

**9. Recycled Water**

The California Department of Health Services (CDHS) specifies the levels of treatment for recycled wastewater and publishes the standards in Title 22 of the California Code of Regulations. Examples of the types of uses for recycled water and the required levels of treatment are displayed in Appendix E.

To date, wastewater has not been recycled within the RLECWD service area.

Future integrated water resource plans and master recycled water plans are currently being developed for Sacramento and Placer Counties. Any effect within the Rio Linda Service area is unlikely in the next five years. Beyond 2010, regional coordination may provide benefits, such as groundwater recharge and a supply of recycled water.

The current status is that no recycled water programs currently exist and the potential for one is under study. These potential benefits are not yet quantified.

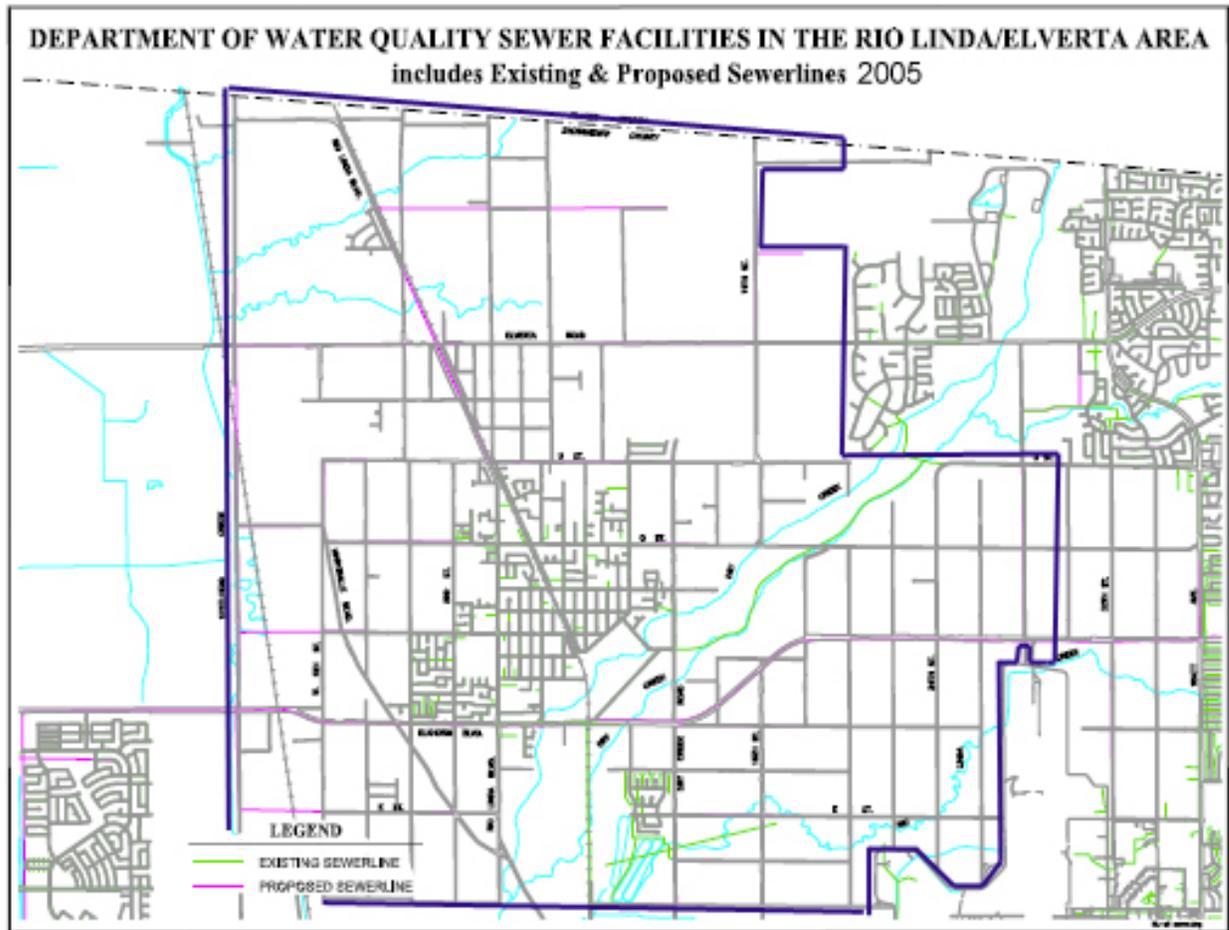
**Table 15 - Agencies that would likely Participate in Recycled Water Plans Affecting the RLECWD Service Area**

<b>Agencies</b>	<b>Potential Role in Developing Recycled Water Plan</b>
Rio Linda /Elverta Community Water District	Sell treated recycled water to specified willing customers
Sacramento Regional County Sanitation District	Collect and treat wastewater in Sacramento County
Sacramento Groundwater Authority	Coordinate groundwater recharge in keeping with the Sacramento Groundwater Management Plan.
City of Roseville	Collects and treats wastewater and produces recycled water that may be delivered and used in north Sacramento County
Sacramento County	Provide multiple jurisdictions such as: land use planning authority in unincorporated areas of the county, health services, Sacramento County Water Agency
Water Forum Successor Effort	Coordinates water stakeholder participation
Regional Water Authority	Coordinates regional water supply efforts
California Department of Health Services	Regulatory Authority over Recycled Water Projects

The population living within the RLECWD service area generates approximately 2,700 acre feet of wastewater annually. Approximately 70 percent of this locally generated wastewater is disposed of through private septic systems that are not connected to municipal sewer services provided by the Sacramento Regional County Sanitation District (SRCS). Figure 9 is a map of the local wastewater collection system.

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Figure 9 - Wastewater Collection System within the RLECWD Service Area



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2005 Urban Water Management Plan**

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The amount of future wastewater collected by municipal sewer services will most likely grow for several reasons:

- The SRCSD wastewater collection sewers are planned to service a larger area.
- New homes for a growing population will connect to the new sewers.
- As existing septic systems fail, or homeowners grow tired of dealing with septic systems, the customers will hook up to the municipal sewer system.
- New State Water Quality Control Board regulations currently being developed may motivate customers to abandon their septic systems and hook up to the municipal sewer system.

For purposes of this study, 50 percent of current customers are assumed to maintain septic systems through 2030. All new customers after 2010 are assumed to discharge to the municipal sewer system.

**Table 16 – Estimated Wastewater Collected and Treated - AFPY**

	2000	2005	2010	2015	2020	2025	2030
Estimated wastewater generated within RLECWD service area	2,500	2,700	3,000	3,200	3,500	4,000	4,500
Estimated wastewater disposed to private septic systems	1,750	1,750	1,750	1,625	1,500	1,375	1,250
Estimated wastewater disposed to SRCSD collection and treatment system	750	950	1,250	1,575	2,000	2,625	3,250
Quantity that meets recycled water standard, although it may not be available to RLECWD service area	750	950	1,250	1,575	2,000	2,625	3,250

Estimates are based on interior residential/commercial water use of 132 gallons per person per day. (Source: SRWTP 2020 Master Plan Task 400 TM #2, "Projected Wastewater Flows and Characteristics") All wastewater collected by SRCSD is treated to standards that may be used for some type of recycling. The location of the SRCSD WWTP is near Elk Grove, some 20 miles from RLECWD.

The amount of wastewater estimated to be unavailable for recycling is the wastewater treated by private septic systems and is repeated in Table 17. An insignificant amount of this may be used by homeowners as graywater recycling.

**Rio Linda /Elverta Community Water District  
2005 Urban Water Management Plan**

**Table 17 – Estimated Wastewater Collected but Not Treated & Not Recycled**

Method of Treatment	Treatment level	Treatment level					
		2005	2010	2015	2020	2025	2030
Residential Septic Systems		910	910	845	780	715	650
All water collected by SRCSD is treated. Some is recycled outside RLECWD. Any wastewater not recycled is discharged to the Sacramento River. See Table 16.	Tertiary	RLECWD service area contribution may potentially be quantified in SRCSD Master Plan Update					

Recycling Water in Sacramento County

Within Sacramento County, the SRCSD operates water recycling programs outside the RLECWD service area. The "SRCSD Water Recycling Program Status (Sept. 2005)" reports the following status of their current operations and future plans.

SRCSD operates a 5-MGD Water Reclamation Facility (WRF) located at the Sacramento Regional Wastewater Treatment Plant (SRWTP). The WRF began delivering recycled water in April 2003 to the Laguna West, Lakeside, and Stonelake communities in Elk Grove for landscape irrigation. The recycled water is delivered in partnership with the Sacramento County Water Agency (SCWA), with SRCSD providing recycled water and SCWA retailing the recycled water to its customers.

As of September 2005, the program has 40 user sites which include parks, schoolyards, commercial landscaping and roadway medians. There are more user sites planned for connection in 2006. Phase I recycled water usage has reached a peak operation of 3.0 MGD and average daily water recycling usage in the range of 1.0 – 1.5 MGD. All operations are conducted in accordance with California Regional Water Quality Control Board (RWQCB) and Department of Health Services recycled water standards and SRCSD’s Master Reclamation Permit (WDR #97-146).

The WRF was designed and constructed to be readily expandable to 10 MGD, to serve new areas of the growing Elk Grove/Laguna Community (East Franklin, and Laguna Ridge developments). Similar to Phase I, SRCSD will work in partnership with SCWA to serve these areas. The expanded water recycling facility and new water recycling service areas will be called Phase II of the SRCSD Water Recycling Program. Phase II is expected to be in service by 2008-2010.

To plan for water recycling projects beyond 2010, SRCSD is conducting a Water Recycling Master Plan (WRMP) for water recycling program growth through 2030. The overall project objective is to increase water recycling usage in the Sacramento region during peak irrigation months to a 30-to 40-mgd level. Water recycling on this scale will allow SRCSD to better manage its effluent discharged to the Sacramento River and will help Sacramento Area water purveyors to improve their water supply quantity and reliability in terms of irrigation and industrial water supply. The WRMP effort will include significant outreach to stakeholders that could be associated with SRCSD’s future water recycling plans. Stakeholders to be contacted during the WRMP are expected to

## **Rio Linda /Elverta Community Water District 2005 Urban Water Management Plan**

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include, among others; Sacramento Area water purveyors and users, land use planning authorities, land development leaders, and environmental interests. The WRMP will culminate in the development of a SRCSD Water Recycling Master Plan document that is expected to contain numerous water recycling project alternatives that have been evaluated for future SRCSD implementation. This WRMP document is expected to be completed in 2006. (Source: "SRWTP 2020 Master Plan- Projected Wastewater Flows through 2020")

### Recycling Water in Placer County

To the north of RLECWD service area, the City of Roseville collects wastewater from much of southern Placer County. Only 7 miles upstream along Dry Creek, the City of Roseville operates the Dry Creek Wastewater Treatment Plant which discharges treated effluent into Dry Creek. The new Pleasant Grove Wastewater Treatment Plant began operations this past year. Together they serve the Placer County communities of Roseville, Rocklin, Loomis, Penryn and Newcastle.

The permitted average dry weather flows are 18 MGD at Dry Creek WWTP and 12 MGD at Pleasant Grove WWTP. Both WWTPs provide tertiary level wastewater treatment. Both Dry Creek WWTP and Pleasant Grove WWTP are sources of disinfected tertiary water (wastewater that has been oxidized, coagulated, clarified, and filtered). For the calendar year 2003, the City delivered 1,463 acre feet of recycled water to its customers. Current demands include landscape, park and golf course irrigation within and adjacent to the City of Roseville. None of these current demands are in the Rio Linda/ Elverta CWD service area.

Roseville's 1996 Wastewater Master Plan assessed potential recycled water demands in and around the City of Roseville. New developments, changes in zoning, new areas of growth and new specific plans have prompted an update of the Master Plan.

The June 2004, "Dry Creek Recycled Water Groundwater Recharge Feasibility Study," prepared for the City of Roseville, examined potential opportunities to recharge groundwater in Placer and Sacramento counties with recycled water. The study goals included:

- Identify the potential market in the region for recycled water for irrigation purposes
- Evaluate participation in the regional groundwater banking and exchange program
- Investigate the institutional and regulatory issues relating to a groundwater recharge program

This feasibility study identified four sites warranting further study for direct recharge where in-stream percolation or off-stream surface spreading adjacent to Dry Creek might provide groundwater recharge. Wastewater would flow from Dry Creek WWTP down the channel of Dry Creek to the recharge sites. One of these sites is within the RLECWD service area.

**Rio Linda /Elverta Community Water District  
2005 Urban Water Management Plan**

**Table 18 – Additional Agencies that May have a Role in a Full Scale Program  
Involving Dry Creek Recycled Water Projects**

<b>Agencies</b>	<b>Potential Role in Developing Water Recycling Plan</b>
Federal Emergency Management Agency	Permitting for structures within floodways
National Oceanographic and Atmospheric Administration	Management of anadromous fisheries and habitat
Army Corps of Engineers	Section 404 Clean Water Act pertaining to excavation or dredging within a river or stream
Environmental Protection Agency	National Pollution Discharge Elimination System permitting and enforcement of Section 404 permits
Fish and Wildlife Service	Review of Section 404 permits and consultation on endangered species
California Department of Fish and Game	Streambed modification permitting, endangered /threatened species mitigation
California Department of Parks and Recreation	Management function pertaining to stream channel restoration and riparian vegetation
California Department of Water Resources	Permitting jurisdiction for dams higher than 25 feet or impounding more that 50 acre feet; possible funding source
Reclamation Board	Permitting for projects within floodways
Regional Water Quality Control Board	Waste discharge permitting
State Water Resources Control Board	Appropriation of water rights and approval of change in place of use of recycled water
Placer County	Flood Control district, health services, planning, public works, Dry Creek Greenway master Plan, resource Conservation District; Dry Creek Conservancy, Dry Creek Watershed Group

Source: “Dry Creek Recycled Water Groundwater Recharge Feasibility Study”

The same feasibility study identified fifteen sites warranting further investigation for in-lieu recharge opportunities. “In-lieu recharge” means that recycled water would be used in place of groundwater which is currently or may potentially be used for irrigation and other non-potable purposes. The following five sites within the RLECWD services area were considered for further evaluation.

**Rio Linda /Elverta Community Water District  
2005 Urban Water Management Plan**

**Table 19 Some Sites Identified by “Dry Creek Recycled Water Groundwater Recharge Feasibility Study” for Potential Reclaimed Water Irrigation**

Site	Total Irrigable Acres	Average Annual Irrigation Demand at 100% ETo in AF
Dry Creek Parkway	113	514
Central Rio Linda Park & Horse Arena	11	50
Roy E Hayer Park	16	73
Rio Linda High School & Jr. High School	16	73
Depot Park & Community Center	21	95
Total	156	805

Irrigation demand is based on annual average of 3.64 AF per acre (ETo less rainfall, March through October) plus an additional scheduling and management consideration of 25 percent.

The “Dry Creek Recycled Water Groundwater Recharge Feasibility Study” proposed routing recycled wastewater down the Dry Creek Channel. This provides possible, although highly uncertain, uses of recycled wastewater associated with Dry Creek such as fisheries habitat, wildlife habitat, and Environmental Water Account flows. Additional uses could be achieved through diversions from Dry Creek to irrigation and industrial users. These concepts are reflected in Table 20.

**Table 20 - Potential Recycled Water Uses**

Type of Use	Required Treatment level	Year				
		2010	2015	2020	2025	2030
Agriculture	Disinfected					
	Secondary	0				not yet quantified
Landscape	Disinfected					
	Tertiary	0				not yet quantified
Wildlife Habitat	Disinfected					
	Secondary	0				not yet quantified
Wetlands	Disinfected					
	Secondary	0				not yet quantified
Industrial	Disinfected					
	Tertiary	0				not yet quantified
Groundwater recharge	Disinfected					
	Tertiary	0				not yet quantified
Total		0				not yet quantified

Source of “Treatment Level for Types of Use”: CDWR 2002 Recycled Water Task Force Final Report. Source of potential uses: “Dry Creek Recycled Water Groundwater Recharge Feasibility Study”

Neither the future quantities of recycled water available in the service area, nor the quantities that might be applied to specific uses, have been determined.

RLECWD 2000 Urban Water Management Plan and the 2002 updates stated that recycled water was not used within the service area, nor was recycled water projected to be used by 2005.

**Table 21 - Recycled Water Uses –  
2000 Projections Compared with 2005 Actual AFY**

Type of Use	2000 Projections for 2005	2005 Actual Use
Agriculture	0	0
Landscape	0	0
Wildlife Habitat	0	0
Wetlands	0	0
Industrial	0	0
Groundwater recharge	0	0
Total	0	0

Methods to Encourage Recycled Water Use

This discussion is provided in lieu of DWR Guidebook for UWMP Table 38.

Because coordinated studies for additional Sacramento County and multi-county water recycling opportunities are just beginning, it is unreasonable to estimate the quantities of reuse that may result from any particular incentive strategy. Some of the incentives that might potentially be employed are described below although there is no implication that any of these incentives may be adopted for use.

- Provide Strong Public Outreach Programs
  - Involve the public in all phases of project planning
  - Inform potential users of the facts and benefits of using recycled water
  - Provide training to plumbing contractors and irrigation installers regarding the uses and regulations of recycled water.
  - Inform the public of the water supply issues facing the service area
  - Receive comments and respond to questions from the public
  - Achieve acceptance of using recycled water
- Financial Incentives -
  - Provide recycled water at discounted volumetric rate compared to the rate for potable water
  - Provide recycled water at discounted connection fee compared to the fee for potable water
  - Seek funding from third party sources to reduce the local cost of developing delivery and application systems

**Rio Linda /Elverta Community Water District  
2005 Urban Water Management Plan**

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- Reliability Incentives –
  - Offer continued supply of recycled water when potable water is restricted during specific conditions of water shortages
- Regulatory Incentives –
  - Require use of recycled water on irrigated landscape as a condition of delivering potable water for interior uses.
  - Require use of recycled water on irrigated landscape where recycled water is available
  - Require use of recycled water for specified uses, for example: irrigated landscape, agriculture, or industrial process cooling.

The water recycling plans being developed by the City of Roseville, SRCSD and local water purveyors will include an optimization plan to facilitate the use of recycled water.