regional Parks, Sacramento County BOS

General Description of Potential Project and Operations

- Delivery of recycled water to new development in Rancho Cordova, Folsom SOI, Glenborough Development (aka Glenborough Place at Easton), and for irrigation of existing and proposed soccer fields and other recreational facilities at Mather Parks and the existing Mather Golf Course.
- Divert wastewater from the Bradshaw/Folsom Interceptor System to a new satellite plant located along Bradshaw Road south of Highway 16. New satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines. New groundwater wells would be used to supplement recycled water deliveries in peak months. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP.
- Water deliveries would include the following:
  - Rancho Cordova – "Purple pipe" would be installed for distribution of recycled water for irrigation uses.
  - Folsom – "Purple pipe" would be installed for distribution of recycled water for irrigation uses.
  - Mather Golf Course – Existing pipelines (currently distributing groundwater) would be used to supply recycled water for irrigation uses.
  - Mather Parks – "Purple pipe" would be installed for distribution of recycled water for irrigation uses.
- This would be a decentralized recycled water project. Rancho Cordova and Folsom would be Scenario C. There would be no applicable scenario for the Mather Service Areas.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 16 MGD satellite MBR treatment facility
- 150,925 linear feet of 8-inch to 36-inch diameter conveyance piping
  - 150,925 linear feet of transmission piping
  - In-track piping of 13,680 acres
  - On-site piping of 14,469 acres
- 13.0 MG aboveground storage facility
- $500,000 for supplemental water supply
- 3,430 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- North service area is within 7.5 miles of the proposed satellite plant.
- Central service area is within 6.5 miles of the proposed satellite plant.
- South service area is within 7.0 miles of the proposed satellite plant.
- Folsom SOI area is within 13.5 miles of the proposed satellite plant.
- Glenborough Development is within 10.5 miles of the proposed satellite plant.
- Mather Parks are within 4.5 miles of the proposed satellite plant.
- Mather Golf Course is within 5.0 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 8,819 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- Rancho Cordova area – Water supply and general planning has already taken place for the new developments, with water supplies identified without recycled water. However, the opportunity may still exist to install recycled water infrastructure for future use. (Per SCWA, Rio Del Oro would be a possibility.)
- Folsom SOI area, Glenborough Development, and Mather Service Areas would require conditioning through the land use approval process.
- There are 97 parcels within a 100-foot offset of construction areas.
- There are no residential parcels within a 1,000-foot radius of the proposed treatment facility.

✔ **Willing Water Purveyors and Land Use Authorities**

- Met the individual screening measures for "Rancho Cordova Area", "City of Folsom & Glenborough Development (Scenario C)", and "Mather Service Areas".

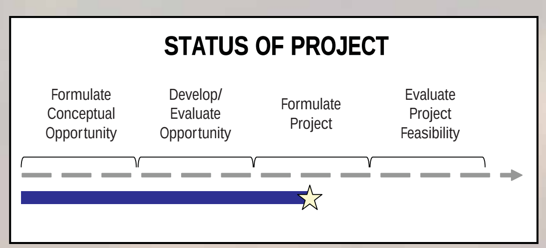
Outstanding Issues

- Since this would be a combined project, the same issues discussed for "Rancho Cordova Area", "City of Folsom & Glenborough Development (Scenario C)", and "Mather Service Areas" would exist.

Rio Linda/Elverta Area - Cherry Island/Gibson Ranch

Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Cherry Island/ Gibson Ranch	Urban Irrigation	1.3	3.2
Total		**1.3**	**3.2**

Estimated Costs	
Probable Capital Costs	$ 32.3M
EUAC/AF	$ 1,866



Rio Linda/Elverta Area - Cherry Island/ Gibson Ranch

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, Rio Linda/Elverta Community Water District (RLECWD), Sacramento Groundwater Authority (SGA), Regional Parks, Sacramento County BOS

General Description of Potential Project and Operations

- This project would include service to the existing Cherry Island Golf Course, Cherry Island Soccer Field Complex, Gibson Ranch County Park, Antelope Greens Golf Course, and Northbrook Park (Cherry Island/Gibson Ranch).
- In all years, SRCSD would divert wastewater from the Upper Northwest Interceptor (UNWI) to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP. Existing pipelines (currently distributing groundwater) would be used to supply recycled water for irrigation uses, and groundwater would continue to be used for potable needs and to supplement recycled water in peak months.
- Nearby development in the Elverta Specific Plan (ESP) area would require a water supply from RLECWD. This water supply portfolio has not been identified. Through PF-8, Sacramento County has required, and would likely continue to require, conjunctive use as a means to curb groundwater impacts in unincorporated portions of the North Sacramento County Groundwater Basin. "In lieu" banking of groundwater by Regional Parks could create a banking credit with SGA. RLECWD could then extract groundwater using new wells, and use the new banking credit to provide a potable water supply to a portion of the ESP.
- This would be a decentralized recycled water project. It would involve retrofitting existing areas; therefore, none of the available scenarios would be applicable.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 2.5 MGD satellite MBR treatment facility
- 21,913 linear feet of 12-inch-24-inch diameter conveyance piping
    - 10,800 linear feet of transmission piping
    - 11,113 linear feet of in-track piping
    - On-site piping of 390 acres
- 1.0 MG aboveground storage facility
- $500,000 for supplemental water supply
- 326 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ Geographical Proximity to Recycled Water Supply

- Cherry Island/Gibson Ranch is within 2.0 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.

✔ Appropriate Potential Recycled Water Demand

- Annual Yield: 1,411 AF/year

✔ Feasibility of Installing Recycled Water Distribution Infrastructure

- Existing groundwater distribution pipelines would be used for recycled water.
- There are 112 parcels within a 100-foot offset of construction areas.
- There are 8 residential parcels within a 1,000-foot radius of the proposed treatment facility.

✔ Willing Water Purveyors and Land Use Authorities

- Regional Parks currently supplies groundwater to Cherry Island/Gibson Ranch.
- RLECWD is supportive of recycled water and would collaborate in policy development through Sacramento County. RLECWD is open to operating needed recycled water facilities on a retail basis.
- The City of Roseville has approached Sacramento County, Regional Parks, and RLECWD regarding service of recycled water. Discussions continue.

Outstanding Issues

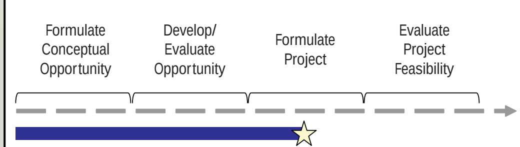
- Groundwater banking and exchange policy (Water Accounting Framework) through SGA is in development.
- Would require coordination with the UNWI program and would require a nearby satellite plant.
- Need to request a letter from City of Roseville stating its intentions to deliver water to the parks and golf courses.

Rio Linda/Elverta Area - Elverta Specific Plan

Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Elverta Specific Plan Area	Urban Irrigation	0.3	0.7
Total		**0.3**	**0.7**

Estimated Costs	
Probable Capital Costs	$ 16.9M
EUAC/AF	$ 4,430

STATUS OF PROJECT



Rio Linda/Elverta Area - Elverta Specific Plan

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, RLECWD, SGA, Sacramento County, Sacramento County BOS

General Description of Potential Project and Operations

- This project would include service to development in the ESP area.
- In all years, SRCSD would divert wastewater from the UNWI to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP.
- This would be a decentralized recycled water project, and would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 to 10 years.

Project Elements

This project would require the following elements:

- 1 MGD satellite MBR treatment facility
- 31,443 linear feet of 8-inch-14-inch diameter conveyance piping
  - 10,800 linear feet of transmission piping
  - 20,643 linear feet of in-track piping
  - On-site piping of 534 acres
- 0.5 MG aboveground storage facility
- $500,000 for supplemental water supply
- 126 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- The ESP area is within 2.0 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 302 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- This would require conditioning through the land use approval process. RLECWD would likely support such conditioning, and may be willing to lead the effort from a water supply perspective.
- There are 186 parcels within a 100-foot offset of construction areas.
- There are 8 residential parcels within a 1,000-foot radius of the proposed treatment facility.

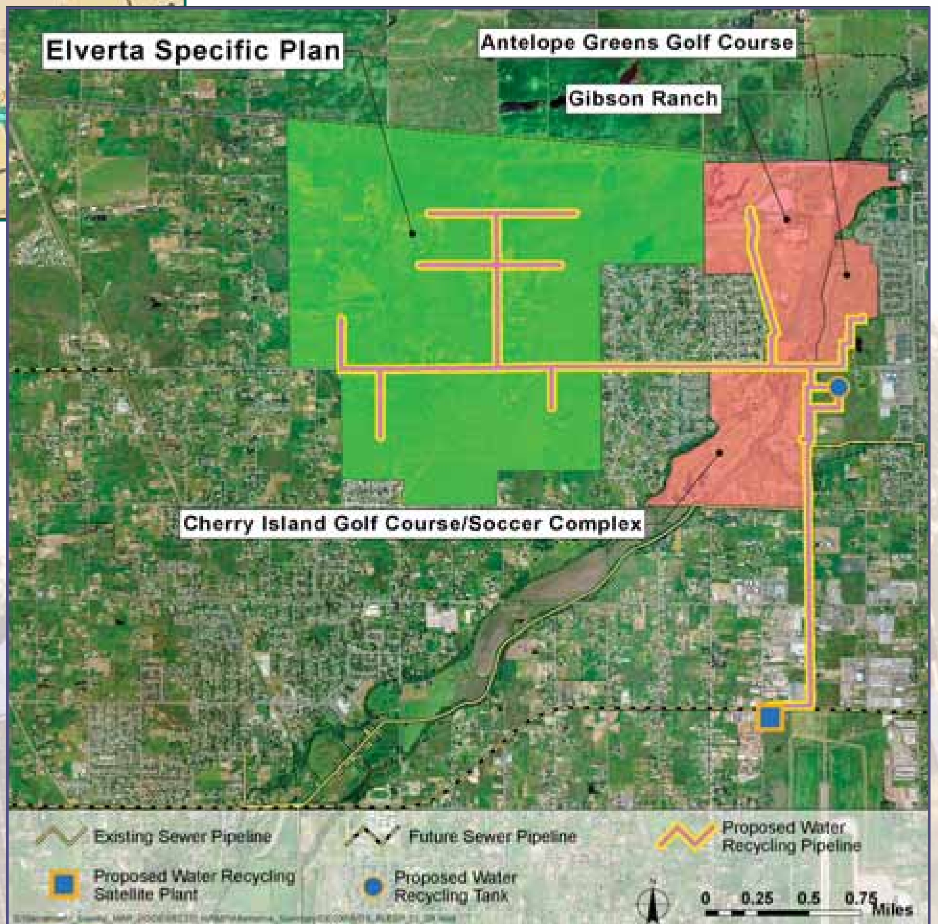
✔ **Willing Water Purveyors and Land Use Authorities**

- Development in the ESP area would require a water supply from RLECWD. This water supply portfolio has not been identified. Through PF-8, Sacramento County has required, and would likely continue to require, conjunctive use as a means to curb groundwater impacts in unincorporated portions of the North Sacramento County Groundwater Basin.
- RLECWD is supportive of recycled water and would collaborate in policy development through Sacramento County. RLECWD is open to operating needed recycled water facilities on a retail basis.
- No other potential providers of recycled water were identified for this area.

Outstanding Issues

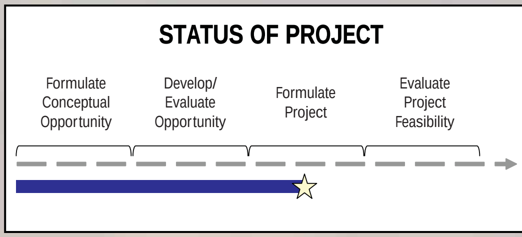
- Would require coordination with the UNWI program and would require a nearby satellite plant.

Rio Linda/Elverta Area - Cherry Island/ Gibson Ranch & Elverta Specific Plan



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Cherry Island/ Gibson Ranch	Urban Irrigation	1.3	3.2
Elverta Specific Plan Area	Urban Irrigation	0.3	0.7
Total		**1.6**	**3.9**

Estimated Costs	
Probable Capital Costs	$ 40.6M
EUAC/AF	$ 1,902



Rio Linda/Elverta Area - Cherry Island Gibson Ranch & Elverta Specific Plan

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, RLECWD, SGA, Sacramento County, Regional Parks, Sacramento County BOS

General Description of Potential Project and Operations

- This project would include service to (1) the existing Cherry Island Golf Course and Cherry Island/Gibson Ranch, and (2) development in the ESP area.
- In all years, SRCSD would divert wastewater from the UNWI to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP. For Cherry Island/Gibson Ranch, existing pipelines (currently distributing groundwater) would be used to supply recycled water for irrigation uses, and groundwater would continue to be used for potable water needs and to supplement recycled water in peak months. For the ESP area, “purple pipe” would be installed for distribution of recycled water for irrigation uses.
- The ESP area would require a water supply from RLECWD. This water supply portfolio has not been identified. Through PF-8, Sacramento County has required, and would likely continue to require, conjunctive use as a means to curb groundwater impacts in unincorporated portions of the North Sacramento County Groundwater Basin. “In lieu” banking of groundwater by Regional Parks could create a banking credit with SGA. RLECWD could then extract groundwater using new wells, and use the new banking credit to provide a potable water supply to a portion of the ESP.
- This would be a decentralized recycled water project. There would be no applicable scenario for Cherry Island/Gibson Ranch. The ESP area would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would between 5 to 10 years.

Project Elements

This project would require the following elements:

- 3.1 MGD satellite MBR treatment facility
- 46,560 linear feet of 8-inch to 24-inch diameter conveyance piping
  - 10,800 linear feet of transmission piping
  - 35,760 linear feet of in-track piping
  - On-site piping of 940 acres
- 1.5 MG aboveground storage facility
- $500,000 for supplemental water supply
- 430 hp pump station capacity
- No additional rights-of-way

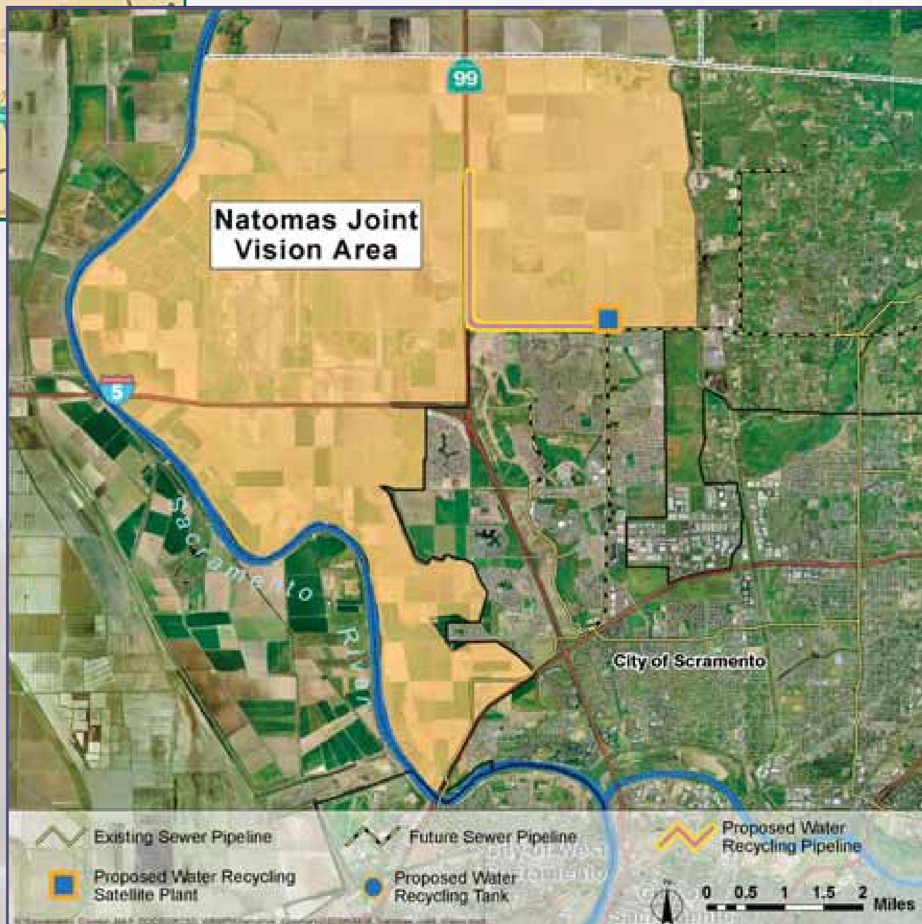
Screening Measures

✔ Met the screening measures of “Rio Linda/Elverta – Cherry Island/Gibson Ranch” and “Rio Linda/Elverta – Elverta Specific Plan”.

Outstanding Issues

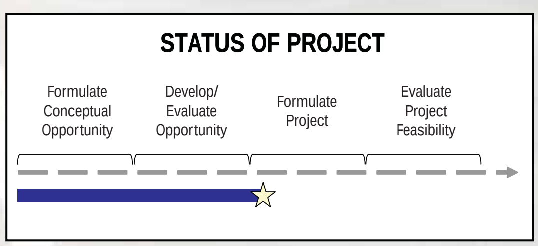
- Since this would be a combined project, the same issues discussed for “Rio Linda/Elverta – Cherry Island/Gibson Ranch” and “Rio Linda/Elverta – Elverta Specific Plan” would exist.

Natomas Joint Vision Area



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Natomas Joint Vision Area	Urban Irrigation	4.4	11.1
Total		**4.4**	**11.1**

Estimated Costs	
Probable Capital Costs	$ 157.5M
EUAC/AF	2,358



Natomas Joint Vision Area

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, Sacramento County BOS, City of Sacramento, Natomas Central Mutual Water Company (NCMWC)

General Description of Potential Project and Operations

- This project would include service to potential development within the Urban Reserve Area of the Natomas Joint Vision (NJV) area. (Service to Metro Airpark, Sacramento International Airport, and agricultural areas would not be included.)
- In all years, SRCSD would divert wastewater from the UNWI to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP.
- This would be a decentralized recycled water project, and would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be greater than 10 years.

Project Elements

This project would require the following elements:

- 9 MGD satellite MBR treatment facility
- 22,500 linear feet of 30-inch diameter conveyance piping
  - 22,500 linear feet of transmission piping
  - In-track piping of 10,000 acres
  - On-site piping of 10,000 acres
- 4.5 MG aboveground storage facility
- $500,000 for supplemental water supply
- 1,115 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ **Geographical Proximity to Recycled Water Supply**

- The NJV area is within 2.0 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be not required.

✔ **Appropriate Potential Recycled Water Demand**

- Annual Yield: 4,928 AF/year

✔ **Feasibility of Installing Recycled Water Distribution Infrastructure**

- Development timing in the NJV area is unknown.
- Conditioning through the land use approval process would be required.
- There are 23 parcels within a 100-foot offset of construction areas.
- There are 31 residential parcels within a 1,000-foot radius of the proposed treatment facility.

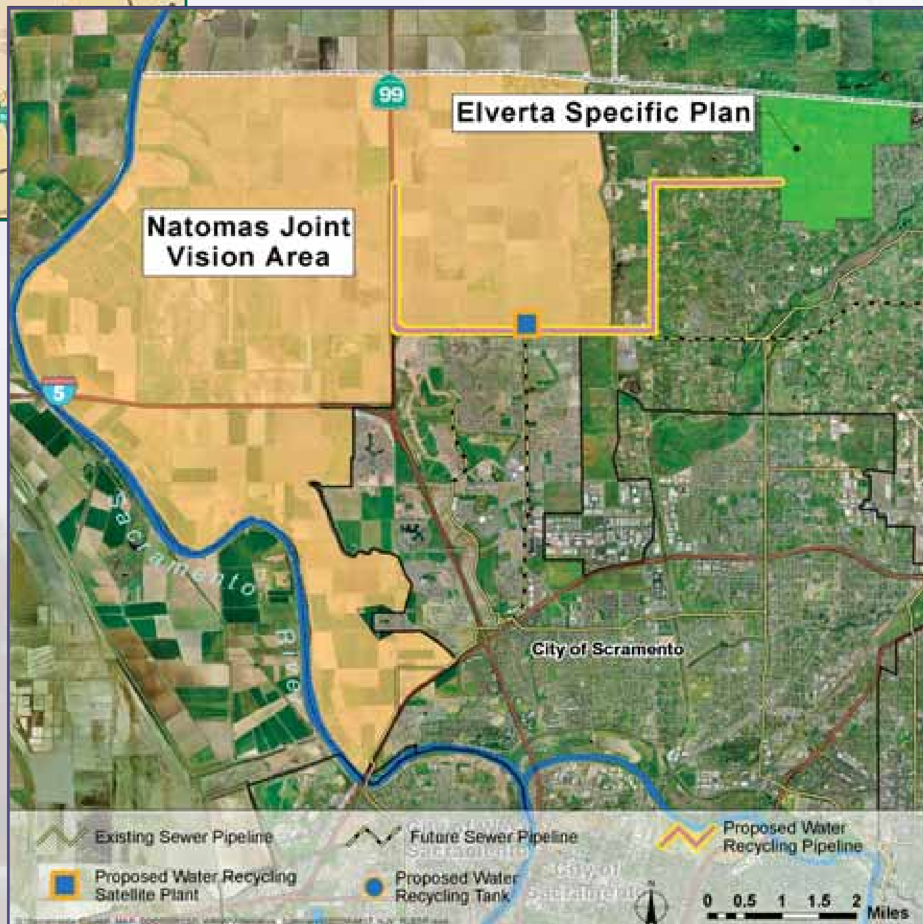
✔ **Willing Water Purveyors and Land Use Authorities**

- Water supply and general planning have not taken place for this area which is outside the existing Urban Services Boundary.
- Both the City of Sacramento and NCMWC have sufficient water available from their water rights to serve future development within the NJV area. However, the development area is outside the City of Sacramento limits, its SOI, and its American River and Sacramento River water rights. The development area is within NCMWC's water rights, but permitted use of that water is primarily agricultural in nature.
- This area is located within the North Sacramento County Groundwater Basin and subject to the Sacramento Area Water Forum Agreement.
- Because the water purveyor(s) and land use authority(ies) are unknown at this time, SRCSD has not initiated project-specific discussions with any agency.
- No other potential providers of recycled water were identified for this area.

Outstanding Issues

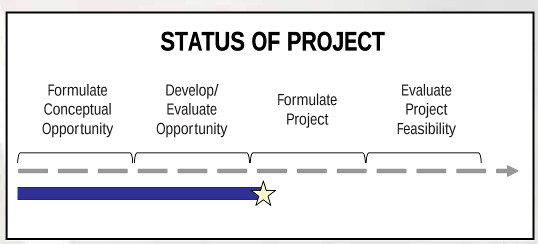
- Water purveyor(s) and land use authority(ies) would need to be determined.
- Would require coordination with the UNWI program, and would require a nearby satellite plant.
- Water rights issues would need to be resolved prior to SRCSD's involvement in project implementation.

Rio Linda/Elverta Area-Elverta Specific Plan & Natomas Joint Vision Area



Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Elverta Specific Plan Area	Urban Irrigation	0.3	0.7
Natomas Joint Vision Area	Urban Irrigation	4.4	11.1
Total		**4.7**	**11.8**

Estimated Costs	
Probable Capital Costs	$ 177.1M
EUAC/AF	2,469



Rio Linda/Elverta Area-Elverta Specific Plan & Natomas Joint Vision Area

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, RLECWD, SGA, Sacramento County, Sacramento County BOS, City of Sacramento, NCMWC

General Description of Potential Project and Operations

- This project would include service to development in the ESP area and potential development within the Urban Reserve Area of the NJV area. (Service to Metro Airpark, Sacramento International Airport, and agricultural areas would not be included.)
- In all years, SRCSD would divert wastewater from the UNWI to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP.
- This would be a decentralized recycled water project, and would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be greater than 10 years.

Project Elements

This project would require the following elements:

- 10 MGD satellite MBR treatment facility
- 55,300 linear feet of 10-inch to 30-inch diameter conveyance piping
    - 55,300 linear feet of transmission piping
    - In-track piping of 10,534 acres
    - On-site piping of 10,534 acres
- 5.0 MG aboveground storage facility
- $500,000 for supplemental water supply
- 1,229 hp pump station capacity
- No additional rights-of-way

Screening Measures

✔ Met the screening measures of “Rio Linda/Elverta – Elverta Specific Plan” and “Natomas Joint Vision Area”.

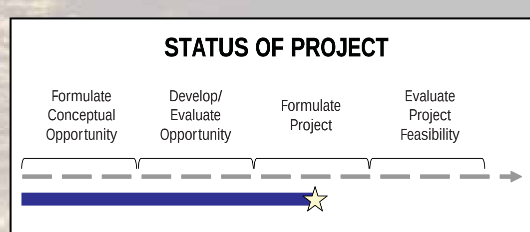
Outstanding Issues

- Since this would be a combined project, the same issues discussed for “Rio Linda/Elverta – Elverta Specific Plan” and “Natomas Joint Vision Area” would exist.

City of West Sacramento

Description	Demand Type(s)	Average Day Demand (MGD)	Peak Day Demand (MGD)
Southport Framework Plan Area	Urban Irrigation	0.8	2.1
University Park	Urban Irrigation	0.1	0.3
Central Park	Urban Irrigation	0.4	1.1
Sports Complex	Urban Irrigation	0.1	0.3
Total		**1.4**	**3.8**

Estimated Costs	
Probable Capital Costs	$ 62.8M
EUAC/AF	2,609



City of West Sacramento

Principal Potential Participants, Water Purveyors, Land Use Authorities

SRCSD, City of West Sacramento (West Sacramento)

General Description of Potential Project and Operations

- This project would include service to new developments in West Sacramento.
- In all years, SRCSD would divert wastewater from the Lower Northwest Interceptor (LNWI) to a new satellite plant. The satellite plant would provide tertiary treated recycled water to be delivered via new transmission pipelines to the place of use. Solids from the satellite plant would be returned to the interceptor for eventual treatment at the SRWTP. New groundwater wells or other supplies would be used to supplement recycled water deliveries in peak months.
- This would be a decentralized recycled water project, and would be Scenario C.
- Direct environmental benefits to aquatic and/or terrestrial habitat would not be anticipated.
- The implementation period for this project would be between 5 and 10 years.

Project Elements

This project would require the following elements:

- 3.1 MGD satellite MBR treatment facility
- 38,300 linear feet of 12-inch to 18-inch diameter conveyance piping
  - 38,300 linear feet of transmission piping
  - In-track piping of 3,503 acres
  - On-site piping of 3,503 acres
- 1.5 MG aboveground storage facility
- $500,000 for supplemental water supply
- 591 hp pump station capacity

Screening Measures

✔ Geographical Proximity to Recycled Water Supply

- West Sacramento is within 7.8 miles of the proposed satellite plant.
- Proximity to the SRWTP and the WRF would not be required.
- West Sacramento Wastewater Treatment Plant was considered as a satellite plant site possibility; however, the manner in which West Sacramento sewers will be rerouted to connect to the LNWI does not make this an attractive option.

✔ Appropriate Potential Recycled Water Demand

- Annual Yield: 1,736 AF/year

✔ Feasibility of Installing Recycled Water Distribution Infrastructure

- Providing recycled water to West Sacramento from a Water Reclamation Facility at the SRWTP was considered and deemed not cost-effective.
- One option discussed with West Sacramento staff was to locate a satellite treatment facility at the Southport Pump Station site and to use the existing West Sacramento outfall as the recycled water transmission facility.
- There are 163 parcels within a 100-foot offset of construction areas.
- There are no residential parcels are within a 1,000-foot radius of the proposed treatment facility.

✔ Willing Water Purveyors and Land Use Authorities

- Thorough review of West Sacramento’s Water Supply Master Plan has shown that West Sacramento has ample surface water supplies for new development.
- Discussions continue with West Sacramento.
- West Sacramento is pursing the use of Reclamation District 900 canals to deliver untreated surface water for irrigation of new development.

Outstanding Issues

- Appropriate level of water recycling infrastructure (or “purple pipe”) with new development conditioning is under discussion.

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