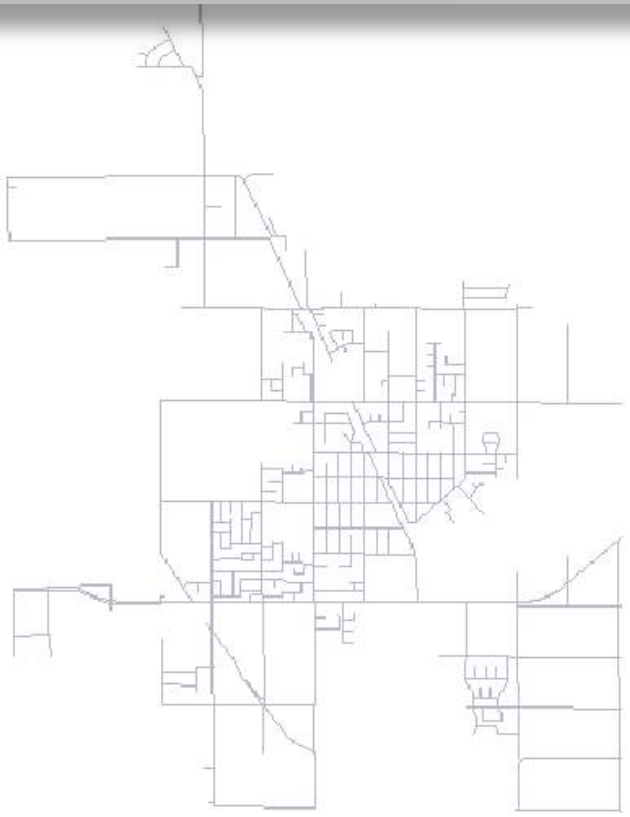
Rio Linda / Elverta
Community Water District

Water Master Plan


Final



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Executive Summary

The Rio Linda/Elverta Community Water District (District) is an independent special water district which serves the communities of Rio Linda and Elverta. This Water Master Plan (Master Plan) was developed to meet the Strategic Plan Objectives that were developed by the District in 2013. The Strategic Plan Objectives are to maintain the water system, maintain a safe work place, provide for future customers, use water efficiently, and meet financial requirements.

With these objectives in mind, the Master Plan focused on

- identifying regional and statewide programs to which the District is committed,
- updating the water system planning criteria,
- assessing the existing water system,
- evaluating the water system based on the planning criteria,
- identifying improvements required to supply new customers when the District's moratorium is lifted, and
- providing a summary of recommended capital improvements for which the District will use in developing its annual capital improvement budget

The following sections summarize the regional water supply constraints, water system planning, and infrastructure assessment. An overview of the recommended capital improvement program is presented in the final section.

Water Supply Constraints

There are several water supply constraints affecting the District including the Water Forum Agreement, Community Plan Policy PF-8, existing and potential water quality regulations, and California Department of Public Health's (CDPH) service connection moratorium.

Water Forum Agreement

The District is a signatory to the Water Forum Agreement (WFA) in 2000. The WFA was put in place to bring the business, environmentalists, and water purveyors together to work out regional solutions. The WFA created two coequal objectives: 1) provide a reliable and safe water supply for the Sacramento region's economic health and planned development to the year 2030, and 2) preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River. The District's short-, medium-, and long-term water supply strategies are consistent with the goals and commitments of the WFA.

Community Plan Policy PF-8

Increased water supply for the Elverta Specific Plan (ESP) must also meet the requirements of Community Plan Policy PF-8 (PF-8) which was established by the Sacramento County Board of Supervisors to ensure that the there is no net

increase in groundwater pumping in the North Sacramento Groundwater Basin. The District's short-, medium-, and long-term water supply strategies are consistent with the requirements of PF-8.

Water Quality Regulations

The District is required to provide water which meets all drinking water quality standards, including maximum contaminant levels (MCL) as regulated by CDPH. Where constituents exist in excess of an MCL, the District must either remove the source from the system or treat the water which may be costly.

Arsenic and manganese are two constituents that have been found in the District's groundwater at levels that exceeded the MCL. In 2007, Wells 3 and 5 were taken out of service due to arsenic levels in excess of the newly adopted MCL of 10 ppb. In 2012, Well 3 was put back into service with operational improvements that reduced the arsenic concentrations to below the MCL. In addition, Well 14 was drilled and sampled, and high concentrations of arsenic and manganese were found. The high cost for treatment prohibited the District from moving forward with equipping the well.

Another constituent that will potentially affect the District is hexavalent chromium (HC). Currently, HC is regulated under the MCL for total chromium at 50 ppb. CDPH is considering adopting an MCL specifically for HC at 10 ppb this year. If the MCL is adopted at this level or lower, a majority of the District's water supply will exceed the MCL.

CDPH Compliance Order

In 2007, CDPH issued a Compliance Order that placed a service connection moratorium with a maximum of 4,617 services on the District prohibiting any new service connections until additional water supply is added to the water system. Since that time, the District has constructed and put online a 2,800 gpm well (Well 15) and is currently under construction of the new L Street Reservoir and Pump Station (L Street Plant) that is planned to go online in November 2014. When the L Street Plant goes online, the District's peak hour and maximum day supply will exceed its demand and CDPH is expected to remove the service connection moratorium.

Water System Planning

The District's water supply strategy has changed due to the water supply constraints that have been described above. Currently the District's water supply is exclusively pumped groundwater. Beginning with the L Street Plant, the new strategy will include storage to meet peak hour, fire flow, and emergency demands.

For the short- and medium-term water supply strategies, the District will add groundwater supply and storage to meet the increased demand of new customers. The locations of new wells will be based on hydrogeological studies to improve the

chances of avoiding treatment. For ESP, PF-8 will be met by purchasing banked groundwater credits.

The long-term water supply strategy for the District is to continue to increase storage and begin importing surface water from the Sacramento River. Connection fees are proposed to fund a new surface water treatment plant (SWP) to replace the banked groundwater water. At full build out, the District will continue to use 3,000 acre-feet/year (AFY) of groundwater along with 14,500 AFY of surface water.

Water Supply

Water supply versus demand was evaluated for maximum day, peak hour, fire flow, and emergency backup. To be conservative, the demand is based on the recorded high number of 4,483 active customers. The planning criteria for water supply is as follows:

Maximum Day Demand (MDD) - met with the total source of supplies (currently groundwater) with the largest source of supply out of service.

Peak Hour Demand (PHD) - met with the total supply from both supply and storage with the largest source or booster out of service.

Fire Flow Demand (FF) – met with source and storage to be able to meet the highest fire flow and its duration during a maximum day event.

Emergency Backup Requirement (EBR) – EBR is for the water system to meet an average day demand during a utility power outage with either gravity supply from elevated storage or backup power from either a natural gas/diesel generator or natural gas/diesel engine driven pump.

The evaluation is summarized in the following table:

Category	***Supply***	***Demand***	***Surplus***
Maximum Day	6,375 gpm	6,187 gpm	188 gpm
Peak Hour	9,975 gpm[1]	9,280 gpm	695 gpm
Fire Flow	12,775 gpm	10,187 gpm	2,588 gpm
Emergency Backup	7,980 gpm	1,915 gpm	6,065 gpm

[1]Peak hour supply with L Street Plant online

Storage

Based on the District's new water supply strategy, a storage criteria has been established that requires storage to meet operational, fire flow (FF), and emergency demands. The total storage requirement (TSR) is as follows:

$$\text{TSR} = \text{Operational} + \text{Fire Flow} + \text{Emergency}$$
$$= (\text{PHD}) \text{x} (4 \text{ hours}) + \text{Highest FF x Duration} + 25 \text{ percent MDD}$$

Based on this new storage criteria, the District has a storage deficit of 2.6 MG. The storage deficit is mainly based on providing additional emergency storage to improve water system reliability in maintaining water service in the event of a

water supply emergency. This storage deficit is planned to be reduced over time by adding new storage as planned in the capital budget along with upsizing new reservoirs that are required for new developments.

Water Quality Strategy

The District plans to meet all CDPH water quality requirements without treatment (other than chlorine for disinfection). Where treatment is unavoidable, the treatment criteria is to reduce the constituent's concentration to no higher than 80 percent of the MCL.

New Customers

Based on the recorded maximum number of active customers and available supply, the District is restricted to 289 available equivalent dwelling units (EDUs) once the L Street Plant is put online and the service connection moratorium is removed by CDPH. The 289 available EDUs are based on the 0.65 gpm/EDU demand which is approximately 50 percent less than the District's existing customer demand. This reduction is due to expected improvements in water efficiency and smaller lot sizes.

For new customers, the District plans to reserve 100 EDUs which will take Board action to use. This leaves 189 EDUs which the District may use to add connections before additional supply is required. For planning purposes, the District will add new supply when the available EDUs drop below 500. A new well is recommended in the near term to increase the available EDUs.

The District currently uses 3,000 AFY of groundwater to supply its existing customers. For new customers added to the water system, additional groundwater wells will be drilled to meet the added maximum day demand and new reservoirs will be constructed to meet the additional storage requirements. Connection fees are planned to be established prior to the removal of the moratorium to enable the District to meet its long-term water supply plan of constructing a SWP to deliver imported water to the District.

For ESP, the District plans to purchase 2,500 AFY of banked groundwater credits for 20 years to supply the first phase of the development. The purchasing of the banked water credits are through the Sacramento Groundwater Authority's water accounting framework and is used to enable the development for the short and medium term. For the long term when ESP is being developed, the design and construction of a new SWP is planned that will import surface water that will replace the need for the banked groundwater. The first phase of the SWP will be constructed to supply an initial 5,000 AFY with incremental increases of 2,500 AFY until full build out of 17,500 AFY.

A Regional Surface Water Treatment Plant (RSWTP) is being considered that could eliminate the District's need for its own SWP. The RSWTP would reduce the imported water supply cost due to economy of scale; therefore it is recommended that the District continue to participate in the RSWTP effort. The current

participants in the RSWTP are Rio Linda/Elverta Community Water District, City of Sacramento, City of Roseville, City of Folsom, Sacramento County Water Agency, Placer County Water Agency, Sacramento Suburban Water District, and California American Water Company.

Improvements planned for ESP are detailed in a separate document based on the criteria within this Master Plan. The document is called: *Elverta Specific Plan – Water Supply Strategy*.

Distribution

To improve water distribution, a 24-inch transmission loop is planned to distribute water throughout the District. This loop will also benefit areas of the water system where wells may need to be replaced due to water quality or age as well as new developments needing additional water supply. A 36-inch raw water transmission main is planned to bring water to a future SWP. The transmission main will be sized for the ultimate capacity of the surface water treatment plant.

The minimum service size for new residential services will now be increased from 1 inch to 1½ inches. The increased size is to account for the added water supply demand associated with the recently adopted uniform building code which requires fire sprinklers in all new residential homes.

Infrastructure Assessment

Each of the District's facilities were visited and assessed for improvement needs. Deficiencies were identified and prioritized. Ongoing water system improvement programs were also identified including a 200-year main replacement program, well replacement program, and Supervisory Control and Data Acquisition (SCADA) program.

Facility Deficiencies

Deficiencies are prioritized into three categories: Facility Priority A (urgent need), B (high need), and C (medium need). Currently, none of the District's facilities have any identified Priority A deficiencies. The following Facility Priority B and C improvements are needed at most well sites:

- Remove hydropneumatic tank and footing
- Replace electrical panels
- Secondary chemical containment for the chlorine feed system
- Sound attenuation enclosure for the VHS motors
- Add lower panel to protect exposed SCADA cables
- Landscaping to the well frontage
- Clear and grub well site, sterilize soil and add asphalt to well site
- Facility signage on front gate

Ongoing System Improvements

Main Replacement Program – A 200-year main replacement program was established for the District. The program will require the replacement of approximately 2,200 feet of main per year. For the replacement of these water mains, a prioritization was established as follows:

1. Restore Historical Levels of Service and Replace 2-inch Mains
2. Replace Mains with Leak History and Redundant Water Mains
3. Loop Dead End Mains
4. Replace Mains Causing Low System Pressure Areas
5. Replace Mains to Meet Current Fire Protection Requirements

Ongoing Well Replacement – The typical life span for a well is 30 to 50 years. The District's wells range in age from 2 to 57 years and approximately half of them are over 30 years old. Two plans for well replacement were created based on the concentration at which CDPH sets the MCL for HC. The priorities for well replacement include water quality, inefficient specific capacities, and age. Wells are planned to be replaced approximately every 3 to 5 years. The estimated capacity of a replacement well is 1,500 gpm which should replace 2 or 3 existing wells (with individual capacities ranging from 425 to 900 gpm).

The District is planning on conducting a hydrogeologic evaluation to determine locations of future wells that can be drilled and will not require treatment.

Valve Replacement Program – An ongoing valve new/replacement program will add or replace approximately 1 to 2 valves per year. This program is used in conjunction with the District's valve exercising program. As broken distribution system valves are identified they are replaced. This program also looks to add new valves in the system to minimize customers affected by unscheduled outages when a water main requires repairs.

Fire Hydrant Replacement Program – An ongoing fire hydrant new/replacement program will add or replace approximately 1 to 2 hydrants per year. This program will replace broken fire hydrant or add fire hydrants were the spacing does not meet the current fire protection standards.

Meter Replacement Program – It is recommended that the District budget for a 20-year meter replacement plan or approximately 230 meters per year along with replacing the remote meter reading equipment once every five years.

SCADA Improvement Program – Two of the District's well sites have full SCADA where the District can remotely control and monitor the facility. For the remaining 10 facilities, the District is limited to monitoring the operation of the facility. The District will expand the SCADA system over time to provide the same remote control and monitoring to all its facilities along with monitoring the operation of the interconnection with Sacramento Suburban Water District. The District will also plan on replacing its SCADA software and hardware every 10-15 years.

PLC Improvement Program – The expected life of a PLC is 15 years. The District should phase in a replacement plan for the PLC based on their reliability and importance to the water supply. The District should plan on replacing a PLC once every five years.

Capital Improvement Program

The next step for the District is to create a financing plan to establish the amount of annual Capital Improvements the District will approve. The financing plan will utilize a combination of District funds, grants, loans, and connection fees. The prioritized improvements are located in Section 7 of the Master Plan. The amount of annual improvements planned will be based on the available funding.

The recommended 5-year Capital Improvement Program for the District is summarized in Table ES-1.

Table ES-1. Rio Linda/Elverta Community Water District 5-Year Capital Improvement Program

	Improvement Description	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	Water Supply					
1	Replacement Well for Well 3 and 12	$100,000	$1,000,000			
2	Replacement Well for Well 4 and 6				$300,000	$2,500,000
3	PLC Replacement Program			$25,000		
4	Well 2A - Remove Hydropneumatic Tank and Footing	$10,000				
5	Well 3 - Remove Hydropneumatic Tank, Re-plumb Well Discharge and replumb discharge	$5,000	$15,000			
6	Well 3 - Sound attenuation enclosure for the VHS motors			$10,000		
7	Well 7 - Sound attenuation enclosure for the VHS motors			$10,000		
8	SSWD Interconnecton - Extend SCADA to Interconnection			$10,000		
9	Elverta Booster Station - Remove Hydropneumatic Tank, Well Pump and Destroy Well 5			$40,000		
	Subtotal Water Supply Improvements	**$115,000**	**$1,015,000**	**$95,000**	**$300,000**	**$2,500,000**
	Distribution Improvements					
10	Replace 6-inch pipe with 2,800 feet of 16-inch DI in Rio Linda Blvd North of Elverta Road	$470,000				
11	Replace 500 feet of 2-inch with 1,200 feet of 12-inch DI located north west of Q and Front St and relocate 7 services	$200,000				
12	Replace 2-inch pipe with 150 feet of 6-inch PVC on Adele Ct and relocate 3 service lines	$20,000				
13	Abandon 2,500 feet of 4-inch pipe from 10th and O St to 8th St and Oak Ln and relocate 24 service lines and 2 fire hydrants to existing 8-inch line		$45,000	$65,000		
14	Abandon 1,350 feet of 4-inch on the north side of Elkhorn Blvd, east of Rio Linda Blvd and relocate 12 services and 1 fire hydrant		$15,000	$35,000		
15	2,500 feet of 12-inch DI on Dry Creek Rd north of Elkhorn Blvd			$60,000	$300,000	
16	1,000 feet of 12-inch DI on Curved Bridge Rd near Dry Creek Rd and 1,000 feet of 8-inch PVC on Curved Bridge Rd				$40,000	$200,000
17	1,000 feet of 8-inch PVC looped to curved Bridge Rd near Dry Creek Rd and 1,100 feet of 8-inch PVC looped between West U St and Charles Ave				$35,000	$170,000
18	Automated Meter Reading Equipment (Reader)	$10,000				
	Subtotal (Distribution Improvements)	**$700,000**	**$60,000**	**$160,000**	**$375,000**	**$370,000**
	Subtotal (Water Supply Improvements)	**$115,000**	**$1,015,000**	**$95,000**	**$300,000**	**$2,500,000**
	Total CIP Improvements	**$815,000**	**$1,075,000**	**$255,000**	**$675,000**	**$2,870,000**

Notes: All estimates are based on 2014. No inflation has been included.

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Abbreviations

AB	Aggregate Base
ASCE	American Society of Civil Engineers
AWWA	American Water Works Association
BAT	Best Available Technology
BMP	Best Management Practice
CCR	California Code of Regulations
CDPH	California Department of Public Health
CIP	Capital Improvement Program
CMU	Concrete Masonry Unit
CUWCC	California Urban Water Conservation Council
DU	Dwelling Unit
DWR	California Department of Water Resources
EDU	Equivalent Dwelling Unit
EPA	Environmental Protection Agency
ESP	Elverta Specific Plan
HC	Hexavalent Chromium
HOA	Hand Off Automatic
IRWMP	Integrated Regional Water Management Plan
ISO	Insurance Service Office
MCL	Maximum Contaminant Level
MDD	Maximum Day Demand
NCMWC	Natomas Central Mutual Water Company
NEC	National Electrical Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PHD	Peak Hour Demand
PHG	Public Health Goal
PPC	Public Protection Classification
PRV	Pressure Reducing Valve

Abbreviations

PVC	Polyvinyl chloride
RCF	Reduction Coagulation Filtration
RLECWD	Rio Linda/Elverta Community Water District
RWA	Regional Water Authority
SCADA	Supervisory Control and Data Acquisition
SGA	Sacramento Groundwater Authority
SMFD	Sacramento Metropolitan Fire District
SMUD	Sacramento Municipal Utility District
SNAGMA	Sacramento North Area Groundwater Management Authority
SRF	State Revolving Fund
SWP	Surface Water Treatment Plant
UWMP	Urban Water Management Plan
VFD	Variable frequency drive
VHS	Vertical Hollow Shaft
WBA	Weak based anion exchange
WFA	Water Forum Agreement

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1. Introduction

This report presents the updated Water Master Plan for the Rio Linda/Elverta Community Water District (District). The previous District Master Plan was completed in 2000 and updated by amendment in 2003. This Master Plan describes water system planning criteria and the District's existing water supply and distribution system (water system or system). A system evaluation is included which identifies recommended improvements to correct existing deficiencies and serve new customers. Identified improvements are prioritized with associated costs to enable the District to develop a three-year Capital Improvement Program (CIP) that will be funded by water rates, connection fees, and/or grants.

1.1 District History

The District was initially formed in 1948 as an independent special water district to serve the residential and commercial areas within the community of Rio Linda. Later, the District boundaries were expanded to serve the Elverta community which is located north of Rio Linda.

The District is located north of the City of Sacramento in northwestern Sacramento County. The District is adjacent and west of California American Water Company and Sacramento Suburban Water District (SSWD), and east of Natomas Central Mutual Water Company (NCMWD). The area within the District's boundary comprises about 12,415 acres (19.4 square miles). Figure 1.1 shows a map of water purveyors surrounding the District.

1.2 Strategic Plan Objectives

The District's Board of Directors (Board of Directors) held two public workshops to develop Strategic Plan Objectives in January and March of 2013. At the March 2013 meeting, the Board of Directors approved the following Strategic Plan Objectives:

A. Maintain the Water System
   1. Meet Regulatory Requirements
      - California Department of Public Health (CDPH)
      - California Occupational Safety and Health Administration (OSHA)
      - Regional Water Quality Control Board
   2. Manage Risk of Catastrophic Failure
   3. Maintain Infrastructure
   4. Replace Infrastructure that is at the end of its economic life
   5. Protect District Property
B. Maintain a Safe Work Place
C. Provide for Future Customers
D. Use Water Efficiently
E. Meet Financial Requirements
   1. Stabilize Rates
   2. Manage Assets
   3. Maintain Insurance
   4. Build up District Reserves
   5. Pay Monthly Obligations
   6. Secure Grants and Loans

For this Master Plan, Strategic Plan Objectives A through D apply. This plan does not address Strategic Plan Objective E – *Meet Financial Requirements* other than to provide supporting documents to allow for water rate adjustments and the

securing of grants and loans to fund the recommended CIP. The water system planning criteria shown in Section 3 are based on meeting these Strategic Plan Objectives.

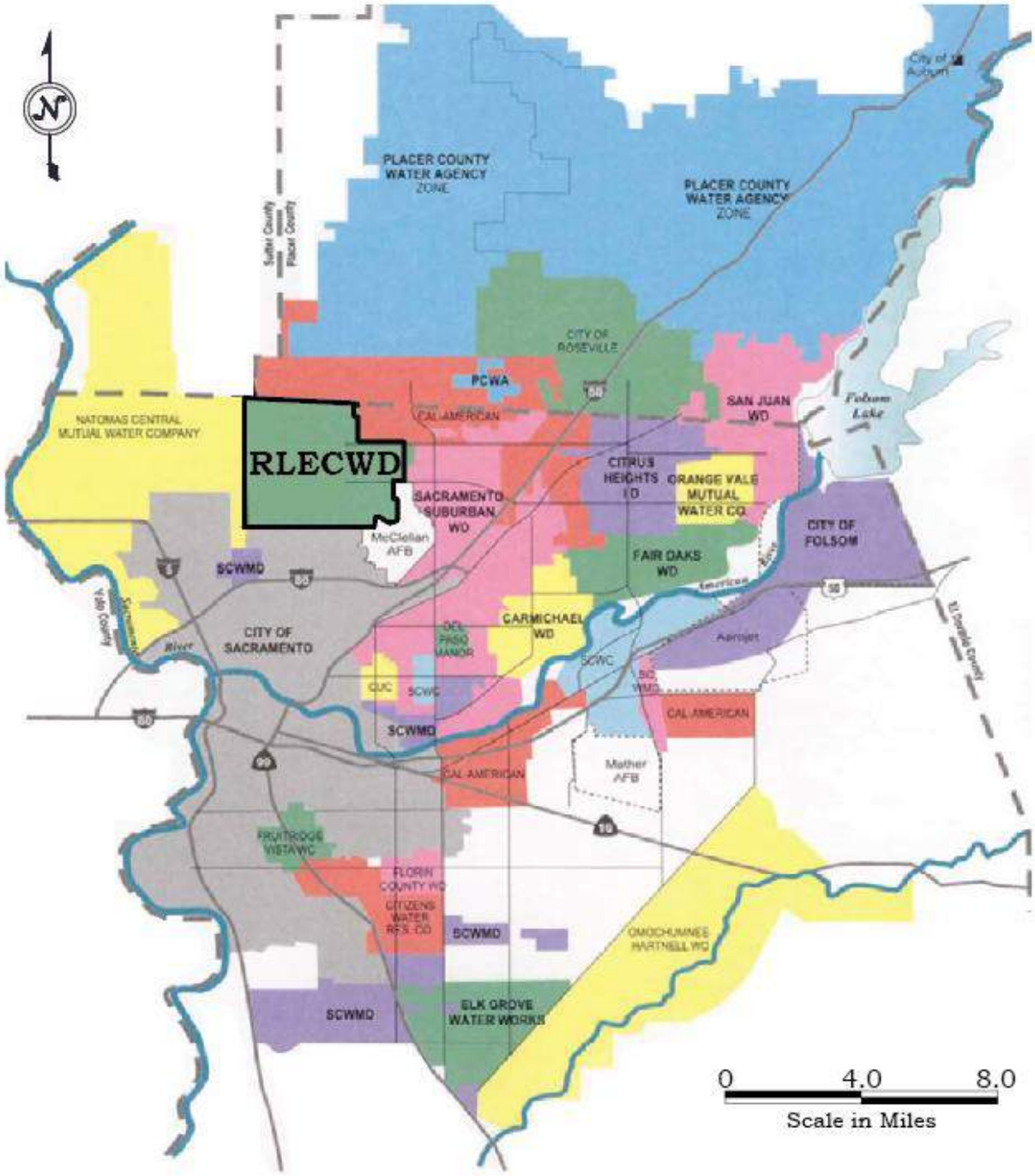

Figure 1.1 Map of Water Purveyors Surrounding RLECWD.

2. Regional Programs and Regulations

This section describes the regional programs to which the District is committed as well as the regulations with which the District is required to comply as a water purveyor regulated by the California Department of Public Health (CDPH).

2.1 Water Forum

The Sacramento Area Water Forum (Water Forum) brought together a diverse group of stakeholders to evaluate water resources and future water supply needs of the Sacramento metropolitan region with two coequal objectives: (1) provide a reliable and safe water supply for the region's economic health and planned development to the year 2030, and (2) preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River. As part of the Water Forum Agreement (WFA), each local water purveyor signed an agreement that had specific and mutual commitments (See Appendix A for the commitments specific to the District).

A summary of the District's commitments that are related to water supply are as follows:

- Agree to the 2030 projected water demand within the present geographical boundary of the District which is 17,035 acre-feet.
- Acknowledge that decisions on how to maintain the long-term sustainable yield of the north area groundwater basin will be made by the Sacramento Groundwater Authority[1] (SGA) with representation from the District.
- Construct appropriate facilities to meet its 2030 projected peak period water demand as the purveyor of municipal and industrial water within the District's current and future expanded boundaries.
- Cooperate with the Water Forum Successor Effort, SGA, and other affected agencies to obtain the surface water to be used as part of SGA's groundwater management program, if SGA determines that it is necessary to acquire surface water for use within SGA's boundaries.
- Acknowledge the responsibility for sharing in the cost to acquire surface water supplies if SGA determines such supplies are necessary to maintain the long-term sustainable yield of the Sacramento north area groundwater basin.
- Endorse construction of facilities to divert, treat, and distribute water consistent with this Purveyor Specific Agreement and the WFA including diversion structures, treatment plants, pumping stations, wells, storage facilities, and major transmission piping.
- Endorse and, where appropriate, implement the Water Conservation Element of the Agreement.
- Endorse and, where appropriate, participate in implementation of

SGA to maintain a north area estimated average annual sustainable yield of 131,000 acre-feet.

- Agree that any solution that provides for future needs will have costs. New diversion, treatment, and distribution facilities, wells, conservation programs, and required environmental mitigation will be needed. This Agreement identifies that these solutions must be equitable, fiscally responsible, and must make the most efficient use of the public's money.
- This Agreement is in force and effect for all signatories for the term of the Memorandum of Understanding, December 31, 2030.

[1]SGA is the successor to the Sacramento North Area Groundwater Management Authority (SNAGMA) and was replaced in reference within this summary.

The District plans on developing a water supply strategy that is consistent with the WFA by purchasing groundwater banking credits to supply the District's new customers in the short and medium term with groundwater. Using banked credits will enable the extraction of groundwater while not changing the long-term net withdrawal rate of the overall basin.

In the long term, the District plans on constructing a diversion from the Sacramento River, constructing a surface water treatment plant, and importing water to supply its customers. Groundwater use for new customers would only be used during dry years when the imported surface water is not available.

The District is working with other interested water purveyors such as the City of Sacramento, Placer County Water Agency, City of Roseville, Sacramento Suburban Water District, Sacramento County Water Agency, and California American Water Company on a regional surface water treatment plant diverting water from the Sacramento River. This potential regional project will reduce the overall cost of imported water to the District. The District will also prioritize efficient water use and reclaimed water if it becomes available to the District.

Importing Sacramento River water to the District helps support the objectives of the WFA that prescribes a regional conjunctive use program for the lower American River and the underlying adjacent groundwater basins. Importing Sacramento River water will further reduce the dependency of water from the American River and potentially allow the District to provide supplemental water from the Sacramento River during dry years to purveyors that rely on the American River for its supply.

2.2 PF-8 Requirement

In 1998, the Sacramento County Board of Supervisors approved an update of the Rio Linda/Elverta Community Plan. The action included adoption of the Community Plan Policy PF-8 (PF-8) that states:

> "In the new growth area in eastern Elverta, and other comprehensively planned development areas, entitlements for urban development shall not be granted until adequate, long term agreements and financing for supplemental water supplies are

in place. “Supplemental water supplies” means any water supply (i.e. surface water, reclaimed water, etc.) that results in no net increase in groundwater pumping. The land use planning process may proceed, and specific plans and rezoning may be approved, while water plans is being developed.”

The PF-8 language appears to have been modified later during the Elverta Specific Plan (ESP) environmental process per Tricia Stevens, Principal Planner Sacramento County Department of Community Development. The modified language was included as part of the District’s approved water supply assessment dated August 26, 2002:

“The County of Sacramento and the Cities of Citrus Heights, Folsom, and Sacramento, through a Joint Powers Agreement, have established the Sacramento North Area Groundwater Management Authority ('SNAGMA') to implement a groundwater management program to protect the long-term sustainable yield of the groundwater basin underlying the North Area Basin. In the new growth area in eastern Elverta, and other comprehensively planned development areas, entitlements for urban development shall not be granted until the Board of Supervisors makes one of the following findings:

(i) that an agreement between the developer and either the domestic water purveyor serving the area (the Rio Linda/Elverta Community Water District and/or Citizens Utilities Company) or the SNAGMA has been executed which:

(a) assures that arrangements are in place to deliver supplemental water supplies (i.e. surface water, reclaimed water, etc.) within the boundaries of the SNAGMA in quantities sufficient to prevent a long-term net increase in groundwater pumping resulting from the proposed development and

(b) assures that funding is made available to either the domestic water purveyor or the SNAGMA for all costs for delivery of such supplemental water supplies, or

(ii) that an appropriate groundwater management program has been adopted by the Sacramento North Area Groundwater Management Agency ("SNAGMA') to protect the long-term sustainable yield of the groundwater basin underlying the area for which an entitlement is sought, and that the water use resulting from such entitlement is subject to and consistent with sum groundwater management program.

The land use planning process may proceed, and specific plans and rezoning may be approved, prior to this finding being made by the Board of Supervisors.”

PF-8 was put into place in order to protect and regulate the long-term sustainable yield of the groundwater basin underlying the north area basin that is managed by the SGA. In summary, PF-8 allows granting of

entitlements for new growth within specific plan areas and other comprehensively planned areas by prohibiting any net change in groundwater pumping in the north area basin. The District can accomplish this by:

1. Importing surface water from either the Sacramento or American Rivers.
2. Importing reclaimed water to offset groundwater pumping.
3. Offsetting groundwater pumping by:
   a. Purchasing banked groundwater from a SGA member.
   b. Purchasing pumped groundwater from a SGA member.
4. Constructing a water saving project that reduces pumping from within the north area basin.

As stated in Section 2.1, the District plans to meet the requirements of PF-8 by purchasing banked groundwater in the short and medium term and treating and importing Sacramento River water as its long-term water supply.

2.3 California Water Works Standards

The CDPH Drinking Water Program regulates public drinking water systems. Drinking-water related statutes and regulations enforced by CDPH are from Title 22 of the California Code of Regulations (CCR). In addition, CDPH provides funding opportunities for water system improvements through Proposition 84, Proposition 50, and the Safe Drinking Water State Revolving Fund (SRF).

To remove the service moratorium as stated in Section 2.4, the District must comply with CCR Section 64554(a) requiring that "At all times, a public water system's water source(s) shall have the capacity to meet the system's maximum day demand (MDD)" along with CCR Section 64554(a)(1) and (3) that require "for 1,000 or more service connections, the system shall be able to meet four hours of peak hourly demand (PHD) with source capacity, storage capacity, and/or emergency source connections."

In 2012 and 2013, the District constructed Well 15 and reactivated Well 3 which, together, added 3,300 gallons per minute (gpm) source capacity to meet both MDD and PHD. In 2014, the District plans to construct a new reservoir and pump station (L Street Plant) that will add 3,600 gpm of supply to meet PHD.

In 2013, the District completed an amendment to SRF Applicant Engineering Report (Appendix B) that evaluated the District's existing demand and supply in conformance to the California Water Works Standards. The report shows that with the completion of the L Street Plant the District's supply will exceed its MDD and PHD.

2.4 California Department of Public Health Compliance Order Service Connection Moratorium

In November 2007, CDPH issued Compliance Order 01-09-07-CO-004 to the District that placed a service connection moratorium on the District prohibiting any new service connections until additional water

supply is added to the water system (See Appendix C).

Since that time, the District received a loan through California Proposition 84 that enabled the construction of a new well (Well 15) that went online in 2013. The District is currently using the remaining funds from the loan to construct the L Street Plant which is planned to go online in November 2014. When the reservoir and pump station goes online, the District's peak hour and maximum day supply will exceed its demand and CDPH is expected to remove the service connection moratorium (see Section 5.1).

2.5 Conservation Program and 20x2020 Impacts

The District maintains a conservation program compliant with the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding, of which the District is a signatory. In addition, the District's conservation program is compliant with the State Water Code and Department of Water Resources Urban Water Management Plan (UWMP) requirements.

A group of new legal requirements was passed in 2009 intended to improve water management throughout California. One of the new requirements is known as 20x2020, and requires the District's historic water demand to be reduced 20 percent by the year 2020. The California Department of Water Resources (DWR) interprets this law as a requirement for every urban water supplier to each reduce their demands 20 percent by 2020. The District's 2010 UWMP addressed this requirement and provided a description of the projected reduction goals and implementation methods to achieve the goals. Despite overall demand reductions, water demand is still a cyclical quantity that varies with hydrologic year type, economic factors, and other human behavior-based phenomena that is not fully understood.

2.6 Sacramento Metropolitan Fire District's Fire Flow Requirements

The Sacramento Metropolitan Fire District (SMFD) is a special-purpose district that provides fire protection services within the communities of Rio Linda and Elverta. The District will meet SMFD's fire flow requirements. Currently, portions of the system do not meet these requirements because they were installed when the fire requirements were lower. The District will size all new water mains that are replacing existing water mains or added to the water system to meet current SMFD fire protection requirements.

The District's fire flow supply standard is to meet the highest fire flow requirement during a maximum day event at a minimum pressure of 20 psi.

For customers requesting new service or upgrading their property, the procedure for determining fire flow requirements for buildings is in accordance with the 2013 California Fire Code.

For fire flow supply planning purposes, the District will use typical fire flow requirements to size its new mains for

residential, commercial, and industrial land uses as shown in Table 2.1.

Table 2.1 Typical Fire Flow Requirements

Land Use	Fire Flow (gpm)	Duration (hours)
Residential	1,500	2
Commercial	3,000	3
Industrial	4,000	4

For pipeline design, SMFD requires a maximum spacing for hydrants of 500 feet in residential areas and 300 feet in commercial areas. For industrial areas, the SMFD will provide the spacing requirements based on each building's hazard.

2.6.1 ISO Rating

The Insurance Service Office (ISO) assigns every community a Public Protection Classification (PPC). This classification is based on a scale of 1 to 10. A score of 1 indicates superior fire protection based on the Fire Suppression Rating Schedule manual. Lower ISO PPC classifications reduce building fire insurance premiums.

About 40 percent of the classification evaluation is based on the community water supply. ISO evaluates whether a community has sufficient fire flow after maximum daily use and includes the survey of all water supply components (pumps, storage, filtration, etc.). For instance, in order to obtain a classification of 8 or lower, ISO requires a minimum water supply of 250 gpm for a continuous 2-hour duration fire flow in the area. This can also be obtained with alternative sources but these sources would need to be within a 5-minute response time radius.

According to SMFD, Rio Linda has an ISO rating of 4 in areas with hydrants and an ISO rating of 8B in areas without hydrants.

Class 8B is a PPC for communities that provide superior fire protection services and fire alarm facilities but lack the water supply required for a PPC of Class 8 or lower. The minimum criteria for Class 8B is as follows:

- The community has an adequate number of well-organized and properly trained firefighters.
- The community has reliable emergency communications.
- The community has adequate fire station facilities.
- The community has operational records.
- The community has the capacity to deliver an uninterrupted flow of 200 gpm for 20 minutes beginning within 5 minutes of the first arriving engine.
- The fire district must have one suitably equipped engine that responds to all first alarm structural fires.
- Pump capacity must be at least 750 gpm at 150 psi.
- The engine must have a water tank in accordance with the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus, "Pumper Fire Apparatus."*
- The community does not need to meet the water supply requirement of 250 gpm for 2 hours necessary for PPC Class 8 or lower.

2.7 California Building Standards Commission – Sprinkler Requirement for Residential Homes

Effective January 2011, the California Building Code adopted the addition of residential fire sprinklers in all new one-and two-family dwellings and townhouses constructed within California.

East Bay Municipal Utility District (EBMUD) completed a study to determine the minimum service size to meet the new fire sprinkler requirement (See Appendix D). This study recommended a standard 1.5-inch tap and copper lateral service configuration for all new combined fire and domestic services, with a minimum 1-inch meter for a typical application where the total flow is less than or equal to 50 gpm. Meters for all new townhouses and one- and two-family dwellings shall be sized to supply the greater of either:

- Fire sprinkler demand plus at least 15 gpm domestic allowance, or
- Total domestic peak demand based on fixture unit count.

To allow for the additional flow requirement for the residential sprinklers, the minimum service line for a new customer will be upsized from 1 inch to 1½ inches to allow for the additional capacity needed to supply the residential sprinkler requirements when the water service moratorium is removed.

2.8 Regional Water Authority – Integrated Regional Water Management Plan

The Regional Water Authority (RWA), a joint powers authority that serves and represents the interests of water providers and associated agencies in the greater Sacramento, Placer, and El Dorado County region, developed an Integrated Regional Water Management Plan (IRWMP) which is a comprehensive planning document to encourage regional strategies for management of water resources. The website for the IRWMP is:

http://www.rwah2o.org/rwa/programs/irwmp

The website states:

> "Stakeholders that have water management project plans with multiple benefits are encouraged to let us know about them. Since the IRWMP is a living document, project descriptions are welcome anytime for consideration of being added to the IRWMP. To be eligible, projects must have a direct relationship to water management."

To input information regarding a proposed project, visit the American River Basin Integrated Water Management Web Interface at:

http://irwm.rmcwater.com/rwa/login.php

The District plans to submit projects that are consistent with the IRWMP to RWA in order to receive regional grant funding from either the state or federal governments. The following three projects are recommended to be submitted to IRWMP:

- Regional Surface Water Treatment Plant: This project would reduce the diversion of water from the American River and the District's dependence on groundwater.
- New Transmission Mains: This project would enable the District to provide backup surface water to the region when the new surface water treatment plant is constructed.
- Replacement Wells: Due to the proposed hexavalent chromium MCL that CDPH is planning to implement, over half of the District's water supply would be at or exceed the proposed MCL of 10 ppb. Because of the age of the wells, the District plans to replace the wells to avoid treatment rather than equip these wells with treatment.

3. Water System Planning Criteria

As stated in Section 1.2, the District's Water Planning Criteria is based on the Board of Director's Strategic Plan Objectives and industry standards.

3.1 Water Supply

Strategic Plan Objective A.1 – *Meet Regulatory Requirements* directs the District to meet CDPH's waterworks standards. These standards require that the water supply exceed the system demands which is also required to lift the moratorium (as stated in Section 2.4), which would enable the District to add new customers and meet Strategic Plan Objective C – *Provide for New Customers*.

The water system demand is described in the following terms:

Equivalent Dwelling Unit (EDU) – The unit used to determine system demand for water facilities. For the District, an EDU is based on a new single-family residential home that is connected to the water system. The water demand for new connections used to calculate EDUs has been determined to be lower than the historic demand. This lower demand is due to the higher density of homes and the requirements of water saving devices in new residential homes. This lower demand analysis is further discussed in Section 6.1.

Annual Demand – The total volume of water delivered to the system in a full year expressed in million gallons (MG) or acre-feet.

Maximum Day Demand (MDD) – The largest volume of water delivered to the system in a single day expressed in gpm.

Peak Hour Demand (PHD) – The maximum volume of water delivered to the system in a single hour expressed in gpm.

Fire Flow Demand – The highest fire flow required for the District or specific development. Within the District the highest fire flow is based on a typical heavy industrial development.

3.1.1 New Connection Supply

For the District to add new customers to the water system, two requirements must be addressed:

1. The existing water supply must be increased to lift the moratorium as stated in Section 2.4
2. A conjunctive water supply approach must be established to meet the specific plan requirements of PF-8 outlined in Section 2.2 and the District's Water Forum requirements as outlined in Section 2.1.

The District is currently in the process of completing its last water supply improvement (L Street Plant) that is required to lift the moratorium. The District met with all water purveyors in the area to develop a water supply plan that would meet the PF-8 requirement and the WFA.

The water supply plan for new connections will be as follows:

3.1.1.1 Short- and Medium-Term Water Supply

Until the new surface water treatment plant (SWP) is constructed, any new connections will be supplied with groundwater. Community plans will be required to offset the additional groundwater pumping with groundwater banking credits that are overseen by SGA (See Appendix K).

3.1.1.2 Long-Term Water Supply

It is recommended that the District construct a SWP once funding is obtained to provide imported surface water to offset the District's groundwater usage. It is recommended that a project funding plan be created to finance the SWP and its associated piping. The project funding plan should consider including the following to finance the project:

1. Increase connection fees
2. Reduce the project cost through regionalization
3. Grants and loans

At build out, the water supply requirement will be 17,500 acre-feet, of which the District will continue using approximately 3,000 acre-feet of groundwater. The District plans to compensate the water supply deficit of 14,500 acre-feet with imported surface water from the Sacramento River.

The District is currently in negotiations with Natomas Central Mutual Water Company (NCMWC) to lease 5,000 acre-feet of their surface water rights.

The capacity of the SWP is planned to be phased in 5 million gallons per day (MGD) increments with an ultimate treatment capacity of 25 MGD. The SWP property and raw water pipeline will be sized for the ultimate capacity. Refer to Section 6 – New Customers for a more specific phasing of the long-term water supply.

3.1.2 Maximum Day Supply

Maximum day demand must be supplied with its largest supply pump out of service. This criterion minimizes impacts on its customers by eliminating the risk of a water pressure issue if its largest water supply unit should fail during a high demand day in the summer.

3.1.3 Peak Hour Supply

Peak hour demand must be supplied by source and storage with the largest booster or well pump out of service. This criterion minimizes impacts on its customers by eliminating the risk of a water pressure issue if its largest pumping unit should fail on a high demand time in the summer. This is similar to the maximum day demand criterion.

3.1.4 Maximum Day Plus Fire Flow

Maximum day demand plus fire flow must be supplied by source and storage. This criterion allows the District to be able to supply its highest fire flow requirement during the high water demands in the summer.

3.1.5 Emergency Backup Supply (Power Outage)

Emergency backup supply needs to accommodate for water usage during power outages. CDPH has suggested that the District meet between an average day to a maximum day demand for emergency backup supply. Typically, power outages do not generate surges in water demands

because many water uses also require electricity, such as washing machines and irrigation systems. Therefore, the criterion for emergency backup supply is one average day demand. This can be supplied from both sources of supply and storage. The emergency backup supply must be distributed throughout the District to avoid creating low pressure areas during the outages.

3.1.6 Water Storage Criteria

Similar to water supply capacity, criteria have also been defined for determining the water storage capacity required to meet diurnal operational peaks and emergency conditions. The storage required for emergency conditions include reserves to meet both fire flow needs and supply production outages.

The total storage requirement is as follows:

Total Storage Required =
Operational + Fire Flow + Emergency

Total Storage Required =
(PHD) x (4 Hrs)
+ (Highest Fire Flow) x (Duration)
+ (25% MDD)

Each of the total storage components are defined as follows:

3.1.6.1 Operational Storage

This storage volume is used to meet high demands during the day that are above the nominal supply source production rate. The production rate is augmented by flow from storage reservoirs into the distribution system during the peak demand periods. The reservoirs are filled when demands drop below the nominal production flow rate. The volume of water reserved for operational storage requirements shall be at least equal to the peak hour demand minus the maximum day demand for 4 hours (2 hours of the differential between PHD and MDD in the morning and evening).

3.1.6.2 Fire Storage

Firefighting storage requirements have been identified in the Insurance Service Office (ISO) guidelines and National Fire Code. The maximum fire flow rate must first be identified. This flow must then be multiplied by the required duration for which that flow rate must be maintained to estimate the total volume needed for fire flow reserve storage. The resulting fire flow volume must be stored in reservoirs. For the District, the highest fire flow requirement is for industrial systems which require 4,000 gpm for 4 hours.

3.1.6.3 Emergency Storage

A reserve of treated water is needed to meet emergencies during periods when normal supply is interrupted. Such conditions may arise due to power failure, loss of raw water supply, pumping equipment or pipeline failure, or taking facilities out of service for repair. The required emergency storage volume is a function of the diversity of the sources of supply, the diversity of the production facilities, and the seasonal variations in demand.

The emergency storage design criterion for the District is recommended to be 25 percent of the MDD. This criterion is based on the District's high diversity of water supply coming from both wells and storage. This criterion will enable the District to supply the system for 6 hours if there was a catastrophic failure in its water supply during high demands as per Strategic Plan

Objective A.2 – *Manage Risk of Catastrophic Failure*.

3.2 Water Quality

This section describes water quality criteria that were developed from Strategic Objective A.1 – *Meet Regulatory Requirements*.

To meet regulatory requirements, the water quality criterion was established based on regulations from CDPH and Title 22 from the California Code of Regulations. Constituents in the water supply must not exceed the maximum contaminant level (MCL). MCLs are set by the U.S. Environmental Protection Agency (EPA) and CDPH for drinking water quality and are set as close as possible to public health goals (PHG) considering best available treatment technology and cost. PHGs are the concentrations of drinking water contaminants that pose no significant health risk if consumed for a lifetime, based on current risk assessment principles, practices, and methods.

The District currently monitors for all the constituents required in Title 22 and has a CDPH approved water quality monitoring program.

3.2.1 Treatment Criteria

The Board of Directors has stated that the District's primary goal for treatment is avoidance. If avoidance is not possible, the following criteria will be used:

A. For all constituents except secondary standards (Iron and Manganese):
    a. Once the constituent reaches 80 percent of the MCL, confirmation samples will be taken and a water supply impact report will be completed to determine the best available treatment and its cost along with the impact of the loss of water.
    b. If a source of supply exceeds an MCL, the well capacity will be replaced or treatment will be added to the source.
    c. If treatment is necessary, the treatment goal is 80 percent of the MCL.

B. Iron and Manganese
    a. Once the source water reaches half the MCL, confirmation samples will be taken and a water supply impact report will be completed to determine the best available treatment and its cost along with the impact of the loss of water.

       Treatment will be planned to reduce the manganese in the source water to non-detect levels (10 ppb) or the well will be replaced. This criterion is based on the long-term financial and maintenance impacts of manganese building up in the water system over time.

There are three constituents that are at levels that may require treatment in some of the District wells. They are arsenic, manganese, and hexavalent chromium (HC). See section 4.3 for a summary of the District's water quality results. Appendix E presents the detailed water quality results for manganese at Well 3 and HC for the entire District wells (See Appendix E). The following paragraphs describe these constituents in more detail.

3.2.2 Arsenic

In 2006, the federal EPA reduced the MCL for arsenic in drinking water from 50 to 10 ppb. Following this federal change in the arsenic level, the State of California adopted the same MCL in November 2008.

Per the treatment criteria in Section 3.2.1, if concentrations of arsenic exceed the MCL, the water supply must be blended or treated to obtain an effluent concentration of 8 ppb.

Based on a hydrogeological study that was completed for the City of Sacramento, the arsenic levels are higher on the westerly side of the District and at shallow and deep levels within the aquifer (See Appendix F). Therefore, new and replacement wells should be located in the easterly part of the District.

3.2.3 Hexavalent Chromium

The current MCL for total chromium in California is 50 ppb and the federal MCL is 100 ppb. In August 2013, CDPH proposed an MCL specifically for hexavalent chromium (HC), a subset of total chromium, at 10 ppb.

Per the treatment criteria in Section 3.2.1, if concentrations of HC exceed the MCL that CDPH adopts in the future, the water supply must be blended or treated to obtain an effluent concentration of 80 percent of the adopted MCL.

Currently, there is no criterion for new well placement based on HC because there has not been a hydrogeological investigation of HC concentrations in the District. See Section 5.2.2.2 for recommendations regarding conducting such a study.

3.2.4 Manganese

In California, the secondary MCL for manganese is 50 ppb. Secondary MCLs are water quality standards which are set for aesthetic reasons rather than health and safety reasons. Although secondary MCLs are not federally enforceable, they are enforceable for California community water systems. American Water Works Association (AWWA) and American Society of Civil Engineers (ASCE) have recommended that manganese be treated to a level below 20 ppb and the water industry has set an informal limit of 10 ppb. Water System testing has shown that at 20 ppb, manganese can build up over time in the distribution system and cause water quality complaints such as discolored water, stained plumbing fixtures, and unpleasant metallic taste. To avoid these effects, it is recommended that the District treat groundwater supplies that exceed the detectable limit (10 ppb) for manganese.

Based on the hydrogeological study that was completed for the City of Sacramento, manganese concentrations are generally lower in the eastern side of the District and at depths shallower than 400 feet (See Appendix F). Therefore, new and replacement wells should be located on the easterly part of the District.

3.3 Facilities

This section describes the criteria for facilities based on the following Strategic Plan Objectives:

A. *Maintain the Water System*
   A.1. *Meet Regulatory Requirements*
   A.2. *Manage Risk of Catastrophic Failure*

A.3. *Maintain Infrastructure*
A.4. *Replace Infrastructure that is at the end of its economic life*
A.5. *Protect District Property*
B. *Maintain Safe Work Place*
D. *Use Water Efficiently*

These objectives are applied to the priorities listed in the following sections.

3.3.1 Facility Assessment

The goal of this section is to provide a criterion that will be used as a basis for assessing the District's existing facilities. The purpose of the assessment is to analyze the components at the well sites in order to identify deficiencies that could compromise water supply reliability and to add the associated remedies to the CIP. Recommendations to address each deficiency are classified into three categories: Facility Priority A, Facility Priority B, and Facility Priority C.

Facility Priority A – Urgent Need (Health and Safety Immediate): deficiencies that require immediate corrective action to remedy a condition that poses an imminent threat to employees, water quality, or the facility.

Facility Priority B – High Need: deficiencies that need to be addressed within the near term (within 5 years). Recommendations for Priority B deficiencies improve reliability, reduces the risk of compromising the water supply/quality, and reducing overall facility operating costs.

Facility Priority C – Medium Need: deficiencies that require attention in the medium or long term (within 10 years). Priority C recommendations are related to best operating practices, aesthetics, efficiency, and meeting new fire protection standards.

All District facilities should be assessed approximately every three years and assessments should be added to an updated CIP.

The assessment shall be as follows:

1. Visit each of the District's water supply and storage facilities.
2. Interview the operators to determine how well facility equipment operates and what improvements are recommended.
3. Review any District documents related to the District's infrastructure.
4. Review electrical bills along with SCADA and operational data to determine the efficiency of each facility.
5. Identify preliminary deficiencies and discuss with District staff.
6. Finalize list of deficiencies, identify priority type, and develop corrective solutions.
7. Update CIP with updated assessment solutions.

3.3.2 Well Replacement

The District will implement a Well Replacement Program to replace existing wells. Based on conversations with local hydrogeologists, the life expectancy of a typical well is approximately 30–50 years. The criteria for replacing wells are as follows:

- Replace wells that cannot be operated due to poor water quality.

- Replace wells with inefficient specific capacities.
- Replace current wells that exceed 50 years or are showing signs of deterioration. The maximum replacement schedule will be approximately every 3 years. This could be accelerated based on new water quality regulations (HC) or premature well casing failures.
- Replace no more than 2 to 3 smaller capacity wells with one new larger capacity well. The estimated capacity of the replacement well is 1,500 gpm.
- Minimum well site property dimensions are 120 ft by 120 ft.
- Optimally locate wells near existing or future storage sites to minimize operating costs from re-pumping water.
- Optimally locate wells for ideal water quality to avoid treatment as per Section 3.2.

3.3.3 Minimum Pumping Efficiency

In December 2011, a study by the California Public Utilities Commission (See Appendix G for front page of the report) stated that:

> "Southern California Edison reports that 28,000 pump tests had wire-to-water efficiencies in the range of 44 to 63%. Data from the OEEP pilot study indicates that on average pump station wire-to-water efficiencies in the range of 70 to 72% is a reasonable target to achieve in practice for water well or booster pumping plants."

The website for this report is located at:

http://www.cpuc.ca.gov/NR/rdonlyres/8EDE92CE-72AB-4ED6-AB9D-73C2601F2ED6/0/OEEP_Application_Guide.pdf

The overall efficiency of each of the pumping units should be evaluated annually. When the overall efficiency during normal operations of the pumping unit drops below 70 percent, a pump evaluation should be completed to determine if the pump should be scheduled for replacement. The evaluation should look at the cost of replacement, its significance to the system's water supply, and the hours of its operation. The pump evaluation requirement satisfies Strategic Plan Objectives A.4 – *Replace Infrastructure* and D – *Efficient Use of Water*.

3.3.4 SCADA

Maintaining and improving the District's Supervisory Control and Data Acquisition (SCADA) system meets the following Strategic Plan Objectives:

A.1. *Meet Regulatory Requirements*
- Monitoring the pressure and flow of the water system to ensure that it meets CDPH's minimum pressure requirements.

A.5. *Provide Facility Security*
- Providing facility intruder alarms.

D. *Use Water Efficiently*
- Monitoring operational data of each facility which enables the District to make operational changes to reduce costs and validate these savings from the SCADA data.

The criterion for the District is to have a SCADA system that will monitor the District operations and system alarms along with the ability to make operational changes remotely. The SCADA system will include the following minimum attributes at its water supply facilities:

1. Monitoring:

   Flow, pressure, pumping water level, chlorine residual (where available), pump run time, energy consumption, alarms, utility power outages, pump starts, reservoir water levels, and chemical storage levels

2. Remote Control:

   Unit hand/off/auto control, flow (for VFD units), pressure (set point changes), alarm resetting, pump selection, generator exercising, district wide control strategies, and chlorine feed rate adjustments

3.4 Distribution System

Adding new water mains or replacing existing water distribution pipes meets the following Strategic Plan Objectives:

A.1. *Meet Regulatory Requirements*
- Replacing undersized water mains to meet minimum pressures.
- Improving water quality by eliminating dead end water mains through looping.

A.2. *Manage Risk of Catastrophic Failure*
- Adding new gate valves at intersections to reduce affected customers due to a main failure.

A.3. *Replacing Infrastructure*
- Implementing a main replacement program.

C. *Provide for Future Customers*
- Designing the size of the replacement mains to meet current fire protection standards which will minimize impacts on new customers within the District.
- Upsizing a new development's water mains to meet the District's overall distribution system strategy.

D. *Use Water Efficiently*
- Replacing deteriorated water mains and services that are leaking.

These objectives are applied to the priorities listed in the following sections.

3.4.1 Water Distribution System Sizing

The District's distribution system criteria are as follows:

- Primary transmission mains: 16-inch and larger, ductile iron
- Secondary transmission mains: 12-inch, ductile iron or C900 PVC
- Distribution mains: 8-inch and smaller, C900 PVC
- Cul-de-sacs: 6-inch, C900 PVC
- Fire hydrants:
  - Dry barrel type (6" x 4" x 2½" x 2½")
  - 500-ft spacing for residential
  - 300-ft spacing for commercial
- 1-1/2-inch services to supply residential fire sprinklers

The pipelines in the distribution system shall also be sized based on the criteria described in Table 3.1 for normal, maximum day plus fire flow, and peak hour demand conditions.

Table 3.1 Water distribution system criteria

Maximum Day Demand	
Maximum velocity	6 fps
Pressure range	40 to 70 psi
Maximum Day Demand plus Fire Flow	
Maximum velocity	10 fps
Desirable velocity	4 to 7 fps
Pressure	The minimum pressure in the vicinity of a fire shall be 20 psi
Peak Hour Demand	
Maximum velocity	7 fps
Pressure	The minimum residual pressure during a peak hour demand shall be 30 psi

3.4.2 Main Replacement Program

To determine a feasible main replacement program, the District contacted other water purveyors in the area to see what replacement goals they were trying to achieve. Both Carmichael Water District and Sacramento Suburban Water District have a 100-year main replacement goal. One of the reasons their goal is 100 years is that a large section of their system is unmetered and located in customers' backyards. The District is fully metered and most of the water mains are in streets, therefore, it is recommended that the District implement a 200-year main replacement program instead of a 100-year program to replace its existing water mains. The District currently has approximately 443,700 feet of water main. For a 200-year main replacement goal, the following would be an annual water main replacement goal:

$$\text{Annual Goal} = \frac{443{,}700}{200} \approx 2{,}200 \text{ feet per year}$$

To achieve this goal, the District will need to replace an average of 2,200 feet of water main each year. By being proactive and achieving the main replacement goal, the District can reduce the occurrence of leaks that can lead to larger and more expensive problems. The primary cause of main deterioration is corrosion. Hard water (water rich in minerals) tends to corrode pipes more quickly. The following subsections describe the criteria for determining the priorities of the main replacement program.

3.4.2.1 Distribution System Priority 1: 2-inch Mains and Maintaining Level of Service

The 2-inch water mains are undersized and cannot provide adequate service to customers. They are typically made of cast iron and, over time, can corrode and further restrict the effective main diameter causing large variations in system pressure.

This priority also includes improvements that are required to restore a historic level of water service that has been reduced due to changes in the water system. These water system changes may be a result of removing deteriorated mains or a supply source due to age or water quality.

3.4.2.2 Distribution System Priority 2: Mains with Frequent Leaks and Redundant Mains

The second priority is replacing mains with leaks along with redundant mains. Replacing mains with leaks minimizes water service disruptions to residents and businesses, increases the efficiency of the water system by reducing unaccounted water, and reduces the District's water system maintenance costs. Eliminating redundant water mains reduces maintenance costs and potential leaks and increases the ability to isolate sections of the water system.

3.4.2.3 Distribution System Priority 3: Dead-End Water Mains

The third priority is replacing mains at dead ends and creating loops to eliminate dead ends. There are several dead-end water mains throughout the water system. Water in these mains can become stagnant, lose their chlorine residual, and concentrate sediment. The sediment can build and, when disturbed, create turbid water to customers. The dead-end water mains also require additional maintenance by requiring District staff to routinely flush the dead-end lines to keep the water fresh and remove the sediment. Over time, biofilm can also form on the inside of these mains. Biofilm can create water quality complaints and cause the system to fail distribution system sampling.

3.4.2.4 Distribution System Priority 4: Low Pressure Area/ High Velocity Water Mains

The fourth priority is replacing mains in areas of low pressure. The minimum pressure within the District during normal operations is 40 psi. Water mains will be upgraded to eliminate areas that show pressures lower than 40 psi. A majority of 4-inch mains are being replaced under this priority because of the potential of high velocities developing in the water mains during high demand times. High velocities can cause large pressure variations and may cause localized pressure drops to below 40 psi. High velocity water in mains results in increased friction headloss in pipes and potential water hammer.

3.4.2.5 Distribution System Priority 5: Fire Protection Upgrade

The fifth priority is replacing mains to increase fire flow capacity to meet fire flow requirements. For the main replacement program, fire protection for areas of high vulnerability should be a priority for public safety and should be in the order shown:

i. High density areas, industrial and commercial
ii. Residential multifamily areas
iii. Residential low density areas

As water mains are replaced based on higher priorities, localized fire protection throughout the system will improve.

3.4.3 Water Service Upgrades for Residential Sprinklers

As stated in Section 2.6, all new one- and two-family dwellings and townhouse construction in California must include residential fire sprinklers in accordance with the California Building Code. The minimum service size to accommodate the additional demand from sprinklers are shown in Table 3.2.

Table 3.2 Minimum Service Sizes

Minimum Service Sizes	
Residential	1½ inches
Commercial	2 inches

Meters for all new townhouses and one- and two-family dwellings shall be sized to supply the greater of either:

- Fire sprinkler demand plus at least 15 gpm domestic allowance, or
- Total domestic peak demand based on fixture unit count.

3.5 Water Efficiency

The District completed its draft 2010 Urban Water Management Plan (Plan) in December 2012. The Plan is located on the District's website.

The Plan was submitted to the California Department of Water Resources (DWR). The plan was approved by DWR in January 2014. Section 5 of this Plan outlines the District's conservation and demand management efforts that are planned to be achieved through the foundational and programmatic best management practices (BMP).

As shown in Section 3 of the Plan, through the previous implementation of BMPs, the District has seen a reduction of demand per customer and looks to meet the required 20 percent reduction in demand by the year 2020 (20x2020).

A large percentage of the District's existing customers have older homes built on large lots. These types of customers tend to use more water than the average residential customer in Sacramento County.

Over time, the District water use per customer will move towards the average use in the area. This is due to the water efficiency per customer rising for the following reasons:

1. New customers will be required to have water efficient appliances, sprinklers, and landscaping.
2. Existing customers are being educated to save water and are able to participate in water saving programs such as appliance rebates (toilets, washing machines, hose sprayers, etc.).
3. The main replacement program lists the replacement of leaking water mains as the highest priority.

The District bases its demand projections for new customers on the water demand for residential homes that are required to have water efficient appliances and landscaping.

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4. Existing System

This section describes the existing system as of the date of this report.

4.1 Existing Customer Demands

There are 4,617 total existing customers with a recorded high of 4,483 active customers that the District serves. The District is prohibited from adding any additional services or increasing supply to any existing services until the moratorium is lifted as stated in Section 2.4.

Ultimate build out water demands depend on many factors. Land use types, building densities, and development style can all change over time which affects water demands. This Master Plan develops a range of projected demands based on differing land use and development styles.

Future demands are projected by applying unit water demand factors to land area. Usually, total water demands are projected by adding unit water demand factors for each projected land use; however, this Master Plan assumes a different approach due to the large areas of undeveloped, rural land-use types in the service areas that could develop at a variety of densities.

Current unit water demand factors for neighboring water agencies with similar type development and customer base are investigated to develop global service area unit water factors for future development in the District. Figure 4.1 presents the unit water demand (AFY/acre) over the last 10 years for neighboring agencies and the District.

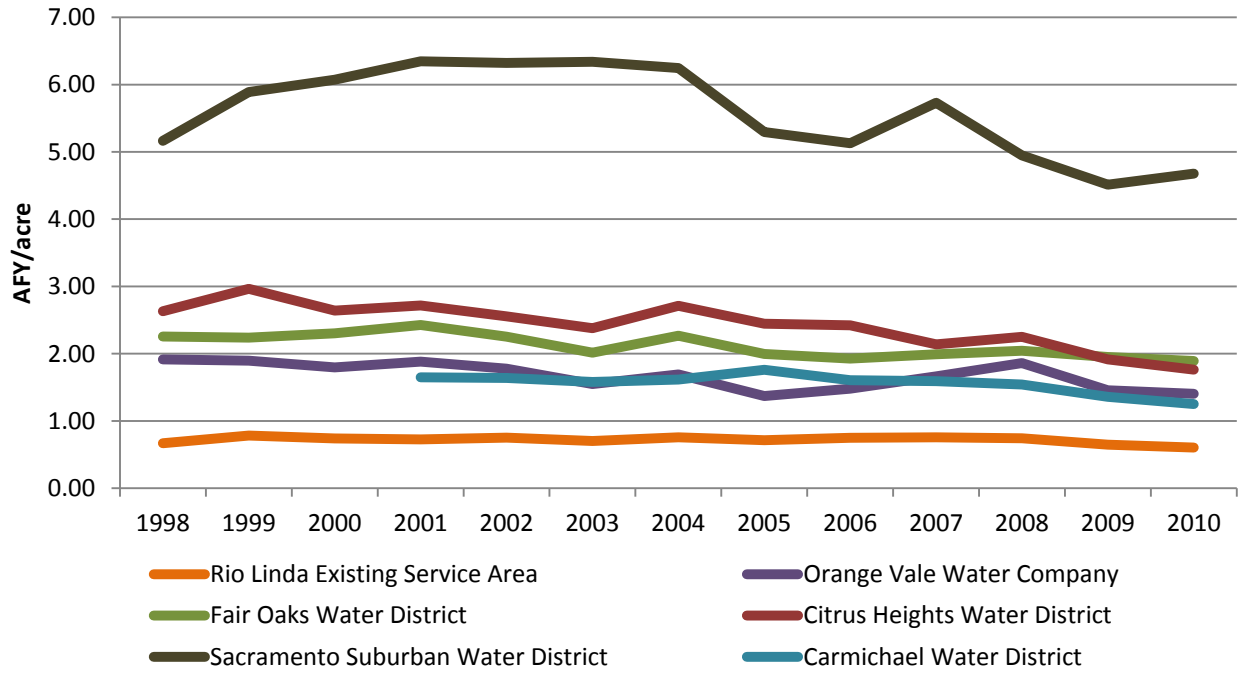


Figure 4.1 Sacramento Area Water Agency Unit Water Demands

The data indicate that the District maintains one of the lowest unit water demand factors in the region. This is likely a result of the development style in the service area (more rural than suburban) and potential for water augmentation through the use of private wells. It is assumed that future developments will be a combination of suburban and rural type land uses. This Master Plan assumes a range of unit water factors and development styles as presented in Table 4.1. This table identifies three service areas. The existing service area is the current 4,799 acres served by the District. The future service area is the total area within the service boundary (12,277 acres) minus the existing service area and ESP.

ESP is a specific plan area on the east side of the District's service area. Portions of ESP not in the District's service area are currently going through the Local Agency Formation Commission (LAFCO) process to be annexed into the District. This Master Plan assumes the District will serve the entire area. Water demand projections for ESP are based on unit water factors and land-use areas (due to availability of specific land-use data) and are presented separately in the ESP planning documents.

This Master Plan targets the middle range demand (17,500 acre-feet per year) to project annual supply needs and long-term infrastructure requirements. Actual development land use and water demands will be tracked over the long term, and supply and infrastructure requirements will be adjusted accordingly.

Table 4.1 Range of Projected Water Demands

Lower Range Estimate	Area (Acres)	Unit Demand (AFY/acre)	Annual Demand (AFY)	Assumptions
Existing Service Area	4,799	0.8	3,839	Existing customer demands do not change.
ESP Area	1,785	0.8	1,428	ESP not developed as planned, future development parcel by parcel basis and matches existing demands.
Future Service Area	5,693	0.8	4,554	Parcel by parcel development matches existing demands.
Total:	12,277		9,900	Rounded total demand.
Upper Range Estimate				
Existing Service Area	4,799	1.6	7,678	Parcels developed similar to Carmichael and Orangevale.
ESP Area	1,785	2.26	4,042	ESP developed as currently planned.
Future Service Area	5,693	2.26	12,866	Remaining development matches ESP density and demands.
Total:	12,277		24,600	Rounded total demand.
Middle Range Estimate				
Existing Service Area	4,799	0.8	3,839	Existing customer demands do not change.
ESP Area	1,785	2.26	4,042	ESP developed as currently planned.
Future Service Area	5,693	1.6	9,109	Parcels developed similar to Carmichael and Orangevale, demand slightly lower.
Total:	12,277		17,000	Rounded total demand.

4.2 Water Supply

This section describes the District's existing water supply facilities and their capacities.

4.2.1 Water Supply Capacity

The District supplies its water system from 11 active groundwater wells, one elevated reservoir, one inline booster station, two pressure reducing valve (PRV) stations, and a reservoir and pump station that are currently under construction. Table 4.2 provides the capacities for the District's sources of supply.

Table 4.2 Source of supply capacity

Facility	Capacity
Well 2A	672 gpm
Well 3	603 gpm
Well 4	612 gpm
Well 6	537 gpm
Well 7	617 gpm
Well 8A	544 gpm
Well 9	693 gpm
Well 10	908 gpm
Well 11	760 gpm
Well 12	429 gpm
Well 15	2,800 gpm
SSWD Intertie*	1,000 gpm
Total Capacity	9,175 gpm

*Emergency use only and not included in total capacity.

4.2.2 Water Storage Capacity

The District currently has one 10,000-gallon elevated reservoir online. A new 1,200,000-gallon reservoir is under construction and is planned to be online at the end of 2014. Table 4.3 lists the capacities for the District's storage facilities.

Table 4.3 Storage facility descriptions

Facility	Capacity
Elevated Reservoir	100,000 gal
Welded Steel Reservoir*	1,200,000 gal

*Construction planned to be completed November 2014

4.3 Water Quality

Table 4.4 and Table 4.5 show the most recent water quality sampling results for arsenic and HC respectively. The shaded cells are a concern to the District because they indicate concentrations that are at or exceed the MCL (or proposed MCL in the case of HC).

Table 4.4 Select Water Quality Results for Arsenic.

Well	2012 Arsenic (ppb) [MCL of 10]
2A	6.9
3	10.0
4	3.8
6	3.9
7	5.2
8A	2.2
9	5.3
10	2.7
11	2.2
12	5.9
15	3.7*

*Sample taken in 2011

Table 4.5 Select Water Quality Results for Hexavalent Chromium

Well	2001/ 2002 HC (ppb)	2013 HC (ppb)	2014 HC (ppb)
2a	10	2.4	9.6
3	5.1	5.4	5.4
4	9.1	11.0	11.0
6	7.5	11.0	11.0
7	6.5	7.0	6.4
8a	10	15.0	16.0
9	8.8	8.1	7.8
10	13	9.0	13.0
11	14	13.0	12.0
12	3	8.0	7.7
15	12	11.0	11.0

4.3.1 Arsenic

As shown in the hydrogeological A-A' cross section in the City of Sacramento Groundwater Master Plan (See Appendix F), the concentration of arsenic and manganese increases from east to west across the District. The concentration for manganese increases deeper into the aquifer and there is a narrow aquifer stratum from 100 to 400 feet where arsenic concentrations are below 10 ppb.

Well 15 was constructed in the recommended area. The arsenic concentration in this well is 3.7 ppb which is well below the MCL for arsenic.

As mentioned in Section 3.2.2, CDPH lowered the MCL for arsenic from 50 to 10 ppb in November 2008. As a result of this change, Wells 3 and 5 were taken out of service because their average arsenic concentrations were greater than 10 ppb.

The loss of the two wells created a water supply deficit causing CDPH to impose a service connection moratorium (see Section 2.4). One alternative to increase water supply was to investigate economical ways to reactivate Wells 3 and/or 5. The reactivation of Well 5 was removed from consideration due to its high concentration of arsenic and the poor condition of the well. The reactivation of Well 3 seemed more likely since its arsenic concentration was slightly over the MCL.

An engineering analysis of Well 3 recommended testing the well over time to see if the arsenic levels were lowered with continuous operation.

In 2012, the Board of Directors approved a test plan to determine whether the arsenic concentration in the well would drop below the MCL over time with continual operation. The testing proved successful and the well was put back into service in early 2013. Since the well has been running continuously, the arsenic level has reduced to concentrations between 8 and 9 ppb. The reactivation of the well has provided an additional water supply capacity of approximately 500 gpm.

After Well 5 was taken out of service, booster pump station at Well 5 was installed to improve pressures in the northern part of the system due to the loss of water supply. This booster station has not been able to function properly due to the undersized suction line. A new 16-inch water line on Elwyn Avenue north of Elverta Road is planned to restore pressure in that area of the water system. The last time Well 5's pump was pulled, the well was video recorded. The video showed that the well casing had deteriorated. The well has been disconnected from the water system and there are no plans on reactivating the well with treatment. Currently, the well has been re-designated as a monitoring well.

4.3.2 Hexavalent Chromium

Currently, there is an MCL of 50 ppb for total chromium but no specific MCL for HC. CDPH has recently announced a proposed MCL for HC of 10 ppb.

A timeline on how the MCL for HC was established is available from CDPH at:

> http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Chromium6timeline.aspx

The public comment period for the HC MCL proposal ended on October 11,

2013 for which the District and Regional Water Authority submitted letters to CDPH expressing the financial harm that the proposed MCL would inflict on the District if CDPH adopted an MCL of 10 ppb and the District was not provided any financial assistance from the State or Federal Government (See Appendix J). CDPH staff explained that 12 months is the maximum allowable time for CDPH to finalize the MCL after the public comment period ends; however, recognizing the significance of this action, CDPH stated that the process is not expected to take the full 12 months.

The District has a total water supply of 9,175 gpm of which over half of the District's water supply is at or over the pending MCL. Well 10 (800 gpm capacity) also fluctuates around the pending MCL concentration.

4.3.3 Manganese

Well 3 has a manganese concentration of 32 ppb while all of the other wells have non-detect levels of manganese (See Appendix E). The well was reactivated to reduce the District's water supply deficit. Based on the age of the well and its level of manganese, the replacement of this well should be a high priority but only after other wells that have arsenic or HC at or above their respective MCL are replaced.

4.4 Facility Descriptions

Currently, the District is approximately 20-percent built out and has eleven (11) municipal wells, one (1) elevated reservoir, one (1) inline booster station, (2) pressure reducing valves (PRV), and one emergency interconnection with Sacramento Suburban Water District.

A new reservoir and pump station is currently under construction and is planned to go online in November 2014. A system schematic of the District's facilities is shown in Figure 4.2.

Note that this figure does not show the current L Street Plant that is being constructed. The system schematic will be updated once the new facility goes online.

The age of each well is shown in Table 4.6. The shaded rows indicate facilities that exceed the recommended 30-year life expectancy of a well as stated in Section 3.2.

Table 4.6 Age of wells

Facility	Date Drilled (Year)	Age (years) As of 2014
Well 2A	1993	21
Well 3	1957	57
Well 4	Pre-1960	54+
Well 6	1965	49
Well 7	1974	40
Well 8A	1987	27
Well 9	1978	36
Well 10	1979	35
Well 11	1987	27
Well 12	1987	27
Well 15	2012	2

Table 4.7 shows the specific capacity of each well. Specific capacity (SC) is a measure of the efficiency of the well to produce water. It is calculated by taking the well's flow and dividing it by its drawdown. The equation for specific capacity is:

SC = Q (gpm)/drawdown (ft)

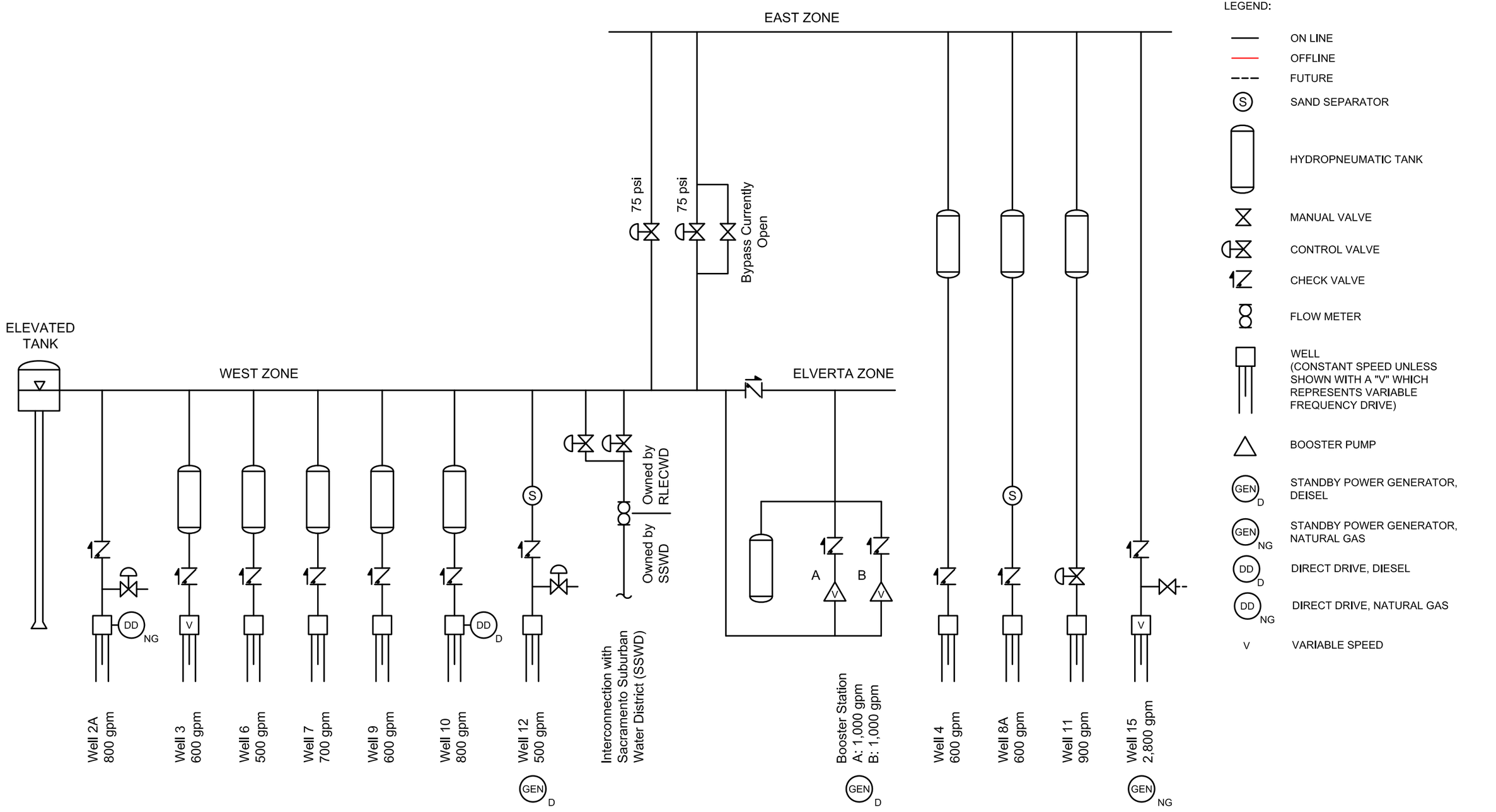
where the drawdown is the static pumping level minus the pumping water level.

The shaded rows indicate wells that have inefficient specific capacities relative to other wells within the District and region.

Table 4.7 Specific Capacity of Wells

Facility	Flow (gpm)	SC (gpm/ft)
Well 2A	787	76
Well 3	603	27
Well 4	647	36
Well 6	546	53
Well 7	652	34
Well 8A	474	68
Well 9	676	33
Well 10	893	50
Well 11	867	8.5
Well 12	429	1.2
Well 15	2,800	39

The following sections describe the existing conditions of the District's wells. For a specific list of existing conditions, see Appendix H.



Rio Linda / Elverta Community Water District 730 L Street Rio Linda, CA 95673	**FIGURE 4.2**	**APRIL 2014**
	SYSTEM SCHEMATIC	AFFINITY ENGINEERING

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4.4.1 Well 2A

Site Area: 20,000 square feet

Description:

This well site is partially graveled with concrete around most of the equipment and is enclosed by a 6-ft chain-link fence with barbed wire. The remainder of the site is dirt with weeds. The facility equipment includes the following:

- Hydropneumatic tank – Disconnected and out of service.
- Motor control center.
- 4-ft by 4-ft wooden chlorine building with no ventilation fan.
- Vertical turbine pump – oil lubricated.
- Right angle natural gas engine for emergency supply during power outages.
- Propeller type flow meter.
- System pressure transducer.
- Pumping water level transducer.
- SCADA – The facility can be remotely monitored and controlled.
- The well normally starts and stops through a pump-to-waste valve and operates based on the water level in the elevated tank along with local water pressure. The well operates, starts, and shuts down using a pump-to-waste valve.
- SMUD electrical service with ground transformer.

Currently, in the 2013/14 Capital Budget, a new construction bin is planned to be installed to replace the bins being demolished to make room for the L Street Plant.

Figure 4.3 Photograph of Well 2A

4.4.2 Well 3

Site Area: 675 square feet

Description:

This well site has concrete around the well, chlorine room, and electrical panel. The remainder of the site is dirt with weeds. Access to the well site is through an easement between two homes and is enclosed by a 4-ft high chain-link fence. The well was taken out of service due to arsenic concentrations exceeding the MCL in 2007. In 2012, the well was reactivated after water quality tests showed that with prolonged runs the arsenic levels dropped below the MCL of 10 ppb.

The facility equipment includes the following:

- Non-certified hydropneumatic tank with the air removed to eliminate an explosive tank hazard.
- New chlorine building was constructed in 2012 with no ventilation fan.
- Motor control center.
- Vertical turbine pump with variable frequency drive – oil lubricated.

- Propeller type flow meter.
- System pressure transducer.
- Pumping water level transducer.
- Chlorination system which was replaced in 2013 with a prominent chemical feed pump that varies its feed rate based on the flow of the well.
- SCADA – The facility can be remotely monitored and controlled.
- The well is a lead supply for the western portion of the system and typically runs continuously.
- During normal operations, the well pump varies its speed to maintain a set pressure. The chlorine feed pump paces its feed rate based on the well's flow.
- SMUD electrical service with pole mounted transformers.

Currently, in the 2013/14 Capital Budget, the fencing is going to be upgraded by increasing the height of the fence from 4 feet to 8 feet with barbed wire. This project is at the request of CDPH to provide more security to the well site.

Figure 4.4 Photograph of Well 3

4.4.3 Well 4

Figure 4.5 Photograph of Well 4

Site Area: 350 square feet

Description:

This well site has a concrete entrance that extends in front of the electrical panel. The remainder of the well site is dirt with weeds. The well site is located between two backyards and is enclosed by a 5-ft high chain-link fence. The facility equipment includes the following:

- Non-certified hydropneumatic tank that is in service.
- Electric panel located inside of a metal enclosure with padlock.
- 2-ft by 4-ft fiberglass chlorine building with no ventilation fan.
- Vertical turbine pump – oil lubricated.
- Propeller type flow meter.
- Pressure transducer.
- Pumping water level transducer.
- SCADA – The SCADA system monitors flow and pressure only. The SCADA system does not provide remote control.
- The well normally operates based on local system pressure using a Mercoid pressure switch.
- SMUD electrical service with pole mounted transformers.

4.4.4 Well 6

Site Area: 1,200 square feet

Description:

This well site is mostly concrete with gravel and weeds around the hydropneumatic tank. There is a 5½-ft high perimeter chain-link fence. The well is located at the end of the property near the front entrance of a residential home. The facility equipment includes the following:

- Non-certified hydropneumatic tank that is in service.
- Electric panel located inside of a metal enclosure with padlock.
- New 2-ft by 4-ft wooden chlorine building with no ventilation fan.
- Vertical turbine pump.
- Propeller type flow meter.
- Pumping water level transducer.
- System pressure transducer.
- SCADA – The SCADA system monitors flow and pressure only. The SCADA system does not provide remote control.
- The well normally operates based on local system pressure using a Mercoid pressure switch.
- SMUD electrical service with pole mounted transformers.

Figure 4.6 Photograph of Well 6

4.4.5 Well 7

Figure 4.7 Photograph of Well 7

Site Area: 3,125 square feet

Description:

This well site is mostly gravel with weeds. This site is between two homes and is enclosed by a 5½-ft high chain-link fence with barbed wire on the top. The facility equipment includes the following:

- Non-certified hydropneumatic tank that is in service.
- Electric panel that has an exterior HOA, breaker switch, and reset button.
- New 2-ft by 4-ft wooden chlorine building with no ventilation fan.
- Vertical turbine pump – oil lubricated.
- Propeller type flow meter.
- Pressure transducer.
- Pumping water level transducer.
- SCADA – The SCADA system monitors flow and pressure only. The SCADA system does not provide remote control.
- The well normally operates based on local system pressure using a Mercoid pressure switch.

- 4-wire SMUD electrical service with pole mounted transformers.

Currently, in the 2013/14 Capital Budget, the hydropneumatic tank is planned to be removed and the well site will be rehabilitated. This includes re-plumbing the facility.

4.4.6 Well 8A

Figure 4.8 Photograph of Well 8A

Site Area: 2,025 square feet

Description:

This well site is asphalt paved and has concrete around some of the facility equipment. The pavement is cracking with some weeds growing through the pavement. This well is within 50 feet of livestock and is enclosed by a 5½-ft chain-link fence with barbed wire. The facility equipment includes the following:

- Non-certified hydropneumatic tank that is in service.
- Electric panel that has an exterior HOA, breaker switch, and reset button.
- New 2-ft by 4-ft wooden chlorine building with no ventilation fan.
- Vertical turbine pump – oil lubricated.
- Sand separator.
- Propeller type flow meter.
- System pressure transducer.
- Pumping water level transducer.
- SCADA – The SCADA system monitors flow and pressure only. The SCADA system does not provide remote control.
- The well normally operates based on local system pressure using a Mercoid pressure switch.
- SMUD electrical service with ground transformer

4.4.7 Well 9

Site Area: 2,500 square feet

Description:

This well site is asphalt paved with a concrete pad for the chlorine building and electrical panel. The pavement is cracking and weeds are growing inside of the cracks. The well is within 50 feet of livestock and is enclosed by a 6-ft chain-link fence with barbed wire. The facility equipment includes the following:

- Non-certified hydropneumatic tank that is in service.
- Electric panel that has an exterior HOA and reset button.
- 4-ft by 4-ft fiberglass chlorine building with no ventilation fan.
- Vertical turbine pump – oil lubricated.
- Propeller type flow meter.
- System pressure transducer.
- Pumping water level transducer.
- SCADA – The SCADA system monitors flow and pressure only. The SCADA system does not provide remote control.
- The well normally operates based on local system pressure using a Mercoid pressure switch.
- SMUD electrical service with ground transformer.

Currently, in the 2013/14 Capital Budget, the hydropneumatic tank is planned to be removed and the well site will be rehabilitated. This includes re-plumbing the facility.

Figure 4.9 Photograph of Well 9

4.4.8 Well 10

Site Area: 5,000 square feet

Description:

This well site is paved with concrete except for the rear of the well site where there is gravel and weeds. This site is within 50 feet of livestock and is enclosed by a 6-ft high chain-link fence with barbed wire. The facility equipment includes the following:

- Non-certified hydropneumatic tank that is in service.
- Electric panel that has an exterior HOA, breaker switch, and reset button.
- 4-ft by 3-ft wooden chlorine building.
- Vertical turbine pump – oil lubricated.
- Right angle diesel engine for emergency supply during power outages.
- Propeller type flow meter.
- System pressure transducer.
- Pumping water level transducer
- SCADA – The facility can be remotely monitored and controlled.
- The well normally operates based on local system pressure using a Mercoid pressure switch.
- SMUD electrical service with ground transformer.

Figure 4.10 Photograph of Well 10

4.4.9 Well 11

Site Area: 2,500 square feet

Description:

This well site has a concrete driveway with concrete in front of the chlorine building and well pump. The remainder of the well site is dirt with weeds. This site is enclosed by a 6-ft chain-link fence with barbed wire. A liner was installed in the well due to a hole in the well casing. The pressure transducer does not work and is stuck in the well. The facility equipment includes the following:

- Non-certified hydropneumatic tank that is in service.
- Electric panel that has an exterior HOA, breaker switch, and reset button.
- 4-ft by 3-ft fiberglass chlorine building.
- Vertical turbine pump.

- "Clayton style" hydraulically operated check valve.
- Propeller type flow meter.
- System pressure transducer.
- Pumping water level transducer (not operational).
- SCADA – The facility can be remotely monitored and controlled.
- The well normally operates based on local system pressure using a Mercoid pressure switch.
- SMUD electrical service with ground transformer.

Figure 4.11 Photograph of Well 11

4.4.10 L Street Plant

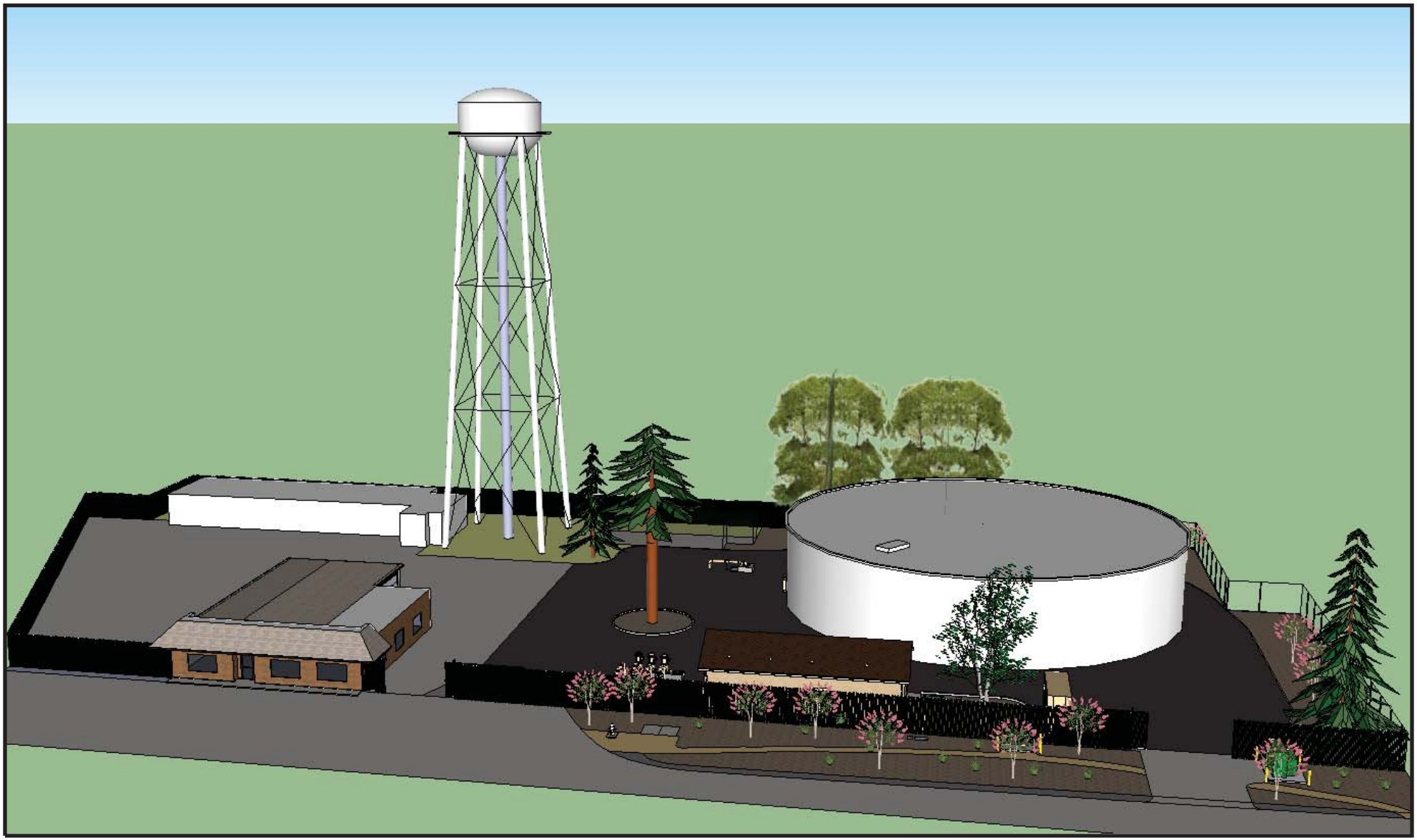
Site Area: 17,000 square feet

Description:

A new reservoir and pump station is currently under construction. The reservoir and pump station will fill normally from Well 12 that is having its discharge re-plumbed to discharge into the reservoir. The facility will have backup power from a new natural gas generator. The facility equipment includes the following:

- 1.2 MG welded steel reservoir
- Motor control center located inside of a temperature controlled building.
- Chlorine room with ventilation system to chlorinate the well and system water feeding the reservoir.
- Three reservoir booster pumps.
- Combined booster pump discharge magnetic type meter.
- Well 12 - vertical turbine pump, oil lubricated.
- Well 12 – propeller meter.
- 0.1 MG elevated reservoir.
- Reservoir water level pressure transducer.
- Pumping water level transducer.
- Elevated reservoir water level pressure transducer.
- SCADA – The facility will be remotely monitored and controlled.
- The well will normally operate based on the water level in the ground storage reservoir. The well will start and stop using a pump-to-waste valve and operate based on the water level in the ground reservoir. The booster pumps operate based on the water level in the elevated reservoir.
- The diesel generator will be rewired to provide power to the District Office.
- 4-wire SMUD electrical service and ground transformer.

Figure 4.12 Photograph of Well 12



Rio Linda/Elverta Community Water District 730 L Street Rio Linda, CA 95673	Figure 4.13	April 2014
	3-D Rendering of the New L Street Reservoir and Pump Station	AFFINITY ENGINEERING

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4.4.11 Well 14 Property

The District purchased property and drilled Well 14. The well's water quality exceeded the MCL for arsenic and the District decided not to equip the well. A second monitoring well was drilled to investigate if lower concentrations of arsenic could be found at higher levels in the aquifer. This was not successful; therefore, both Well 14 and the monitoring well have been reclassified as monitoring wells.

Figure 4.14 Photograph of Well 14 Property

4.4.12 Well 15

Site Area: 11,700 square feet

Description:

The well was constructed in 2012. The well site is partially paved around the well with the remaining property graveled. There is a long gravel road that extends from Q Street to the well site. The site has an electrical room and an 8-ft security iron fence and gate. The unused portion of the property that has a monitoring well is fenced with 8-ft high chain-link fence. The facility has a building that houses the electrical and chemical equipment. The facility equipment includes the following:

- Motor control center inside a temperature controlled building.
- Ventilated chlorine room with variable chemical feed system.
- Vertical turbine pump with variable frequency drive – water lubricated.
- Magnetic type flow meter.
- System pressure transducer.
- Pumping water level transducer.
- Natural gas generator.
- SCADA – The facility can be remotely monitored and controlled.
- The well is a lead supply for the east section of the water system and typically runs most of the time.
- During normal operations, the well pump varies its speed to maintain a set pressure. The chlorine feed pump paces its feed rate based on the well's flow. During low demand times, the Well will shut off based on the water level in the elevated reservoir.
- 4-wire SMUD electrical service with ground transformer.

Figure 4.15 Photograph of Well 15

4.4.13 Elverta Booster Station (formerly Well 5)

The pump station consists of two inline 650 gpm variable booster pumps (pump) with variable frequency drives designed to operate when system demands on their discharge exceed 100 gpm and the pressure on the pump discharge drops below 25 psi. The pump station has not operated as intended since it was installed.

When discharge parameters arise that signal a pump to operate, the pump starts and immediately shuts off due to a low pressure alarm on the intake. Preliminary tests on the pump station were completed in March 2012 that determined that when there was a high water demand (i.e. fire flow) near the discharge of the pump station, the pump station did not contribute additional flow. This was due to the undersized pump suction line inhibiting the operation of the pumps.

Figure 4.16 Photograph of Elverta Booster Pump Station

4.4.14 Sacramento Suburban Emergency Interconnection

The District has one emergency interconnection with Sacramento Suburban Water District. The interconnection is rated for 1,000 gpm and consists of two pressure reducing valves that are set to automatically open when the District's pressure drops to a below normal level. Over the last three years, the District has not purchased water from SSWD through this interconnection. Recently, SSWD added remote monitoring of the interconnection and has offered the District the ability to connect to this operating data such as pressure and flow and send it to the District's SCADA system.

4.4.15 PRV Stations

There are two PRVs within the distribution system. The first PRV is located east of the intersection of Dry Creek Road and Q Street and the second PRV is located west of the intersection of Elkhorn Blvd and 10th Street.

The two PRVs were originally installed to keep the pressure up on the eastern half of the distribution system prior to Well 15 going online. Since Well 15 has gone online, there is no longer a need for the PRVs during normal operation and the PRVs have been locked open to eliminate a restriction in the distribution system.

4.5 Distribution System

There are approximately 84 miles of pipe in the District's water distribution system. The District's existing distribution system is shown in Figure 4.17. A majority of the distribution system consists of asbestos cement pipe with some ductile iron and PVC pipe.

The total approximate lengths of pipe for each size are shown in Table 4.8.

Table 4.8 Total approximate lengths of pipe in distribution system.

Pipe Diameter (inches)	Total Length	
	(feet)	(miles)
2	760	0.15
4	42,000	8
6	142,000	27
8	238,000	45
12	17,000	3
16	3,940	0.75
Total:	443,700	84

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Natomas Central
Mutual Water Co.

Cal-Am
Water Co.

2"

2"

Legend:

- District Boundary
- Proposed Annexation Area
- 4" Distribution Line
- 6" Distribution Line
- 8" Distribution Line
- 12" Secondary T-Main
- 16" Primary T-Main

0 1250 2500 5000

1" = 2500'

APRIL 2014

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FIGURE 4.17

EXISTING SYSTEM DISTRIBUTION MAP

Rio Linda / Elverta
Community Water District
730 L Street
Rio Linda, CA 95673

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5. System Evaluation

This section evaluates the existing water system using the criteria established in Section 3.

5.1 Water Supply and Storage

As stated in Sections 2.4 and 4.1, the District is restricted to 4,617 total customers until the CDPH compliance order is lifted. Based on the highest recorded number of active customers of 4,483, this section will determine how much water supply and storage is available in the current system to add new customers once the new L Street Reservoir and Pump Station is completed and the moratorium is lifted. It also provides a water supply plan with trigger levels for when new supply and storage facilities will need to be added to meet the water supply needs of new customers.

5.1.1 Current System Supply Evaluation

The MDD and PHD factors were originally calculated in the Amendment to SRF Applicant Engineering Report for the District (See Appendix B). The MDD per EDU is based on the method used in Section 64554 of the California Waterworks Standards, which states that if daily usage demands are not available, the maximum day factor is 1.5 times the average day in the maximum month in the past 10 years. The maximum month average demand was recorded to be approximately 0.92 gpm per EDU in July 2005. The PHD is 1.5 times the MDD. The resulting system demand factors and demands are summarized in Table 5.1.

5.1.1.1 Annual Supply Evaluation:

The District currently supplies its customers with groundwater. SGA has established a targeted annual pumping rate of 2,882 acre-feet per year. This target is based on 10 percent less than the average annual pumping over the last five years. This reduction is to reduce overall basin demand by 10 percent to meet the groundwater sustainability goal that SGA has determined to be 90,000 acre-feet per year. For further information regarding SGA's Water Accounting Framework see:

http://www.sgah2o.org/sga/files/WAF-PhaseIII-Final-9-28-10.pdf

Table 5.1 Existing System Demands

Maximum Day Demand Factor	Total Max Day Demand	Peak Hour Demand Factor	Total Peak Hour Demand
1.38 gpm/EDU	6,187 gpm	2.07 gpm/EDU	9,280 gpm

In 2012, the District pumped 2,857 AFY of water which is slightly less than SGA's targeted pump rate. For water supply purposes, the District will plan on using the 3,000 AFY of groundwater to supply its existing customers.

5.1.1.2 Maximum Day Supply:

The maximum day supply from the system's sources (wells) is 9,175 gpm as described in Section 4.2. The available maximum day supply (sources with the largest unit offline) is:

$$9{,}175 \text{ gpm} - 2{,}800 \text{ gpm} = 6{,}375 \text{ gpm}$$

The system's maximum day demand is shown in Table 5.1. The system's available maximum day supply must exceed the maximum day demand. The system's surplus/shortage of maximum day supply is:

$$6{,}375 \text{ gpm} - 6{,}187 \text{ gpm} = 188 \text{ gpm (Surplus)}$$

This evaluation shows that the system has a maximum day supply surplus of 188 gpm.

5.1.1.3 Peak Hour Supply:

The peak hour supply from the system's sources (wells) is 9,175 gpm and the storage booster pumps (storage) is 3,600 gpm as described in Section 4.2. The available peak hour supply (sources and storage booster pumps with the largest unit offline) is:

$$9{,}175 \text{ gpm} + 3{,}600 \text{ gpm} - 2{,}800 \text{ gpm} = 9{,}975 \text{ gpm}$$

The peak hour demand is shown in Table 5.1. The system's available peak hour supply must exceed the peak hour demand. The system's surplus/shortage of peak hour supply is:

$$9{,}975 \text{ gpm} - 9{,}280 \text{ gpm} = 695 \text{ gpm (Surplus)}$$

This evaluation shows that the system has a peak hour supply surplus of 695 gpm.

5.1.1.4 Maximum Day Plus Fire Flow Supply:

The District has established that its water supply from wells and storage booster pumps will meet the largest fire flow requirement during a maximum day demand. The largest fire flow requirement for the District as shown in Table 2.1 is 4,000 gpm for 4 hours.

The available water supply = water supply + booster capacity:

$$9{,}175 \text{ gpm} + 3{,}600 \text{ gpm} = 12{,}775 \text{ gpm}$$

The water supply requirement = maximum day demand + largest fire flow:

$$6{,}187 \text{ gpm} + 4{,}000 \text{ gpm} = 10{,}187 \text{ gpm}$$

The system's surplus/shortage of fire flow supply is:

$$12{,}775 \text{ gpm} - (6{,}187 \text{ gpm} + 4{,}000 \text{ gpm}) = 2{,}588 \text{ gpm (Surplus)}$$

This evaluation shows that the system has a fire flow supply surplus of 2,588 gpm.

5.1.1.5 Emergency Backup Supply:

Emergency Backup supply is intended for supply during power outages. The supply includes supply from wells and booster pumps that have backup power. These facilities include Wells 2A, 10, 15, and the L Street Plant. The overall capacity during power outages is as follows:

The available water supply = Well 2A + Well 10 + Well 15 + L Street Boosters

672 gpm + 908 gpm + 2,800 gpm + 3,600 gpm = 7,980 gpm

The water supply requirement = average day demand = 1,915 gpm

The system's surplus/shortage for emergency supply is:

7,980 gpm - 1,915 gpm = 6,065 gpm

This evaluation shows that the system has an emergency backup supply surplus of 6,065 gpm.

5.1.1.6 Worst Case Demand Scenario

The water demands in the previous sections were based on demands using 4,483 customers which were the active customers at the time of the engineering evaluation. There are currently 4,617 total customers for which 134 customer have remained inactive. The worst case scenario would be if all of the total customers were active and the District's largest supply source (Well 15) was taken out of service in the summer. In this case, the District would activate its emergency interconnection with SSWD. The following is a Maximum Day and Peak Hour evaluation for this worst case scenario:

Worst Case Maximum Day Evaluation

Maximum Day Supply

9,175 gpm - 2,800 gpm + 1,000 gpm = 7,375 gpm

Maximum Day Demand

1.38 gpm/EDU x 4,617 EDUs = 6,371 gpm

The system's surplus/shortage of maximum day supply is:

7,375 gpm – 6,371 gpm = 1,004 gpm

This evaluation shows that the system has a maximum day supply surplus 1,004 gpm.

Worst Case Peak Hour Evaluation

Peak Hour Supply

9,175 gpm+ 3,600 gpm + 1,000 gpm - 2,800 gpm = 10,975 gpm

Peak Hour Demand

2.07 gpm/EDU x 4,617 EDUs = 9,557 gpm

The system's surplus/shortage of maximum day supply is:

10,975 gpm – 9,557 gpm = 1,418 gpm

This evaluation shows that the system has a peak hour supply surplus 1,418 gpm.

5.1.2 System Storage

The existing system was designed to supply maximum day and peak hour demands from groundwater wells. The District has one elevated tank (100,000 gallons) that is used to maintain system pressure only.

The water system is currently transitioning from a groundwater-only system to a groundwater and storage system. Storage will be utilized to supplement the groundwater supply for peak hour, fire flow, and emergency supply.

The storage requirement will be based on the current system demands that are listed in Table 5.1. The storage requirement is based on the following:

System Storage = Operational + Fire Flow + Emergency.

More specifically, each of the storage components is shown as follows:

Operational Storage:

(Peak Hour Demand − Max Day Demand) x 4 hours

$$= (9{,}280 \text{ gpm} - 6{,}187 \text{ gpm})(4 \text{ hours})\left(\frac{60 \text{ min}}{\text{hour}}\right)$$

$$= 742{,}320 \text{ gallons}$$

Fire Flow Storage:

Highest Fire Flow Requirement

$$= (4{,}000 \text{ gpm})(4 \text{ hours})\left(\frac{60 \text{ min}}{\text{hour}}\right)$$

$$= 960{,}000 \text{ gallons}$$

Emergency Storage:

25% of Average Day Demand

$$= (6{,}187 \text{ gpm})\left(\frac{1{,}440 \text{ min}}{\text{day}}\right)(0.25)$$

$$= 2{,}227{,}320 \text{ gallons}$$

Total Storage Required:

Total System Storage Required = 3,929,640 gallons $\approx$ 3.93 MG

Storage Deficit = Required Storage − Elevated Reservoir − L Street Reservoir

Total Storage Deficit = 3.93 MG − 0.1 MG − 1.2 MG = 2.63 MG $\approx$ 2.6 *MG*

This evaluation shows that based on the District's current demands there is a storage deficit of approximately 2.6 MG. This deficit should be eliminated over time by adding additional storage.

5.1.2.1 L Street Elevated Reservoir

A seismic evaluation of the elevated reservoir is recommended to determine if the reservoir is seismically stable. The results of the evaluation will most likely require the reservoir to be decommissioned as a water storage tank. If this is the case, rather than removing the tank, the tank could remain without water and continue as a cell tower. If the tank remains as a cell tower, the District would still be required to make any structural repairs to meet seismic requirements as well as painting the tank.

5.1.2.2 Potential Elevated Reservoir Replacement at Well 14 Property

With HC potentially requiring the District to relocate most of its groundwater supply to the northeast part of the system, a new 0.5 MG elevated reservoir should be considered at the southwest part of the system to provide pressure stabilization. The new elevated reservoir would prevent pressure swings that occur when the supply is remote to the demand. The District currently owns the Well 14 property that is located in the southwestern part of the system where this elevated reservoir could be located.

5.1.3 New Customer Supply Strategy

The MDD and PHD shown in Table 5.1 are based on historical water demands from the District's existing customers. For new customers, a water supply evaluation was performed as part of the new ESP. The new demands are based on the expected use of customers with new water efficiency fixtures and irrigation systems (See Elverta Specific Plan Water Supply Strategy). Based on this evaluation, the new customer demands are approximately 50 percent less than the District's existing customer demands. Table 5.2 shows a comparison of the existing demand factors versus the new customer demand factors.

Table 5.2 Existing Vs. New Customer Demands Per EDU

Existing MDD	New Customer MDD	Existing PHD	New Customer PHD
1.38 gpm/EDU	0.65 gpm/EDU	2.07 gpm/EDU	0.97 gpm/EDU

5.1.4 New Connection Recommendation

With the addition of the L Street Plant, the District will have a surplus of water supply which will lift the moratorium on service connections. The only water supply deficit for the District is from storage which is 2.6 MG. It is recommended that this storage deficit should be reduced over time by adding new District funded reservoirs and/or upsizing new developer funded reservoirs that are constructed to add new customers.

Based on the new customer demand factors and water supply surplus that will be created once the new L Street Plant is constructed and the new moratorium is lifted, the District will have the following EDUs available:

Available EDUs (MDD) = (188 gpm)/ (0.65 gpm/EDU) = 289 EDUs
Available EDUs (PHD) = (695 gpm)/ (0.97 gpm/EDU) = 716 EDUs

MDD limits the available EDUs for the District to 289 EDUs because of the limit on source water supply. Connection fees paid by new customers would contribute to new wells/ imported water required to meet the added maximum day demand and the new storage required to meet the added peak hour, fire flow, and emergency demands.

In the interim period prior to the construction of the SWP, the District will meet the demands of small developments that are not part of a specific plan with increased groundwater supply. New wells will be drilled or replacement wells that supply more water than they replace will add source water supply and increase the amount of available EDUs for the District.

It is recommended that the District reserve 100 EDUs as a cushion for supply versus demand. These reserve EDUs reduce the amount of available EDUs to 189 that can be added to the water system before additional supply is needed. Board approval should be required for the District to use any of the 100 reserved EDUs before additional supply is needed.

5.2 Water Quality

The District's position is to avoid treatment whenever possible due to the following reasons:

- High capital cost of treatment
- Increase O&M cost to operate the treatment equipment
- Additional land required to add treatment
- Higher certification requirement for operators

There are two current water quality constituents (arsenic and manganese) and one potential water quality constituent (HC) that the District has concerns about. These three constituents are discussed in the following subsections.

5.2.1 Arsenic

The current water supply has no arsenic issues in the groundwater

wells. Replacement wells should be located based on the recommendation of the Groundwater Master Plan that was completed for the City of Sacramento and the new updated hydrogeological study that is being funded by ESP (See Appendix F).

5.2.2 Hexavalent Chromium

HC levels in the District's wells from recent HC testing are shown in Table 4.5 in the previous section.

The District sent a letter to CDPH (See Appendix J) during the public comment period objecting to the proposed MCL based on the impact to its water supply.

5.2.2.1 Best Availability Technology (BAT) for HC:

Although there has been HC detected throughout the state, there is little data on the Best Available Technology (BAT) for drinking water treatment. The City of Glendale released its final project report to CDPH on February 28, 2013, regarding 10 years of research at a cost of nearly $9 million identifying water treatment technologies that can be used to remove HC from drinking water supplies. The study screened a large array of potential treatment technologies including weak based anion (WBA) exchange and adsorptive media, membranes, and reduction coagulation filtration techniques (RCF). From this research, WBA and RCF were the two most promising treatment technologies. The research stated that the estimated capital cost for well head treatment is 340 to 510 $/AF. CDPH will review the extensive report and provide approval for the treatment technique that they feel has demonstrated the efficiency and reliability to adequately treat for HC.

SGA has provided partial funding to the City of Davis for an experimental biological reduction technology but only preliminary results are available at this time. There are many factors for CDPH to consider before approval of any BAT for HC is established, including cost of installation and operation.

Other options the District is considering are blending opportunities to reduce the levels of HC. This could be accomplished by either blending the water with another groundwater source or with an imported source such as surface water.

Additionally, most of the District's non-complying well sites (except Well 15) are on very small lots in residential neighborhoods and the treatment equipment's footprint is too large to fit on these sites. Additional land will need to be acquired for the treatment equipment if the well cannot be blended or the well will need to be destroyed and its capacity replaced.

5.2.2.2 Recommendation

1. The District should perform quarterly monitoring of its water wells for HC to determine if there are any seasonal variations in HC concentrations.
2. Complete the hydrogeological evaluation that is being funded by ESP to determine the best location to drill wells that do not require treatment for HC, arsenic, or manganese.
3. Depending on the final MCL set by CDPH, construct replacement

wells designed for a capacity of 1,500 gpm each. The replacement wells should be located per the recommendations of the hydrogeological evaluation. Distribution improvements in addition to the replacement wells may also be needed depending on the location of the new wells in relation to the wells that are being replaced.

4. If the replacement wells are required to be placed in the northeast section of the water system to avoid treatment, then transmission mains will be required. Additionally, the District should consider constructing a 500,000-gallon elevated reservoir at Well 14's property to stabilize water pressure when the supply in that area is relocated to the northeast side of the water system.
5. If treatment is required for Well 15, the first alternative would be to investigate drilling a second well adjacent to the existing well to determine if HC can be blended to below the MCL. The District owns property where a second well could be drilled east of the existing well. If blending is not an option, the District will be required to purchase property from one of the adjacent property owners to add HC treatment to the well.

5.2.3 Manganese

Currently, all of the wells within the District are non-detect for manganese except for Well 3 that has a manganese concentration of 32 ppb.

The goal of the District is to have all of its water supply sources with non-detect levels of manganese (less than 10 ppb) to prevent the buildup of precipitated manganese in the water system. It is recommended that a confirmation sample for manganese be performed to confirm the manganese level in the well. If the manganese level is confirmed, then the well should be a priority to be replaced.

5.3 Facility Evaluations

Each of the facilities were visited and assessed (see Appendix I). All deficiencies were prioritized as either a Priority A, B, or C as discussed in Section 3.3.1. During the assessment, there were no Priority A items found. The Priority B and C items found are listed for each facility.

5.3.1 Well 2A

Priority B Items:

1. Remove Hydropneumatic tank: The hydropneumatic tank has been disconnected from the well. If the hydropneumatic tank is not required then it should be removed along with its footing to reduce site maintenance and improve accessibility around the well, and re-plumb well discharge.
2. The chlorine building is deteriorating and needs to be repaired or replaced. If repaired, repairs include replacing deteriorated wood, painting the building, and adding fan ventilation to prevent the chlorine gas building up. A light should also be installed in the chlorine building in order to be able to monitor the chemical feed system at night.

3. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.

Priority C Items:

4. Sound Attenuation: The VHS motors should have a sound attenuation enclosure over it. The enclosure will reduce the sound coming from the well site.
5. Exposed Cables: The SCADA cabinet is located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.
6. Landscaping: It is recommended that landscaping be installed in the frontage portion of the well site to further blend the facility into the community.
7. Re-gravel: There is an excessive amount of weeds on the site. Weed abatement requires additional periodic maintenance. The site should be cleared and grubbed. A soil sterilant should be applied and a layer of crushed rock added. The soil sterilant should be approved for use around a groundwater well.
8. Facility Signage – A facility sign should be added to the facility that has the following information:
   - District name
   - Emergency phone number

5.3.2 Well 3

Priority B Items:

9. Remove hydropneumatic tank: the hydropneumatic tank has been submerged. If the hydropneumatic tank is not required then it should be removed along with its footing to reduce site maintenance and improve accessibility around the well.
10. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.
11. Chlorine Building Ventilation: The chlorine building does not have vent fans to keep chlorine from building up within the building and corroding the building's metal as well as the chlorination equipment. The air should exhaust near the bottom of the building where the chlorine will build up. The fans should be wired to operate continuously.
12. Inaccurate Meter: Well 3's meter is bolted directly to the check valve. The meter needs to be relocated to have a minimum of 5 diameters of straight pipe between the check valve and the meter.

Priority C Items:

13. Sound Attenuation: The VHS motors should have a sound attenuation enclosure over it. The enclosure will reduce the sound coming from the well site.

14. Exposed Cables: The SCADA cabinet is located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.
15. Re-gravel: There is an excessive amount of weeds on the site. Weed abatement requires additional periodic maintenance. The site should be cleared and grubbed. A soil sterilant should be applied and a layer of crushed rock added. The soil sterilant should be approved for use around a groundwater well.
16. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.3 Well 4

Well 4 has an HC concentration that is consistently higher than CDPH's proposed MCL of 10 ppb. The District should minimize its capital investment into this site until the MCL for HC is adopted. If the MCL for HC is adopted at 10 ppb, it is recommended that this well be destroyed and its capacity replaced with a larger well that does not require treatment (see Section 5.3.17). If the MCL for HC is adopted at a higher level than 11 ppb, the District should plan on continuing to use the well with the following improvements planned for:

Priority B Items:

17. The hose bib on the pump side of the check valve needs to be removed to eliminate a potential cross connection situation. CDPH does not allow threaded hose bib connections on the pump side of the check valves because it creates a vacuum as the water from the column pipe goes back down the well when the well pump shuts down.
18. Inside the enclosure, there is an open box with conductors exposed. A new cover to the box should be installed.
19. The missing bolts on the pump-to-waste valve should be replaced and a screen should be installed at the end of the pump-to-waste line to keep it sanitary. Alternatively, a blind flange or cap could be installed rather than installing a screen.
20. The electrical panel requires replacement with a new panel that has a soft start or VFD. The existing panel is at the end of its economic life. With the new soft start, the non-certified hydropneumatic tank can be removed and the well will pump directly into the water system. The removal of the non-certified hydropneumatic tank is required by the District's insurance company and will eliminate the risk of the tank exploding. The SCADA system will be upgraded to add remote control to the facility.
21. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.

22. Chlorine Building Ventilation: The chlorine building does not have vent fans to keep chlorine from building up within the building and corroding the building's metal as well as the chlorination equipment. The air should exhaust near the bottom of the building where the chlorine will build up. The fans should be wired to operate continuously.

Priority C Items:

23. Sound Attenuation: The VHS motor should have a sound attenuation enclosure over it. The enclosure will reduce the sound coming from the well site.
24. Exposed Cables: The SCADA cabinet is located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.
25. Re-gravel: There is an excessive amount of weeds on the site. Weed abatement requires additional periodic maintenance. The site should be cleared and grubbed. A soil sterilant should be applied and a layer of crushed rock added. The soil sterilant should be approved for use around a groundwater well.
26. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.4 Well 6

Well 6 has an HC concentration that has been consistently higher than CDPH's proposed MCL of 10 ppb. The District should minimize its capital investment into this site until the MCL for HC is adopted. If the MCL for HC is adopted at 10 ppb, it is recommended that this well be destroyed and its capacity replaced with a larger well that does not require treatment (see Section 5.3.17). If the MCL for HC is adopted at a higher level than 11 ppb, the District should plan on continuing to use the well with the following improvements planned for:

Priority B Items:

27. The electrical panel requires replacement with a new panel that has a soft start or VFD. The existing panel is at the end of its economic life. With the new soft start, the non-certified hydropneumatic tank can be removed and the well will pump directly into the water system. The removal of the non-certified hydropneumatic tank is required by the District's insurance company and will eliminate the risk of the tank exploding. The SCADA system will be upgraded to add remote control to the facility.
28. The control conduit is running on top of the concrete and could cause a tripping hazard. It is recommended that the concrete be cut and the conduit be reinstalled below grade.
29. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary

containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.

30. Chlorine Building Ventilation: The chlorine building does not have vent fans to keep chlorine from building up within the building and corroding the building's metal as well as the chlorination equipment. The air should exhaust near the bottom of the building where the chlorine will build up. The fans should be wired to operate continuously.
31. Security: Wells 6's controls are not secure. A lockable cover should be installed over the HOA to prevent tampering with the controls and shutting off the well until the panel is replaced.

Priority C Items:

32. Sound Attenuation: The VHS motor should have a sound attenuation enclosure over it. The front door of an adjacent house is very close to the well. The enclosure will reduce the sound coming from the well site.
33. Exposed Cables: The SCADA cabinet is located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.
34. Re-gravel: There are weeds in the unpaved portion of the well site by the hydropneumatic tank. Weed abatement requires additional periodic maintenance. This area of the well site should be cleared and grubbed. A soil sterilant should be applied and a layer of crushed rock added. The soil sterilant should be approved for use around a groundwater well.
35. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.5 Well 7

Priority B Items:

36. The pump-to-waste line should either have a screen on it or as an alternative a blind flange to prevent animals from getting into it as well as keep the line sanitary. The missing pump-to-waste grate should be replaced.
37. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.
38. Chlorine Building Ventilation: The chlorine building does not have vent fans to keep chlorine from building up within the building and corroding the building's metal as well as the chlorination equipment. The air should exhaust near the bottom of the building where the chlorine will build up. The fans should be wired to operate continuously.
39. Inaccurate Meter: The meters are located on the pump side of the check valve. The meter needs to be relocated to the system side of the check valves with the length

of straight pipe 5 times the pipe diameter upstream and 1 times the pipe diameter downstream of the meter.

Priority C Items:

40. Sound Attenuation: The VHS motor should have a sound attenuation enclosure over it. The enclosure will reduce the sound coming from the well site.
41. Exposed Cables: The SCADA cabinet is located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.
42. Re-gravel: There are weeds throughout the well site. Weed abatement requires additional periodic maintenance. This area of the well site should be cleared and grubbed. A soil sterilant should be applied and a layer of aggregate base (AB) rock added. The soil sterilant should be approved for use around a groundwater well. The AB should be extended to the edge of the road pavement to maintain well access.
43. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.6 Well 8A

Well 8A has an HC concentration that is consistently higher than CDPH's proposed MCL of 10 ppb. It is recommended that this well be destroyed and its capacity replaced with a larger well that does not require treatment unless CDPH adopts an MCL that is higher than the well's HC concentration of 15 ppb (see Section 5.3.17). If the District plans on continuing the use of the well, the following improvements should be planned for:

Priority B Items:

44. Various Improvements: The pump-to-waste line is missing its blind flange. A new blind flange should be installed to replace the existing flange. The gate valve is also missing a bolt on its connection to the flanged tee. A new gate valve can lid is recommended to replace a missing lid. There was no air gap on the hydropneumatic tank's drain line. A proper air gap is required to prevent a potential cross connection. There is a broken conduit on the electrical line that feeds the chlorine building exposing the conductors. The conduit should be repaired to protect the electrical conductors. The external telephone line behind the electrical panel is not weather protected. It is recommended that the telephone line be installed inside electrical conduit to protect the wiring.
45. The electrical panel requires replacement with a new panel that has a soft start or VFD. The existing panel is at the end of its economic life. With the new soft start, the non-certified hydropneumatic tank can be removed and the well will pump directly into the water system.

The removal of the non-certified hydropneumatic tank is required by the District's insurance company and will eliminate the risk of the tank exploding. The SCADA system will be upgraded to add remote control to the facility.

46. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.
47. Chlorine Building Ventilation: The chlorine building does not have vent fans to keep chlorine from building up within the building and corroding the building's metal as well as the chlorination equipment. The air should exhaust near the bottom of the building where the chlorine will build up. The fans should be wired to operate continuously.
48. Security: Wells 8A's controls are not secured. A lockable cover should be installed over the HOA to prevent tampering with the controls and shutting off the well until the panel is replaced.
49. Inaccurate Meters: The well's meter is bolted directly to the sand separator. The meter needs to be relocated to have a length of one straight pipe diameter downstream of the meter to maximize its accuracy.

Priority C Items:

50. Exposed Cables: Most of the SCADA cabinets are located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.
51. Landscaping: It is recommended that landscaping be installed in the frontage portion of the well site to further blend the facility into the community. Well 8A is very visible to the community since it is on Elkhorn Blvd.
52. Pavement Failure: Weeds need to be removed from the pavement and the pavement repaired and resurfaced with a slurry seal. This is required before the pavement decays further.
53. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.7 Well 9

Priority B Items:

54. Various Improvements: The pump-to-waste line is missing its screen. As an option, a blind flange or cap could be installed to prevent contamination from going into the pump-to-waste line. There was no air gap on the hydropneumatic tank's drain line. A proper air gap is required to prevent a potential cross connection.
55. The electrical panel is planned to be replaced with a new panel that has a soft start as part of the 2013/14 capital budget. The existing panel is at the end of its economic life. With the new soft

start, the non-certified hydropneumatic tank will need be removed and the well will pump directly into the water system. The removal of the hydropneumatic tank is required by the District's insurance company and will eliminate a potential risk of the tank exploding. The SCADA system will need to be upgraded to add remote control to the facility.

56. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.
57. Chlorine Building Ventilation: The chlorine building does not have vent fans to keep chlorine from building up within the building and corroding the building's metal as well as the chlorination equipment. The air should exhaust near the bottom of the building where the chlorine will build up. The fans should be wired to operate continuously.
58. Inaccurate Meters: Wells 9's meter is located on the pump side of the check valve. The meters need to be relocated to the system side of the check valves with the length of straight pipe 5 times the pipe diameter upstream and 1 times the pipe diameter downstream of the meter.

Priority C Items:

59. Exposed Cables: Most of the SCADA cabinets are located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.
60. Landscaping: It is recommended that landscaping be installed in the frontage portion of the well site to further blend the facility into the community. Well 9 is very visible to the community since it is on Elkhorn Blvd.
61. Pavement Failure: Weeds need to be removed from the pavement and the pavement repaired resurfaced with a slurry seal. This is required before the pavement decays further. The pavement should be extended to the edge of the road.
62. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.8 Well 10

Well 10 has had HC concentrations of 13 and 9 ppb. It is recommended to wait until more sampling data is gathered before the District invests further in Well 10. If the HC level remains below the adopted MCL, then the following improvements should be planned for:

Priority B Items:

63. Various Improvements: The electrical conduits around the motor are broken and some are sealed with duct tape. The conduits need to be repaired to protect the electrical conductors.

The duct tape needs to be removed and the conduits should be sealed with electrical parts per NEC code. The engine control panel was not locked. The door needs to be locked. A new lock needs to be installed if the existing lock does not work to protect the engine controls. The hose bib on the pump side of the check valve needs to be removed to eliminate a potential cross connection situation. CDPH does not allow threaded hose bib connections on the pump side of the check valves because when the well pump shuts down it creates a vacuum as the water from the column pipe goes back down the well. There was no air gap on the hydropneumatic tank's drain line. A proper air gap is required to prevent a potential cross connection.

64. The electrical panel requires replacement with a new panel that has a soft start or VFD. The existing panel is at the end of its economic life. With the new soft start, the non-certified hydropneumatic tank can be removed and the well will pump directly into the water system. The removal of the non-certified hydropneumatic tank is required by the District's insurance company and will eliminate the risk of the tank exploding. The SCADA system will be upgraded to add remote control to the facility.
65. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.
66. Chlorine Building Ventilation: The chlorine building does not have vent fans to keep chlorine from building up within the building and corroding the building's metal as well as the chlorination equipment. The air should exhaust near the bottom of the building where the chlorine will build up. The fans should be wired to operate continuously.
67. Security: Wells 10's controls are not secure. A lockable cover should be installed over the HOA to prevent tampering with the controls and shutting off the well until the panel is replaced.
68. Inaccurate Meter: Well 10's meter is located on the pump side of the check valve. The meter need to be relocated to the system side of the check valve with the length of straight pipe 5 times the pipe diameter upstream and 1 times the pipe diameter downstream of the meter.

Priority C Items:

69. Sound Attenuation: The VHS motor should have a sound attenuation enclosure over it. There are residential homes adjacent to the well site. The enclosure will reduce the sound coming from the well site.
70. Exposed Cables: Most of the SCADA cabinets are located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel

be enclosed to protect these cables.

71. Re-gravel: There are weeds in the unpaved portion of the well site by the hydropneumatic tank. Weed abatement requires additional periodic maintenance. This area of the well site should be cleared and grubbed. A soil sterilant should be applied and a layer of aggregate base (AB) rock added. The soil sterilant should be approved for use around a groundwater well.
72. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.9 Well 11

Well 11 has an HC concentration that is consistently higher than CDPH's proposed MCL of 10 ppb. It is recommended that this well be destroyed and its capacity replaced with a larger well that does not require treatment unless CDPH adopts an MCL that is higher than the well's HC concentration of 15 ppb (see Section 5.3.17). If the District plans on continuing the use of the well, the following improvements should be planned for:

Priority B Items:

73. The driveway should be extended to the roadway pavement to maintain accessibility.
74. Various Improvements: The electrical tape on the pressure transducer's electrical line should be removed and the conduit should be sealed properly using electrical standards per NEC code. On the face of the electrical panel a plug is missing creating a hole in the electrical panel. The hole should be sealed to prevent water or corrosion from affecting the well's electrical equipment. The pump-to-waste line should have a screen on the end. As an option, a blind flange or cap could be installed to prevent contamination from entering the line.
75. The electrical panel requires replacement with a new panel that has a soft start or VFD. The existing panel is at the end of its economic life. With the new soft start, the non-certified hydropneumatic tank can be removed and the well will pump directly into the water system. The removal of the non-certified hydropneumatic tank is required by the District's insurance company and will eliminate the risk of the tank exploding. The SCADA system will be upgraded to add remote control to the facility.
76. Secondary Chemical Containment: It is required that all hazardous chemicals (chlorine) have secondary containment in case the chlorine tank breaks. A containment chamber needs to be added to the chlorination system.
77. Chlorine Building Ventilation: The chlorine building does not have vent fans to keep chlorine from building up within the building and corroding the building's metal as well as the chlorination equipment. The air should exhaust near the bottom

of the building where the chlorine will build up. The fans should be wired to operate continuously.

78. Security: Wells 11's controls are not secure. A lockable cover should be installed over the HOA to prevent tampering with the controls and shutting off the well until the panel is replaced.

Priority C Items:

79. Sound Attenuation: The VHS motor should have a sound attenuation enclosure over it. There are residential homes adjacent to the well site. The enclosure will reduce the sound coming from the well site.
80. Landscaping: It is recommended that landscaping be installed in the frontage portion of the well site to further blend the facility into the community.
81. Exposed Cables: Most of the SCADA cabinets are located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steal them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.
82. Re-gravel: There are weeds in the unpaved portion of the well site. Weed abatement requires additional periodic maintenance. This area of the well site should be cleared and grubbed. A soil sterilant should be applied and a layer of aggregate base (AB) rock added. The soil sterilant should be approved for use around a groundwater well.
83. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.10 Well 14's Property

Well 14 currently has a production well and two monitoring wells drilled on this property. The District's goal is to avoid treatment. Because of this, it is recommended that the three wells be destroyed. The disposition of the property will be based on the adopted MCL for HC.

If the adopted MCL is greater than or equal to 15 ppb, then the property should be sold.

If the adopted MCL is set at 10 ppb, then it is recommended that a 500,000 gallon elevated reservoir be constructed. This is tentatively based on the District replacing its water supply to the northeastern part of the system to avoid treatment. The elevated reservoir along with transmission mains will help stabilize pressure when the supply is moved further away from the demand.

5.3.11 Well 15

Well 15 has an HC concentration that is consistently above the proposed MCL of 10 ppb. If the HC level by CDPH is adopted at 10 ppb, it is recommended that the well use blending as an approved treatment. An investigation should be performed to determine if a new well could be drilled at a different depth that has HC levels below 10 ppb that the existing well could be blended with to get the composite water quality below 10 ppb. The well could be drilled in the property owned by the District adjacent to the well.

84. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.12 L Street Plant

Priority B Items:

85. Well 12 should be replaced with a new onsite well. The existing well's specific capacity is much lower than the other wells in the area. The new well is expected to have a much higher specific capacity, cost much less to operate, and have a higher yield. Based on the water quality of Well 12, the new well will not be affected by arsenic or HC.

5.3.13 Elverta Booster Station

Priority C Items:

86. Re-gravel: There are weeds throughout the well site. Weed abatement requires additional periodic maintenance. This well site should be cleared and grubbed. A soil sterilant should be applied and a layer of aggregate base (AB) rock added. The soil sterilant should be approved for use around a groundwater well.
87. Remove hydropneumatic tank: The hydropneumatic tank has been removed from service. The tank should be demolished and removed from the site.
88. Remove Well 5's deep well turbine pump. The pump and discharge head should be removed and a locking well cover should be installed on the well.
89. Facility Signage – A facility sign should be added to the facility that has the following information:
    - District name
    - Emergency phone number

5.3.14 Sacramento Suburban Water District Interconnection

Recently, Sacramento Suburban Water District (SSWD) added telemetry to remotely monitor pressures on both sides of the control valve as well as flow from the meter. Provisions were made by SSWD to allow the District to be able to transmit this data and remotely monitor the interconnection with their SCADA system.

Priority B Items:

90. Extend the District SCADA system to connect to SSWD interconnection data to remotely monitor pressure and flow.

5.3.15 Distribution System Sample Stations

Priority C Items:

91. The sample stations should be replaced with sample ports located inside the box and protected from exposure to weather.

5.3.16 PRV Stations

Priority C Items:

92. The two system PRVs are no longer needed with the addition of Well 15. Even with their bypasses open, the PRVs create a restriction in the distribution system and therefore should be removed.

5.3.17 Well Replacement

All of the District wells will be prioritized for replacement based on their condition as well as meeting current and future water quality requirements. The main factors, in order of priority, for determining which wells will be replaced first are the wells' water quality, specific capacity, and age as shown in Tables 4.4, 4.5, 4.6, and 4.7. The upcoming MCL for HC may reprioritize the well replacement plan. If the MCL for HC is set at 15 ppb or higher, none of the District's wells will be affected and further described in Section 5.3.17.1. However, if the MCL for HC is adopted at the proposed level of 10 ppb, then over half of the District's wells will be at or above the MCL. Water quality will then be the primary driving force to replace wells with new wells that do not need HC treatment as seen in Section 5.3.17.2.

Depending on the location of the replacement wells, primary transmission mains may need to be installed to restore any loss of water supply. If the hydrogeological study shows that the best place to locate wells is in the northeastern part of the water system, then storage (elevated or ground) may need to be installed to reduce the supply lag that can occur during demand fluctuations due to the remote location of the supply source. The following sections describe the respective priorities for each scenario.

All recommendations are based on current water quality results and should be reevaluated once new water quality results are available and the final HC MCL is adopted by CDPH.

5.3.17.1 Scenario A – No HC MCL adopted or MCL adopted at 15 ppb or higher

Phase 1

The first phase of replacement will include the replacement of Wells 3 and 12 with a new well located at L Street. Well 3 is the oldest well and the only well with detectable levels of manganese. Well 3's electrical panel is new and has a variable frequency drive. The panel will be salvaged and used on one of the other existing well sites. A pipeline improvement may be required to restore supply where Well 3 is located.

Well 12 has a specific capacity of 1.2 which is very inefficient in comparison to other wells that are operating at higher specific capacities such as Well 4 (specific capacity of 36). The combined capacity to replace both wells would be 1,032 gpm. It is recommended that the replacement well be located at the L Street Plant.

Phase 2

The second phase of replacement will include Wells 4 and 11. Well 4 is one of the oldest wells and Well 11 has already had problems with deterioration. A liner has been placed in Well 11 to remedy the sanding that was caused by the deterioration of the well casing. Well 11 also has a specific capacity of 8.5. The combined capacity to replace both wells would be 1,372 gpm. The location of the replacement well will be identified in the hydrogeological study.

Phase 3

The third phase of replacement will include Wells 6 and 8A. Well 6 is over 40 years old. Well 8A is only 27 years

old but has a high HC concentration that fluctuates around 15 ppb. The combined capacity to replace both wells would be 1,081 gpm. The location of the replacement well will be identified in the hydrogeological study.

Phase 4

The fourth phase of replacement will include Wells 9 and 10. Both wells are over 30 years old and Well 10 fluctuates around the proposed HC MCL. The combined capacity to replace both wells would be 1,601 gpm. The location of the replacement well will be identified in the hydrogeological study.

5.3.17.2 Scenario B – MCL adopted at 10 ppb

Phase 1

The first phase of replacement will include Wells 8A and 11 with a replacement well located per the recommendations of the hydrogeological report. These wells not only have the highest recorded concentration of HC but Well 11 has had a deteriorating casing that required a liner to be installed. The combined capacity to replace both wells would be 1,304 gpm.

It is recommended that the replacement well be a second well drilled adjacent to Well 15. The new well should be at a different depth that has HC concentrations low enough that it can be blended with Well 15 for a blended water quality that meets arsenic, manganese, and HC MCLs. The added water supply can be used to make up the lost water supply from Wells 8A and 11.

Phase 2

The second phase of replacement will include Wells 6, 7, and 12. Wells 6 and 7 are above the proposed HC MCL and are over 40 years old. Well 12 has a specific capacity of 1.2 which is relatively inefficient in comparison to other wells that are operating at higher specific capacities such as Well 4 (specific capacity of 36). The combined capacity to replace all three wells would be 1,583 gpm.

If possible, the replacement well will be relocated at L Street to minimize the cost of the replacement well since the L Street Plant project was designed to add a new well in the future. The hydrogeological study will need to confirm that the new well at L Street will not need treatment. Transmission mains may be required as part of the project to restore the water supply lost with the decommissioning of Wells 6 and 7.

Phase 3

The third phase of replacement will include Wells 3 and 4. Wells 3 and 4 are both over 50 years old and are the oldest wells in the District. The combined capacity to replace both wells would be 1,215 gpm. The location of the replacement well will be identified in the hydrogeological study. Well 3's electrical panel should be salvaged and reused at one of the other active well sites since the panel is new and has a variable frequency drive.

Phase 4

The fourth phase of replacement will include Wells 10 and 9. Both wells are over 30 years old and Well 10 fluctuates around 10 ppb. The combined capacity to replace both wells would be 1,601 gpm. The location of

the replacement well will be identified in the hydrogeological study.

5.3.17.3 New Wells

Replacement wells should be scheduled approximately once every three years or sooner as water quality issues dictate. Depending on outcomes of hydrogeological studies on HC, replacement wells could be drilled in the recommended area to avoid treatment of arsenic, manganese, and HC (See Section 3.2). These wells will be drilled to have a capacity of about 1,500 gpm because the new wells will be replaced one phase of wells at a time. Ideally, new well sites could include storage units as well.

5.3.18 SCADA Improvement Program

The Supervisory Control and Data Acquisition (SCADA) system is a computer system and program that is used by the District to monitor and control its water facilities remotely. The SCADA system also provides reports and notifies District staff of facility alarms.

Currently all facilities can be remotely monitored. Wells 2A, 3, and 15 can be controlled remotely through their PLCs. Remote control is planned to be added to all wells when their electrical panels are replaced. SSWD recently added a PLC to its interconnection with the District. Remote monitoring should be added to this interconnection in the future.

The District should plan on replacing the SCADA program and hardware every 10 years.

5.3.19 Facility PLC Improvement Program

The District currently has programmable logic controllers (PLC) located at each of its water supply facilities. These PLCs provide operational data to the SCADA system. The PLCs at Wells 2A, 3, and 15 are programed and wired to provide local control of the facility.

The expected life of a PLC is 15 years. The District should phase in a replacement plan for the PLC based on their reliability and importance to the water supply. The District should plan on replacing a PLC once every five years.

5.4 Distribution System

The distribution system improvements are based on the 200-year main replacement program, new customers, and miscellaneous improvements.

5.4.1 200-Year Main Replacement Program

The District will be implementing a 200-year main replacement program equating to an average of 2,200 feet of main per year. The main replacement priorities are listed in Section 3.4.2:

5.4.1.1 Priority 1: 2-inch Mains and Maintaining Level of Service

There is approximately 750 feet of 2-inch water main and is located in Adele Court and on Front Street north of Q Street. Three distribution improvements are planned to eliminate the 2-inch water mains and maintain level of service as follows:

1. Install 1,200 feet of 12-inch DI in Front Street north of Q St. This improvement will replace 500 feet

of 2-inch and 550 feet of 4-inch and close loop on two dead ends as well as add fire protection to that area of the water system. The project also includes the replacement of 7 water services and two new fire hydrants that will now be supplied from the 12-inch DI water line.

2. Install 150 feet of 6-inch PVC in Adele Court. The existing water line feeds a cul-de-sac with 3 residential customers. The new water line will be connected to an existing 6-inch AC water line in Marindell Street. Three new water services will connect the existing customers to the new water line.
3. The booster station was constructed to supply water to the northern part of the District when Well 5 was taken out of service due to arsenic levels exceeding CDPH's MCL. The booster station's suction line is sized too small for the pump station to effectively work. A new 2,700 feet long water line is need to supply the booster pump station. A minimum 12-inch water line is required. The waterline should be upsized to 16-inch to meet the District wide transmission requirements.

The priority 1 improvements are shown in Figure 5.1.

5.4.1.2 Priority 2 Improvements: Mains with Leak History or are Redundant

All of the mains in the distribution system are made mostly of asbestos cement. There is no clustering of water leaks on mains in any specific area. There are some service leaks that have occurred randomly throughout the water system and are associated with the crimping of the pipe near the corporation stop. These services will be replaced as required. There are no water mains being replaced based on water leaks. There are water mains that are redundant. This typically occurs when a new replacement water line is installed and the existing water line is not abandoned. The water mains are planned to be removed by relocating the services to the larger water main and abandoning the water line by disconnecting it from the water system. The redundant water lines have been identified in Table 7.4 and all priority 2 improvements are shown in Figure 5.1.

Natomas Mutual
Water Co.

Cal-Am
Water Co.

Legend:
- District Boundary
- Proposed Annexation Area
- Existing Distribution Lines
- Priority 1 Improvements
- Priority 2 Improvements
- Priority 3 Improvements
- Priority 4 Improvements

0 1250 2500 5000

1" = 2500'

FIGURE 5.1

PLANNED DISTRIBUTION IMPROVEMENTS

APRIL 2014

AFFINITY ENGINEERING

Rio Linda / Elverta
Community Water District
730 L Street
Rio Linda, CA 95673

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5.4.1.3 Priority 3 Improvements: Loop Dead End Mains to Improve Water Quality

The District plans to eliminate most of the dead-end mains by looping the mains. The looped mains will continually move water to maintain a chlorine residual in the main and will require less flushing. The distribution system improvements designed to eliminate the dead end water lines have been identified in Table 7.4 and priority 3 improvements are shown in Figure 5.1.

5.4.1.4 Priority 4 Improvements: Undersized Mains Causing Low System Pressure Areas

The majority of 4-inch water mains are being replaced under this priority due to the potential of high velocities developing in the water mains during high demand times. The 4-inch water lines have been identified in Table 7.4 and priority 4 improvements are shown in Figure 5.1.

Additional main replacements may be required to maintain pressure in certain areas of the water system if water quality issues require the existing wells to be relocated to the northeast part of the water system. As wells are replaced, distribution system improvements may be required to restore the water supply to where the well was taken out of service.

5.4.1.5 Upgrade Mains to Meet Current Fire Protection Requirements

There are several undersized mains in the distribution system with fire flows not meeting current fire flow standards. These undersized water mains have been identified in Table 7.4. The District will be replacing these water mains based on the criteria in Section 3.4.1.

5.4.2 Primary Transmission Mains

The distribution system is in a state of transition and the way customers are being supplied water is changing in the following ways:

- The existing wells are aging and will soon be replaced with wells that are located, in some cases, on the opposite side of the water system to avoid treatment for arsenic, manganese, and HC.
- The supply strategy is changing from a system that meets both MDD and PHD from sources to a system that uses sources to meet MDD and sources and storage to meet PHD.
- Imported surface water is being planned to supply the District with over 82 percent of its water supply at full build out. The District is planning to construct a SWP in the northwestern part of the water system.

These water system changes require planning primary transmission mains to move water supply from sources to all areas of the water system as shown in Figure 5.2. The transmission mains will be constructed as needed based on the need to relocate water supply to avoid treatment and the need to supply portions of the District that are being developed. Transmission mains sizes may be adjusted based on the following:

- Changes in land use plans
- Replacing groundwater wells
- Adding imported water supply

- Phasing of new developments and adding new customers
- Updated water modeling of the distribution system

5.4.3 Miscellaneous Distribution Improvements

The following are miscellaneous distribution improvements that have been identified:

5.4.3.1 Valve Replacement Program

During the District's flushing and valve exercising programs broken valves are identified and replaced. Also, some portions of the distribution system do not have enough gate valves. When these mains are taken out of service, a large number of customers can be affected. Operating staff will identify these vulnerable areas of the water system and schedule installations of new gate valves to prevent this situation from happening during an emergency.

The District adds a budget item every year for new and replacement valves.

5.4.3.2 Fire Hydrant Replacement Program

During the flushing program and when the SMFD runs flow tests, broken fire hydrants are identified and either repaired or replaced.

The District's fire hydrant spacing requirement is 500-ft for residential and 300-ft for commercial as stated in Section 3.4.1. There are some sections of the distribution system where this spacing criterion is not met and new fire hydrants are required.

The District adds a budget item every year to add or replace fire hydrants.

5.4.3.3 Meter Replacement Program and Automated Meter Reading (AMR) Program

The District currently has approximately 1,000 meters of the total 4,617 meters that require manual reading. The remaining meters are equipped with remote readers as part of an Automated Meter Reading (AMR) program. The District has currently standardized on Neptune meters and AMR program. The meters and remote readers have a 20-year life. It is recommended that the District budget for a 20-year meter replacement plan or approximately 230 meters per year along with replacing the remote meter reading equipment once every five years.

Natomas Mutual
Water Co.

5 MGD Surface Water
Treatment Plant - Exact
Location to be determined

To Sacramento
River Intake

Cal-Am
Water Co.

Primary Transmission Mains:
36" ~ 6,200 ft (edge of District)
24" ~ 53,600 ft
16" ~ 33,675 ft (new only)

Legend:
- District Boundary
- Proposed Annexation Area
- Existing Distribution Lines
- Primary 36" T-Main
- Primary 24" T-Main
- Primary 16" T-Main
- Existing 16" T-Main

0 1250 2500 5000

1" = 2500'

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FIGURE 5.2

DISTRICT PRIMARY TRANSMISSION MAIN PLAN

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Community Water District
730 L Street
Rio Linda, CA 95673

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6. New Customers

As stated in Section 5.4.2, transmission mains are planned to distribute water throughout the District along with serving new customers. The transmission mains will supply new developments from source water that will be coming from either the proposed SWP or from groundwater wells that will be relocated over time to the northeast section of the water system.

New developments will be required to submit their improvement plans and the District will size any distribution system improvements based on the criteria in Section 3.4.1.

6.1 Planning Criteria

The District developed planning and operations criteria in this Master Plan. The Amended SRF Applicant Engineering Report (see Appendix B) provided design factors for use in analyzing infrastructure requirements of the existing system and existing customers. The District conducted demand projection analysis for the ESP development based on specific land use criteria.

The analysis included the dwelling unit (DU) demand, density bonus, and an estimated 10 percent water loss to equate to an annual demand of 469 gallons per day (gpd) per DU. The Amended SRF Applicant Engineering Report developed the demand factors that are shown in Table 6.1. Using these demand factors, the MDD is 0.65 gpm/EDU and the PHD is 0.97 gpm/EDU. One EDU is equal to 0.52 acre-feet per year (469 gpd/DU). At system build out, the total water demand for the water system would be 17,500 acre-feet per year that would be capable of supplying 33,283 EDUs.

The District assumes that future growth will be a mix of ESP-style development and residential fill in from the subdivision of existing lots. It is recommended that the District use ESP demands/EDU for all new customers. This is because any new residential homes will have water efficiency requirements as dictated in the California Building Code. Any new customers that develop property larger than a typical residential home will be required to have a larger service and/or meter and pay fees and/or rates in proportion to their higher-than-average demand. All large development plans will be required to provide water demand calculations to determine their equivalent EDUs. Projected demands using the factors as identified are presented in Table 6.1. Table 6.2 presents the monthly planning values based on the design criteria.

Table 6.1 Planning Design Criteria

Parameter	Factor	Value
Annual Demand	--	17,500 AFY
Average Month	--	1,458 AF per mo
Max Month	1.86 × average	2,707 AF per mo
Max Day	1.07 × max month average day	30.4 MGD
Peak hour	1.5 × max day	45.7 MGD
Storage Requirement	4 hours max day + Highest fire flow + 25 percent MDD	16.2 MGal

Table 6.2 Projected Ultimate Build out Design Flows

Month	Month Factor	Average Monthly Demand (AF)	Average Day (MGD)	Max Day (MGD)	Peak Hour (MGD)
January	0.47	680	7.2	7.7	11.5
February	0.43	624	7.3	7.8	11.6
March	0.54	792	8.3	8.9	13.4
April	0.71	1032	11.2	12.0	18.0
May	1.16	1694	17.8	19.1	28.6
June	1.58	2304	25.0	26.8	40.2
July	1.86	2707	28.5	30.4	45.7
August	1.78	2601	27.3	29.3	43.9
September	1.41	2053	22.3	23.9	35.8
October	0.99	1445	15.2	16.3	24.4
November	0.57	836	9.1	9.7	14.6
December	0.50	731	7.7	8.2	12.3
Total:	--	17,500	--	--	--

6.2 Future Supply Strategy

The existing groundwater quality, regional reliability, and impending regulations affect the future supply strategy. The District currently relies solely on groundwater for supply. There is one emergency connection with the SSWD. The WFA identified the long-term negative effects to the groundwater basin from regional pumping. The groundwater levels were decreasing and contamination plumes (such as the plume at the former McClellan Air Force Base) were impacting the groundwater reliability and future ability to provide a reliable water supply.

Arsenic, manganese, and the potential MCL for HC affect the location of water supply as the District's new and replacement wells are being planned to avoid treatment for these constituents.

The District is in a unique position throughout the region as one of the least developed areas at only approximately 20 percent. Most other water agencies have already maximized groundwater supply limiting the amount available for new areas in order to maintain the regional groundwater basin stability, quality, and reliability. The WFA partners agreed to diversify supply sources and augment the groundwater with surface water, reclaimed water, and increased conservation measures. Although the District can develop new groundwater supplies as necessary to meet new connections (except for ESP or other specific plans created within the District), the District will instead focus future new supply efforts on non-groundwater sources at this time. The District seeks to work within the WFA and with other agencies throughout the region to develop and implement a regional supply strategy that will provide the highest reliability and source diversity.

The ESP development must meet the PF-8 requirement that results in no net

change in groundwater pumping. The supply investigations evaluated potential surface water and recycled water opportunities throughout the region. As stated in Section 3.1.1, Sacramento River surface water was identified as the long-term supply for the District. The District is also selecting this source at this time to meet future growth in addition to serving ESP. ESP supply source will be purchased from the NCMWC, diverted through existing NCMWC river diversions, and pumped to a new SWP in the District.

All new supply requirements will be met with surface water. Therefore, the District will implement a conjunctive use strategy that will combine supply sources as necessary throughout the year to meet daily demands efficiently.

6.2.1 Water Supply Planning

The District's water supply plan for new customers will meet the objectives of SGA, the Water Forum, and the County's PF-8 requirements by not increasing its groundwater usage. New customers that are not part of a specific plan will be initially supplied by groundwater until surface water is made available.

The short- and medium-term water supply plans will be to purchase banked groundwater credits using SGA's Water Accounting Framework (see Appendix H).

The long-term water supply plan will be to construct the SWP and its associated transmission mains that import and treat water from the Sacramento River. A financing plan will be required to finance the cost of these facilities.

The District will also continue to work with other regional water suppliers to construct a regional SWP in lieu of a plant financed by the District only. The advantages to the District for a regional SWP over a local SWP are:

- Lower construction costs,
- Lower operating costs,
- Higher operating reliability, and
- Higher success in obtaining grant funding through RWA's IRWMP

6.3 Future Infrastructure Requirements

The District's long-term supply strategy requires new customers to be supplied with surface water. This long-term water supply strategy is shown in Table 6.3. The ESP development will begin with groundwater and offset the groundwater usage by purchasing banked groundwater credits. As connection fees are collected and the banked groundwater credits are used, the supply will be switched to surface water.

Table 6.3 Long-Term Supply Strategy

Service Area	Ground-water (AFY)	Surface Water (AFY)
Existing Customer Demand	3,000	--
ESP Demand	--	5,000
Future Customer Demand (non-ESP)	--	9,500
Total:	**3,000**	**14,500**

The District will continue to maintain its groundwater supply at 3,000 acre-feet per year. As existing District well production decreases, new water regulations are enacted, or water quality decreases, the older wells will be replaced with new wells. The District

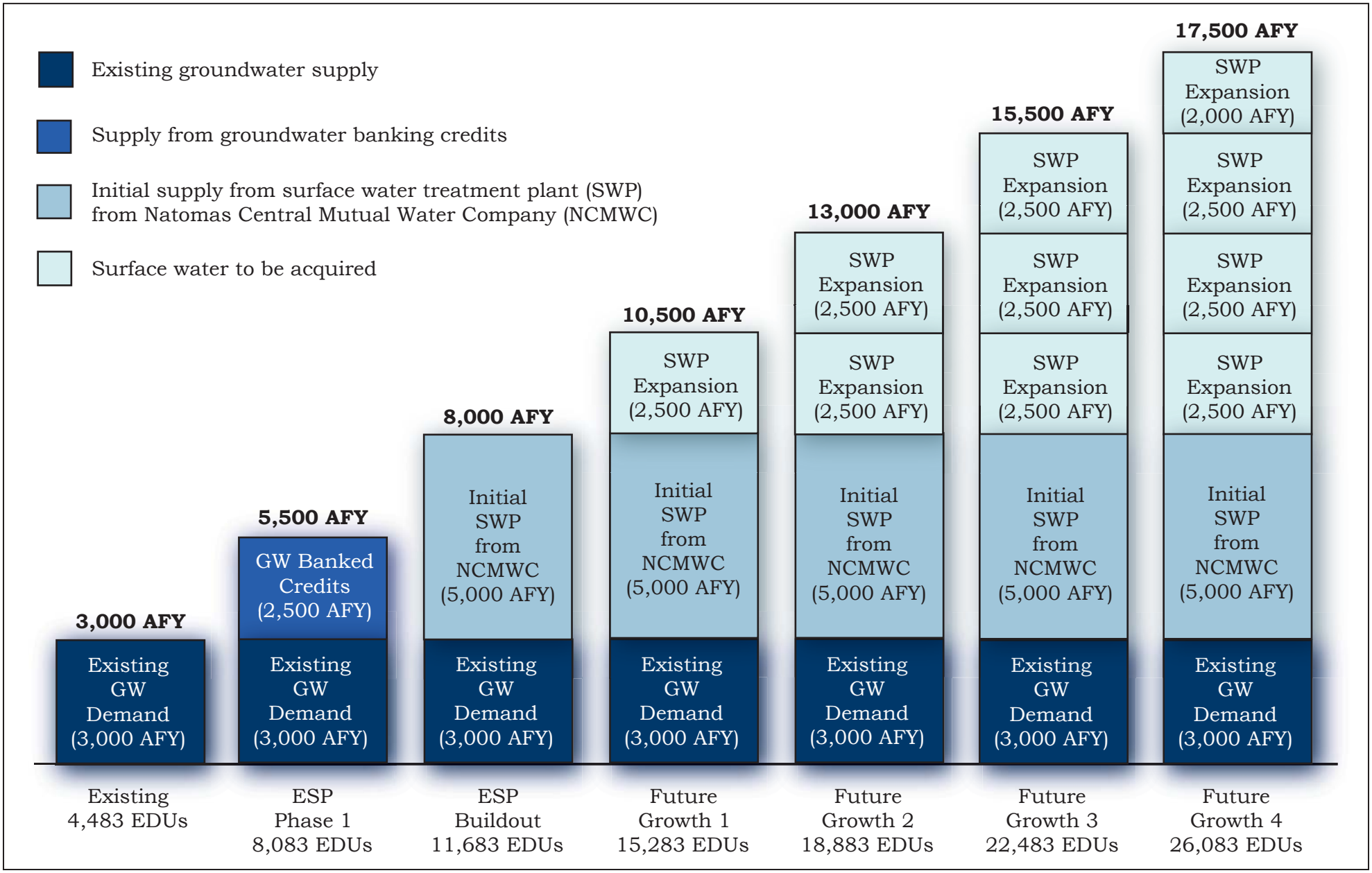
will rely on the new wells. Further hydrogeological investigations prior to any new well construction are recommended to locate wells in areas with the best water quality to avoid treatment. For planning purposes, well treatment has been included in the overall cost to supply water to new customers. The proposed infrastructure to supply new customers is provided in Table 6.4.

6.4 Supply Program Phasing

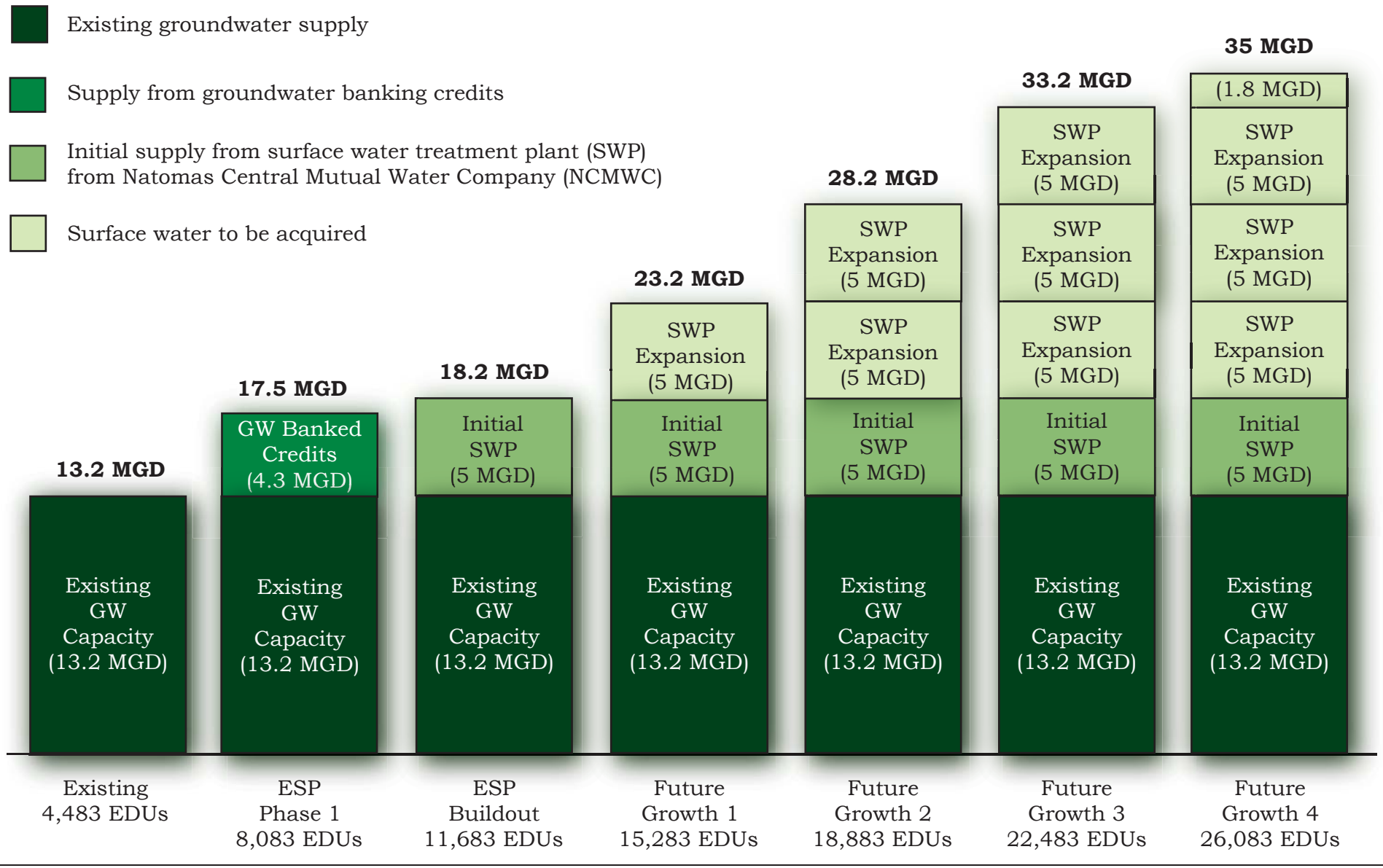
A phasing strategy to provide new infrastructure to supply new customers is shown in Figures 6.1 and 6.2. The first phase of supply infrastructure (groundwater wells and associated treatment for ESP) will supply up to 2,500 acre-feet per year, or 3,600 EDUs. As new connections approach this limit, the first phase of the SWP will be implemented. The SWP and associated infrastructure will be phased in over time to match the rate of new connections. The SWP will be planned and designed to accommodate incremental 5-MGD expansions. The initial phase of the SWP will be 5 MGD. This initial phase will also include a raw water line from the Sacramento River intake to the SWP. The raw water line and SWP's property will be sized for the ultimate capacity of 25 MGD.

Table 6.4 Proposed Build Out Supply and Distribution Infrastructure

Parameter	Capacity	Notes
ESP Initial Development Groundwater Infrastructure		
Groundwater Wells	1,500 gpm, 2 units	2 wells with assumed 1,500 gpm capacity. Wells used for ESP initial development, but will be incorporated into the conjunctive use strategy going forward.
Raw Groundwater Transmission	16-inch, 1,000 LF	Pipe wells to central treatment facility, length assumed at this time, to be finalized in design.
Groundwater Treatment	4.3 MGD	Max day ESP initial development demands.
Booster Pumping Station	6.5 MGD	ESP initial development peak hour demands.
Surface Water Infrastructure		
Raw Water Pumping Station	25.2 MGD	14,500 AFY ultimate build out max day demand. Located at NCMWC Pritchard Lake Intake structure.
Raw Water Pipeline	36-inch, 32,000 LF	Sized for total 14,500 AFY District build out. Actual alignment selected will affect total length.
Raw Water Storage	50 MGal	Located at treatment plant site, number of cells to be determined during design.
Pre-Treatment Booster Pumping Station	25.2 MGD	Pump water from raw water ponds into treatment plant.
Surface Water Treatment Plant	25.2 MGD	Includes treatment and solids handling.
Distribution System Infrastructure		
System Storage	13.5 MGal	Size and unit number to be determined. Located throughout District.
Treated Booster Pumping	37.8 MGD	Total required, includes the 6.5 MGD built for ESP initial development. Actual number and location to be determined.
36-inch T-Main	6,200 LF	See figure for general location, actual locations and length determined in design.
24-inch T-Main	53,600 LF	
16-inch T-Main	33,675 LF	



Rio Linda/Elverta Community Water District 730 L Street Rio Linda, CA 95673	Figure 6.1	April 2014
	Annual Supply Phased Capacity Increases	AFFINITY ENGINEERING



Rio Linda/Elverta Community Water District
730 L Street
Rio Linda, CA 95673

Figure 6.2

April 2014

Maximum Day Supply Phased Capacity Increases

AFFINITY ENGINEERING

6.5 Infrastructure Probable Costs

Table 6.5 presents an opinion of probable costs for the total new customer build out supply and infrastructure requirements. Actual system costs will be phased in over time with supply phased in 5-MGD increments and transmission mains extended to serve each individual development. The costs for purchasing surface water rights are not known at this time. The District is currently negotiating with the NCMWC to obtain surface water for ESP supply. These negotiations may also include purchase options for additional surface water to meet the future District supply needs.

Table 6.5 ESP Ultimate Build Out Opinion of Probable Supply Infrastructure Costs

Item	Capacity	Units		Unit Cost, $/unit		Cost	Notes
				Groundwater			
Wells	1,500 gpm	2	well	1,000,000	well	$2,000,000	Max day is 3,060 gpm, 2 wells at +/- 1,500 gpm
Raw Water Transmission	16-inch	1,000	LF	160	LF	$160,000	LF assumed distance to pipe two wells to central treatment, 1 well at treatment site
Groundwater Treatment	4.3 mgd	4,300,000	gpd	2.5	gpd	$10,750,000	Initial development max day
Storage	3 MG	3,000,000	gal	1	gal	$3,000,000	3 MG constructed initially at ESP
Booster pumping station	6.5 mgd	4,530	gpm	600	gpm	$2,718,000	ESP initial development peak hour total = 4,530 gpm
Groundwater system land			acre	0	acre	$ —	Two sites, assumed to be provided by ESP, cost not included
Subtotal:						$18,628,000	
				Surface Water			
Raw Water Booster Pumping Station	25.2 mgd	17,518	gpm	500	gpm	$8,759,000	Total Max Day (14,500 AFY)
Raw Water Transmission	36 inch	32,000	LF	360	LF	$11,520,000	
Bore and Jack	7 sites	1,100	LF	1,000	LF	$1,100,000	5 canal, HWY 99, Railroad, assume 1,100 LF total, $25/inch-diam casing
Raw Water Reservoir	50 MG	50,000,000	gal	0.25	gal	$12,500,000	2 * Max day volume
Pre Treatment Booster	25.2 mgd	17,518	gpm	350	gpm	$6,131,300	
WTP	25.2 mgd	25,200,000	gpd	2.3	gpd	$57,960,000	Total Max Day (14,500 AFY)

Item	Capacity	Units		Unit Cost, $/unit		Cost	Notes
WTP land	30 acre	30	acre	33,333	acre	$999,990	Assumed $1 million at this time
Booster Pumping Station		22,247	gpm	350	gpm	$7,786,450	Peak hour = 26,277 gpm at build out, capacity listed here subtracts the 4,530 already installed in ESP, actual number and locations to be determined
Subtotal:						$106,756,740	
			Transmission-Distribution System				
T-Main	16-inch	33,675	LF	160	LF	$5,388,000	
T-Main	24-inch	53,600	LF	240	LF	$12,864,000	
T-Main	36-inch	6,200	LF	360	LF	$2,232,000	
System Storage	10.5 MG	10,500,000	gal	1	gal	$10,500,000	13.5 MG required at build out, capacity listed here subtracts the 3 MG already installed in ESP, actual number and locations to be determined
			Subtotal:			$20,484,000	
			All Subtotal			$145,868,740	
			Contingency	30%		$43,760,622	
			Construction Total			$189,629,362	
			Engineering/Const. Mngt/Admin	15%		$28,444,404	
			Environmental/Permitting/Mitigation	2%		$3,792,587	
			Legal	2%		$3,792,587	
			Right of Way/Land	2%		$3,792,587	
			Opinion of Probable Capital Cost			**$229,451,528**	

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7. Summary of Improvements

Tables 7.1 – 7.4 summarize the recommended improvements presented in Section 5. These improvements would be District funded and do not include facilities (wells and pipelines) that will be constructed to serve the ESP Area. It is anticipated that the ESP Area facilities will be constructed as part of the proposed specific plan for that development.

Table 7.1 Ongoing Programs

Description	Estimated Amount/Frequency	Estimated Cost
Main Replacement Program	2,200' per year	$176,000 – $264,000
Valve Replacement Program	1-2 replaced every year	$5,000
Fire Hydrant Replacement Program	1-2 replaced every year	$5,000
Meter Replacement Program (Meters)	230 meters every year	$50,000
Meter Replacement Program (AMR)	AMR Reader every 5 years	$5,000
SCADA Replacement Program	Replaced every 15 years	$80,000
PLC Replacement Program	1 replaced 5 years	$25,000

Table 7.2 Well Replacement Program

Well Replacement Program			
Item No.	**Priority**	**Description**	**Cost**
1	B	Replacement well for Wells 3 and 12 (within 3 years)	$ 1,000,000
2	B	Replacement well for Wells 4 and 6 (within 6 years)	$ 2,500,000
3	B	Replacement well For Wells 8A and 10 (within 15 years)	$ 2,500,000

Table 7.3 Facility Priorities

Facilities			
Item No.	**Priority**	**Description**	**Cost**
		Well 2A	
1	B	Remove hydropneumatic tank and footing	$ 10,000
2	B	Replace chlorine building and add light	$ 5,000
3	B	Secondary chemical containment for the chlorine feed system	$ 1,000
4	C	Sound attenuation enclosure for the VHS motors	$ 10,000
5	C	Add lower panel to protect exposed SCADA cables	$ 1,000
6	C	Landscaping to the well frontage	$ 5,000
7	C	Clear and grub well site, sterilize soil, and add AB to well site	$ 5,000
8	C	Facility signage on front gate	$ 100
		Well 3	
9	B	Remove hydropneumatic tank, re-plumb well discharge	$ 15,000
10	B	Secondary chemical containment for the chlorine feed system	$ 1,000
11	B	Chlorine building - add light and ventilation	$ 1,000
12	B	Relocate meter to improve accuracy	$ 2,000
13	C	Sound attenuation enclosure for the VHS motors	$ 10,000
14	C	Add lower panel to protect exposed SCADA cables	$ 1,000

Facilities			
Item No.	**Priority**	**Description**	**Cost**
15	C	Clear and grub well site, sterilize soil, and add AB to well site	$ 3,000
16	C	Facility signage on front gate	$ 100
		Well 4	
17	B	Remove hose bib on the pump side of the check valve and plug	$ 200
18	B	Replace cover in box where conductors are exposed	$ 100
19	B	Add missing bolts to pump-to-waste valve and add screen or blind flange to end of pump-to-waste line	$ 100
20	B	Replace electrical panel, remove hydropneumatic tank, upgrade SCADA control, and re-plumb well to pump directly into the water system	$ 50,000
21	B	Secondary chemical containment for the chlorine feed system	$ 500
22	B	Chlorine building - add light and ventilation	$ 1,000
23	C	Sound attenuation enclosure for the VHS motors	$ 10,000
24	C	Add lower panel to protect exposed SCADA cables	$ 1,000
25	C	Clear and grub well site, sterilize soil and add AB to well site	$ 2,000
26	C	Facility signage on front gate	$ 100
		Well 6	
27	B	Replace electrical panel, remove hydropneumatic tank, upgrade SCADA control and re-plumb well to pump directly into the water system	$ 50,000
28	B	Replace control conduit below ground to remove tripping hazard	$ 1,000
29	B	Secondary chemical containment for the chlorine feed system	$ 500
30	B	Chlorine building - add light and ventilation	$ 1,000
31	B	Security - add lockable cover over the HOA	$ 100
32	C	Sound attenuation enclosure for the VHS motors	$ 10,000
33	C	Add lower panel to protect exposed SCADA cables	$ 1,000
34	C	Clear and grub area near and under hydropneumatic tank, sterilize soil, and add AB	$ 2,000
35	C	Facility signage on front gate	$ 100
		Well 7	
36	B	Various site improvements - Add screen or blind flange to pump-to-waste and replace pump-to-waste grate	$ 1,000
37	B	Secondary chemical containment for the chlorine feed system	$ 500
38	B	Chlorine building - add light and ventilation	$ 1,000
39	B	Relocate meter to improve accuracy	$ 2,000
40	C	Sound attenuation enclosure for the VHS motors	$ 10,000
41	C	Add lower panel to protect exposed SCADA cables	$ 1,000
42	C	Clear and grub well site, sterilize soil and add AB to well site	$ 2,000
43	C	Facility signage on front gate	$ 100
		Well 8A	
44	B	Various site improvements - Add screen or blind flange to pump-to-waste line, add bolts to gate valve, add gate can lid, add air gap to hydropneumatic tank drain line, replace chlorine building electrical conduit, and relocate telephone line into an electrical conduit	$ 2,500

Facilities			
Item No.	**Priority**	**Description**	**Cost**
45	B	Replace electrical panel, remove hydropneumatic tank, upgrade SCADA control and re-plumb well to pump directly into the water system	$ 50,000
46	B	Secondary chemical containment for the chlorine feed system	$ 1,000
47	B	Chlorine building - add light and ventilation	$ 1,000
48	B	Security - add lockable cover over the HOA	$ 100
49	B	Relocate meter to improve accuracy	$ 2,000
50	C	Add lower panel to protect exposed SCADA cables	$ 1,000
51	C	Landscaping to the well frontage	$ 5,000
52	C	Repair pavement and slurry seal well site	$ 5,000
53	C	Facility signage on front gate	$ 100
		Well 9	
54	B	Various site improvements - Add screen to pump-to-waste line and add air gap to hydropneumatic tank drain line	$ 1,000
55	B	Replace electrical panel, remove hydropneumatic tank, upgrade SCADA control and re-plumb well to pump directly into the water system	$ 50,000
56	B	Secondary chemical containment for the chlorine feed system	$ 500
57	B	Chlorine building - add light and ventilation	$ 1,000
58	B	Relocate meter to improve accuracy	$ 1,000
59	C	Add lower panel to protect exposed SCADA cables	$ 1,000
60	C	Landscaping to the well frontage	$ 5,000
61	C	Repair pavement and slurry seal well site	$ 5,000
62	C	Facility signage on front gate	$ 100
		Well 10	
63	B	Various site improvements - replace broken electrical conduits, replace lock on engine control panel, remove hose bib on pump side of the check valve, and add air gap to hydropneumatic tank	$ 5,000
64	B	Replace electrical panel, remove hydropneumatic tank, upgrade SCADA control and re-plumb well to pump directly into the water system	$ 50,000
65	B	Secondary chemical containment for the chlorine feed system	$ 500
66	B	Chlorine building - add light and ventilation	$ 1,000
67	B	Security - add lockable cover over the HOA	$ 100
68	B	Relocate meter to improve accuracy	$ 2,000
69	C	Sound attenuation enclosure for the VHS motors	$ 10,000
70	C	Add lower panel to protect exposed SCADA cables	$ 1,000
71	C	Clear and grub well site, sterilize the soil, and add AB	$ 1,000
72	C	Facility signage on front gate	$ 100
		Well 11	
73	B	The driveway should be extended to the roadway pavement to maintain accessibility	$ 2,000
74	B	Various site improvements - remove well pressure transducer and cap well tube, plug hole in electrical panel, and add screen or blind flange to pump-to-waste line	$ 2,000
75	B	Replace electrical panel, remove hydropneumatic tank, upgrade SCADA control and re-plumb well to pump directly	$ 50,000

Facilities			
Item No.	**Priority**	**Description**	**Cost**
		into the water system	
76	B	Secondary chemical containment for the chlorine feed system	$ 1,000
77	B	Chlorine building - add light and ventilation	$ 1,000
78	B	Security - add lockable cover over the HOA	$ 500
79	C	Sound attenuation enclosure for the VHS motors	$ 10,000
80	C	Landscaping to the well frontage	$ 5,000
81	C	Add lower panel to protect exposed SCADA cables	$ 1,000
82	C	Clear and grub well site, sterilize soil, and add AB to well site	$ 3,000
83	C	Facility signage on front gate	$ 100
		Well 15	
84	C	Facility signage on front gate	$ 100
		L Street Plant	
85	B	Well 12 replaced with a new onsite well	$ 1,000,000
		Elverta Boosters	
86	C	Clear and grub well site, sterilize soil and add AB to well site	$ 5,000
87	C	Remove hydropneumatic tank and footing	$ 10,000
88	C	Remove Well 5's pump and add locking well cover	$ 5,000
89	C	Facility signage on front gate	$ 100
		Sacramento Suburban Water District Interconnection	
90	B	Extend SCADA system to connect to SSWD interconnection data and remotely monitor pressure and flow	$ 10,000
		Sample Stations	
91	C	Replace all 4 samples stations	$ 40,000
		PRV Stations	
92	C	Abandon and remove 2 PRV stations	$ 20,000

Table 7.4 Distribution Priorities

Distribution			
Item No.	**Priority**	**Description**	**Cost**
1	1	Replace 6-inch pipe with 2,800 feet of 16-inch DI in Rio Linda Blvd North of Elverta Road	$ 500,000
2	1	Replace 500 feet of 2-inch with 1,200 feet of 12-inch DI located north west of Q and Front St and relocate 7 services	$ 200,000
3	1	Replace 2-inch pipe with 150 feet of 6-inch PVC on Adele Ct and relocate 3 service lines	$ 20,000
		Subtotal	$ 720,000
4	2	Abandon 2,500 feet of 4-inch pipe from 10th and O St to 8th St and Oak Ln and relocate 24 service lines and 2 fire hydrants to existing 8-inch line	$ 100,000
5	2	Abandon 1,350 feet of 4-inch on the north side of Elkhorn Blvd, east of Rio Linda Blvd and relocate 12 services and 1 fire hydrant	$ 50,000
		Subtotal	$ 100,000
6	3	2,500 feet of 12-inch DI on Dry Creek Rd north of Elkhorn Blvd	$ 300,000
7	3	1,000 feet of 12-inch DI on Curved Bridge Rd near Dry Creek Rd and 1,000 feet of 8-inch PVC on Curved Bridge Rd	$ 200,000
8	3	1,000 feet of 8-inch PVC looped to curved Bridge Rd near Dry Creek Rd and 1,100 feet of 8-inch PVC looped between West U St and Charles Ave	$ 170,000
9	3	900 feet of 6-inch PVC looped between Delano St and El Modena Ave and 1,350 feet of 6-inch PVC looped between 22nd and 24th St south of E St	$ 135,000
10	3	1,800 feet of 8-inch PVC looped between U and 14th St	$ 144,000
11	3	1,400 feet of 8-inch PVC on 2nd St between Shady Woods Wy and Q St and 650 feet of 8-inch PVC looping Montague Wy to 5th Ave	$ 164,000
12	3	700 feet of 8-inch PVC looping Marysville Blvd south of Elkhorn Blvd and 1,400 feet of 6-inch PVC looped between 14th and 26th St south of E St	$ 140,000
13	3	1,000 feet of 8-inch PVC looping West 4th St to West Elkhorn Blvd and 1,100 feet of 8-inch PVC looped between L St and Elkhorn Blvd	$ 168,000
		Subtotal	$ 1,419,000
14	4	Replace 4-inch pipe with 4,700 feet of 12-inch DI on Front St from the end of Elverta Rail Wy to south of M St (over 2 years)	$ 564,000
15	4	Replace 4-inch pipe with 6,850 feet of 12-inch DI on Q St from 2nd St to Dry Creek Rd (over 3 years)	$ 822,000
16	4	Replace 4-inch pipe with 1,600 feet of 8-inch PVC on Belcamp St from Herring Ave to Q St and 350 feet of 8-inch PVC on Elder St	$ 156,000

Distribution			
Item No.	**Priority**	**Description**	**Cost**
17	4	Replace 4-inch pipe with 850 feet of 6-inch PVC on Bradley Wy between Rio Linda Blvd and Shady Woods Wy and 1,350 feet of 8-inch PVC on 8th St from Q to O St	$ 159,000
18	4	Replace 4-inch pipe with 2,050 feet of 8-inch PVC on Elkhorn Blvd from the south of Randy Wy to Rio Linda Blvd and 100 feet of 6-inch PVC from Paladin Wy and Rio Linda Blvd to Archway Ave and Rio Linda Blvd	$ 170,000
19	4	Replace 4-inch pipe with 800 feet of 8-inch PVC on 10th St from Q St to Quiet St and 1,350 feet of 8-inch PVC on 8th St from O St to M St	$ 172,000
20	4	Replace 4-inch pipe with 1,600 feet of 8-inch PVC on 9th St from Anderson Wood Wy to Oak Ln and 300 feet of 6-inch PVC on the east side of Monticello Ave to 2nd St	$ 146,000
21	4	Replace 4-inch pipe with 1,350 feet of 8-inch PVC on 7th St from O St to M St and 700 feet of 8-inch PVC on 6th Ave from N St to M St	$ 164,000
22	4	Replace 4-inch pipe with 1,400 feet of 8-inch PVC on N St from 7th St to 9th St and 650 feet of 6-inch PVC on Arcano Wy from Tejon Wy to Dorado St	$ 151,000
23	4	Replace 4-inch pipe with 1,400 feet of 8-inch PVC on 5th St from O St to M St and 650 feet of 8-inch PVC on K St from 7th St to Bike Trail	$ 164,000
24	4	Replace 4-inch pipe with 1,350 feet of 8-inch PVC on 4th Ave from M St to K St and 800 feet of 6-inch PVC on the west side of Lilac Ln	$ 156,000
25	4	Replace 4-inch pipe with 700 feet of 8-inch PVC on 5th St from L to K St and 1,400 feet of 8-inch PVC on 5th Ave from M St to K St	$ 168,000
26	4	Replace 4-inch pipe with 1,400 feet of 8-inch PVC on 2nd St from the south of Kenora Wy to Withington Ave and 800 feet of 8-inch PVC on Dolphin Wy from Beamer Wy to 2nd St	$ 176,000
27	4	Replace 4-inch pipe with 700 feet of 8-inch PVC on 6th St from L St to K St and 650 feet of 8-inch PVC on Bolin St from West Monticello Ave to West 2nd St and 700 feet of 8-inch PVC on Randy Wy from Withington Ave to 2nd St	$ 164,000
		Subtotal	$ 3,332,000
		Overall Total	$ 5,464,000

Appendix A. Water Forum Agreement

RIO LINDA/ELVERTA COMMUNITY WATER DISTRICT

A. INTRODUCTION

Rio Linda/Elverta Community Water District (RLECWD) serves an area in the north central part of Sacramento County adjacent to the City of Sacramento and Placer County.

RLECWD currently has 4,060 connections all of which are metered. Within the District, over 1000 individual parcels are served by domestic and/or agricultural wells.

The current water supply for RLECWD is entirely groundwater.

B. SEVEN ELEMENTS OF THE *WATER FORUM AGREEMENT*: INTEGRATED PACKAGE

In order to achieve the Water Forum's two coequal objectives, providing a safe reliable water supply and preserving the values of the Lower American River, all signatories to the *Water Forum Agreement* need to endorse and, where appropriate, participate in each of seven complementary actions.

- Increased Surface Water Diversions
- Actions to Meet Customers' Needs While Reducing Diversion Impacts in Drier Years
- Support for an Improved Pattern of Fishery Flow Releases from Folsom Reservoir
- Lower American River Habitat Management Element
- Water Conservation Element
- Groundwater Management Element
- Water Forum Successor Effort

For each interest to get its needs met, it has to endorse all seven elements. Based on this linkage, signatories agree to endorse and, where appropriate, participate in all seven of these elements.

C. BASELINE DIVERSIONS FROM AMERICAN RIVER

Baseline diversions represent the historic maximum amount of water diverted annually from the American River through the year 1995.

Because RLECWD does not divert from the American River, no American River diversion is included in the baseline for RLECWD.

D. AGREEMENT FOR MEETING RLECWD'S WATER SUPPLY NEEDS TO THE YEAR 2030

The 2030 projected water demand within the present geographical boundary of RLECWD is 17,035 acre feet. This projected demand is included in the North Central Group of M&I Purveyors which also includes a portion of the Citizens Utilities Company, a portion of the Arcade Water District, McClellan AFB and Northridge Water District.

The RLECWD acknowledges that decisions on how to maintain the long-term sustainable yield of the North area groundwater basin will be made by the Sacramento North Area Groundwater Management Authority (SNAGMA) with representation of the RLECWD on the SNAGMA's governing board consistent with the joint powers agreement establishing SNAGMA.

As the purveyor of municipal and industrial water within its current and future expanded boundaries, RLECWD will construct appropriate facilities to meet its 2030 projected peak period water demand.

If SNAGMA determines that it is necessary to acquire surface water for use within SNAGMA's boundaries, the District will cooperate with the Water Forum Successor Effort, SNAGMA, and other affected agencies to obtain the surface water to be used as part of SNAGMA's groundwater management program.

The District acknowledges that the *Water Forum Agreement* does not provide for a baseline quantity of groundwater. The District also acknowledges its responsibility for sharing in the cost to acquire surface water supplies if SNAGMA determines such supplies are necessary to maintain the long-term sustainable yield of the Sacramento North area groundwater basin.

E. SPECIFIC AGREEMENTS FOR COMPLYING WITH THE SEVEN ELEMENTS

(agreements in italics are common in all agreements)

1. All signatories to the *Water Forum Agreement* will endorse all water entitlements needed for the diversions specified in each Purveyor Specific Agreement.

2. All signatories will endorse construction of facilities to divert, treat and distribute water consistent with this Purveyor Specific Agreement and the Water Forum Agreement including diversion structures, treatment plants, pumping stations, wells, storage facilities, and major transmission piping. Endorsement is also to be provided for necessary rights-of-ways, permits, and other endorsements which may be needed, in the context of the following five points:

a. All signatories agree that implementation of the Water Forum Agreement including an Improved Pattern of Fishery Flow Releases, the Updated Lower American River flow standard, the Lower American River Habitat Management Element, Actions to Meet Customers' Needs While Reducing Diversion Impacts in Drier Years, and the Water Conservation Element constitute reasonable and feasible mitigation for any cumulative

impacts on the Lower American River caused by diversions included in the Water Forum Agreement.

b. *Environmental impacts of facilities to divert, treat and distribute water will be subject to site-specific environmental review. It is understood that signatories may provide comments on site specific impacts. All signatories will work in good faith to agree on reasonable and feasible mitigation for any site-specific impacts.*

c. To the extent that the water facilities are consistent with the Water Forum Agreement, signatories agree that they will not object to those water facilities based on the cumulative impacts to the Lower American River. Nor will signatories object to water facilities consistent with the Water Forum Agreement based on the planned growth to be served by those water facilities. (See Section Four IV, Relationship of Water Forum Agreement to Land Use Decision Making.)

d. In the planning for new water diversion, treatment, and distribution facilities identified in the Water Forum Agreement, water purveyors signatory to the Agreement will either provide for a public participation process, such as meeting with already established citizen advisory committees, or other appropriate means to help design and implement these projects.

e. All signatories retain their existing ability to provide input on specific details of facility design, financing, and construction.

3. Endorsement of the water entitlements and related facilities in the Water Forum Agreement means that signatories will expend reasonable efforts to:

a. Speak before stakeholder boards and regulatory bodies,

b. Provide letters of endorsement,

c. Provide supportive comments to the media,

d. Advocate the Water Forum Agreement to other organizations, including environmental organizations that are not signatory to the Water Forum Agreement, and

e. Otherwise respond to requests from other signatories to make public their endorsement of the Water Forum Agreement.

4. *All signatories agree that participation in the Water Forum and the Successor Effort is in the best interests of water consumers and the region as a whole. Participation in the Water Forum is the most economically feasible method of ensuring that water demands of the future will be met. Furthermore, provisions for groundwater management, conjunctive use, conservation programs, improved pattern of fishery flow releases from Folsom Reservoir,*

habitat management, and a reliable dry year supply are in the public interest, and represent reasonable and beneficial use of the water resource.

5. All signatories will not oppose and will endorse where appropriate needed rates and fees applied equitably. This includes endorsement at the California Public Utilities Commission for investor owned utilities' ability to recover all costs of conservation programs, including residential meter retrofit, through rates.

6. All signatories will endorse an Improved Pattern of Fishery Flow Releases from Folsom Reservoir and reduced daily flow fluctuations for the Lower American River. (Reference Section Three, III.)

7. All signatories will endorse formal assurances that the diversions will be consistent with the conditions in the Water Forum Agreement and that an Improved Pattern of Fishery Flow Releases from Folsom Reservoir will be implemented.

8. All signatories will endorse and participate where appropriate in all provisions of the Water Forum Agreement, including all agreements pertaining to other signatories and executed as part of this Agreement.

9. All signatories will participate in education efforts and advocate the Water Forum Agreement to regulatory bodies and signatory stakeholder boards as appropriate.

10. All signatories will participate in the Water Forum Successor Effort to oversee, monitor and report on the implementation of the Water Forum Agreement. (Reference Section Three, VII., Water Forum Successor Effort). This includes participating with other signatories in carrying out procedural agreements as identified in the Water Forum Agreement. To the extent that conditions change in the future, all signatories will work together in good faith to identify ways to ensure that the two coequal goals of the Water Forum will still be met.

11. All signatories will endorse and, where appropriate, financially participate in the Lower American River Habitat Management Element (Reference Section Three, IV., Lower American River Habitat Management Element).

12. All signatories will endorse and, where appropriate, implement the Water Conservation Element of the Agreement (Reference Section Three, V., Water Conservation Element). This purveyor's implementation of water conservation will be as specified in its Water Conservation Plan which is incorporated as Appendix J to the Water Forum Agreement.

13. All signatories will endorse and, where appropriate, participate in implementation of the Sacramento North Area Groundwater Management Authority to maintain a North Area estimated average annual sustainable yield of 131,000 acre feet.

14. All signatories will endorse development of a groundwater management arrangement for the South Area and where appropriate participate in its development, to maintain a South Area estimated average annual sustainable yield of 273,000 acre feet.

15. All signatories will endorse development of a groundwater management arrangement for the Galt Area and where appropriate participate in its development, to maintain a Galt Area estimated average annual sustainable yield of 115,000 acre feet.

16. Signatories authorizing individuals to represent them in matters included within the Water Forum Agreement will ensure that representations made by those individuals are consistent with the Water Forum Agreement and are upheld by the signatories.

17. This Agreement is in force and effect for all signatories for the term of the Memorandum of Understanding, December 31, 2030.

18. Any solution that provides for future needs will have costs. New diversion, treatment, and distribution facilities, wells, conservation programs, and required environmental mitigation will be needed. This Agreement identifies that these solutions must be equitable, fiscally responsible, and make the most efficient use of the public's money.

Water suppliers have both capital costs for facilities and operations and maintenance costs. This Agreement recommends that charges imposed to recover capital costs associated with water acquisition, treatment, or delivery be equitable. Any costs for facilities funded through bonds will be recovered as provided by law. In addition, signatories to the Water Forum Agreement agree that operational, maintenance and replacement costs should be recovered from beneficiaries of the system in accordance with California Government Code Sections 53720 to 53730 (Proposition 62) and California Constitution, Articles XIII, C and XIII, D (Proposition 218) and other laws to the extent they are applicable.

19. *All signatories agree to endorse, and where appropriate, participate in Sacramento River Supply for North Sacramento County and Placer County (Reference Section Four, III).*

20. All signatories will endorse, and where appropriate, participate in the section of the Water Forum Agreement entitled "Relationship of Water Forum Agreement to Land Use Decision Making" (Reference Four, IV).

21. All signatories will endorse, and where appropriate, participate in the Folsom Reservoir Recreation Program (Reference Section Four, V).

22. Purveyors signatory to the Water Forum Agreement will reference the Water Forum Agreement, including agreed upon estimated average annual sustainable yields of each of the three subareas of the groundwater basin in Sacramento County and limits to diversions from the American River in their water master plans and urban water management plans, which are used in providing information to cities and counties as required under Chapter 881 of the Statutes of 1995.

23. Any transfers of American River water by signatories will be delivered in a manner consistent with an Improved Pattern of Fishery Flow Releases as referenced in the Water Forum Agreement.

F. ASSURANCES AND CAVEATS

Because the *Water Forum Agreement* is a comprehensive set of linked elements, it is absolutely essential that adequate assurances be secured for every element. In an agreement that will extend over three decades, the timing of these assurances is critical. Full implementation of all seven elements cannot occur simultaneously. Therefore all signatories agree with the provisions in the Assurances and Caveats Section of this *Water Forum Agreement.*

Two particularly important assurances are the updated Lower American River Flow Standard and Upstream American River Diversion Agreements.

All signatories agree they will recommend to the State Water Resources Control Board an updated American River flow standard and updated Declaration of Full Appropriation to protect the fishery, wildlife, recreational and aesthetic values of the Lower American River. The recommendation will include requirements for U.S. Bureau of Reclamation releases to the Lower American River. In addition, the City of Sacramento's Fairbairn diversion will be required to comply with the diversion limitations of the City's Purveyor Specific Agreement. The *Water Forum Agreement* also includes agreed upon dry year reductions by purveyors upstream of Nimbus Dam. The recommendation for an updated Lower American River standard will be consistent with:

> *Water Forum Agreement* provisions on water diversions including dry year diversions,
>
> and
>
> Implementation of the Improved Pattern of Fishery Flow Releases which optimizes the release of water for the fisheries.

The recommendation will also address related issues such as principles to guide water management in the driest years, flexibility in the standard to allow adaptive management, and amending the existing "Declaration of Full Appropriation for the American River."

Purveyors signatory to the *Water Forum Agreement* who divert from upstream of Nimbus Dam agree they will enter into contract with the Bureau that will provide assurances that the upstream diverters will divert only the agreed upon amounts, which include provisions for reductions in dry year and/or other equivalent measures.

In order to have a durable agreement it is necessary to include the following caveats. These are statements describing actions or conditions that must exist for the *Agreement* to be operative.

1. As specified below, each purveyor's commitment to implementing all provisions of the *Water Forum Agreement* is contingent on it successfully obtaining its water supply entitlements and facilities.

a. If a purveyor receives support from the other signatories to the *Agreement* for all of its facilities and entitlements as shown on the chart in Section Three, I., of the *Water Forum Agreement*, "*Major Water Supply Projects that Will Receive Support Upon Signing the Water Forum Agreement*" and if it receives all necessary approvals for some or all of those facilities and entitlements, then the purveyor will fully support and participate in the following provisions of the *Water Forum Agreement*:

(1) Support for the Improved Pattern of Fishery Flow Releases
(2) Water Forum Successor Effort
(3) Water Conservation Element
(4) Lower American River Habitat Management Element
(5) Support for the Updated Lower American River flow standard
(6) Restriction of diversions or implementation of other actions to reduce diversion impacts in drier years as specified in its Purveyor Specific Agreement.

and

b. If a purveyor is not successful in obtaining all necessary approvals for all of its facilities and entitlements as shown on the chart in Section Three, I., of the *Water Forum Agreement*, "*Major Water Supply Projects that will Receive Support Upon Signing the Water Forum Agreement,*" that would constitute a changed condition that would be considered by the Water Forum Successor Effort.

2. All signatories agree that business, citizens, and environmental signatories' obligation to support, and where specified, implement all provisions of the *Water Forum Agreement* is contingent on implementation of those provisions of the *Agreement* that meet their interests.

3. A stakeholder's support for water supply entitlements and facilities is contingent on:

a. Project-specific compliance with the California Environmental Quality Act, and where applicable, the National Environmental Policy Act, federal Endangered Species Act and California Endangered Species Act.

b. Purveyors' commitment in their project-specific EIRs and CEQA findings to: all seven elements of the *Water Forum Agreement*; support for updating the Lower American River flow standard; commitment by those purveyors that divert from upstream of Nimbus Dam to entering into signed diversion agreements with the U.S. Bureau of Reclamation; commitment by the City of Sacramento to inclusion of the terms of the diversion provisions of its Purveyor Specific Agreement into its water rights.

c. Signed diversion agreements between purveyors that divert upstream of Nimbus Dam and the U.S. Bureau of Reclamation. Other signatories to the *Water Forum Agreement* shall be third party beneficiaries to the diversion agreements solely for the purpose of seeking specific performance of the diversion agreements relating to reductions in surface water deliveries and/or diversions if Reclamation fails to enforce

any of those provisions. The status of a signatory to the *Water Forum Agreement* as a third party beneficiary to the diversion agreements is dependent on that signatory complying with all the terms of the *Water Forum Agreement*, including support for the purveyor specific agreement for the purveyor's project. This is not to intend to create any other third party beneficiaries to the diversion agreements, and expressly denies the creation of any third party beneficiary rights hereunder for any other person or entity.

d. Adequate progress on the updated Lower American River standard. The schedule for obtaining the updated standard is in Section Four, I., of the *Water Forum Agreement*.

e. Adequate progress in construction of the Temperature Control Device.

f. Adequate progress in addressing the Sacramento River and Bay-Delta conditions associated with implementation of the *Water Forum Agreement*.

4. Environmental stakeholders' support for facilities and entitlements is dependent upon the future environmental conditions in the Lower American River being substantially equivalent to or better than the conditions projected in the Water Forum EIR. If the future environmental conditions in Lower American River environment are significantly worse than the conditions projected in the EIR, this would constitute a changed condition that would be considered by the Water Forum Successor Effort. Significant new information on the needs of the Lower American River fisheries, which was not known at the time of execution of the *Water Forum Agreement*, would also constitute a changed condition that would be considered by the Water Forum Successor Effort.

G. REMAINING ISSUES.

None

Appendix B. SRF Report

RIO LINDA/ELVERTA COMMUNITY WATER DISTRICT

P.O. BOX 400 • 730 L STREET
RIO LINDA, CALIFORNIA 95673
Phone: (916) 991-1000 • Fax: (916) 991-6616
www.rlecwd.com

TECHNICAL MEMORANDUM

Subject: Amendment to SRF Applicant Engineering Report

Water System Name: Rio Linda/Elverta Community Water District

Water System Number: 3410018

Compliance Order Number: 01-09-09-CO-004

A. Purpose of Amendment

This amendment to the Updated SRF Application Engineering Report (SRF Report) dated September 2012 provides updated system demands per CDPH comments for the Rio Linda/Elverta Community Water District (District) and discusses how the District will meet these demands.

Based on the updated capacity analysis of the new Well No. 15 (found in the SRF Applicant Engineering Report) the District has revised their plan to include new well (Well 15) to meet their existing capacity needs and a storage tank with redundant booster pumps as a source redundant to Well 15. This amendment describes how the proposed tank and booster pumps will meet the updated system demands to bring the District into compliance.

B. Demand Analysis

As previously discussed in the SRF Report, only monthly water production volumes are available for the District to estimate maximum day and peak hour flows. Figure 1 and 2 show average, minimum, and maximum monthly groundwater production for the District for the period of August 2002 to July 2012 (gpm and gpm/active connection). The number of active connections within the District has varied over the last 10-years from a high of 4,483 in 2007 to a low of 4,325 from 2000-2003. For this analysis the CDPH has requested (based on comments dated March 3, 2010) that the average day demand be estimated based on the maximum average daily demand calculated during the maximum month in the last 10 years (July 2005) on a per connection basis. The maximum day and peak hour demands were previously calculated based on the current number of active connections. The revised demands in this amendment assume that all of the existing connections become active with 4% growth within the District (4800 total connections based on comments dated November 2012). Meeting this criterion will bring the District into compliance.

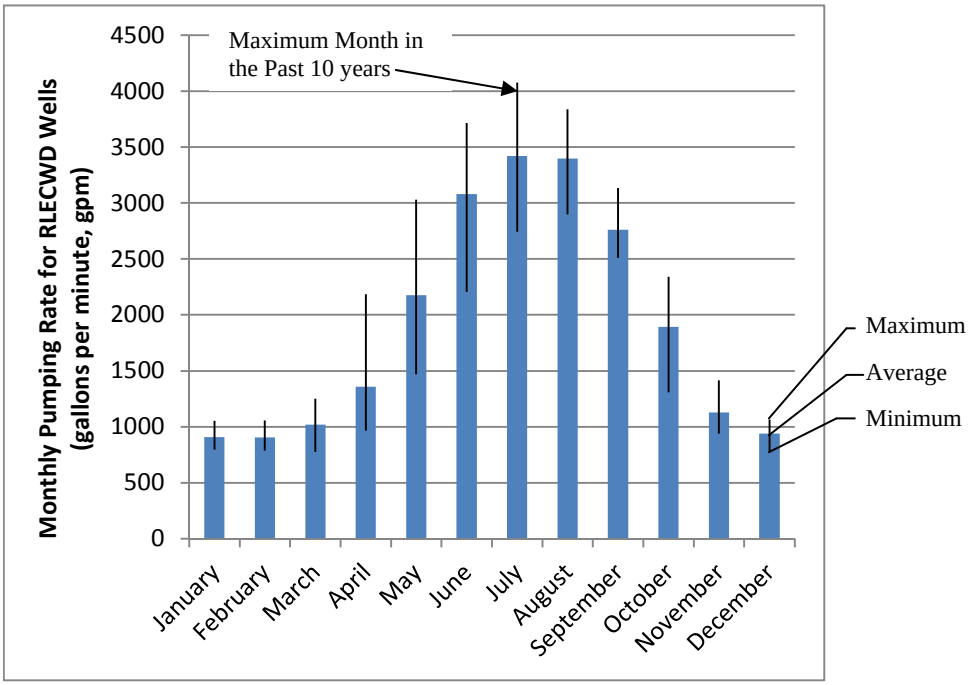


Figure 1 RLECWD Monthly Groundwater Production (2003 to 2012) in gpm

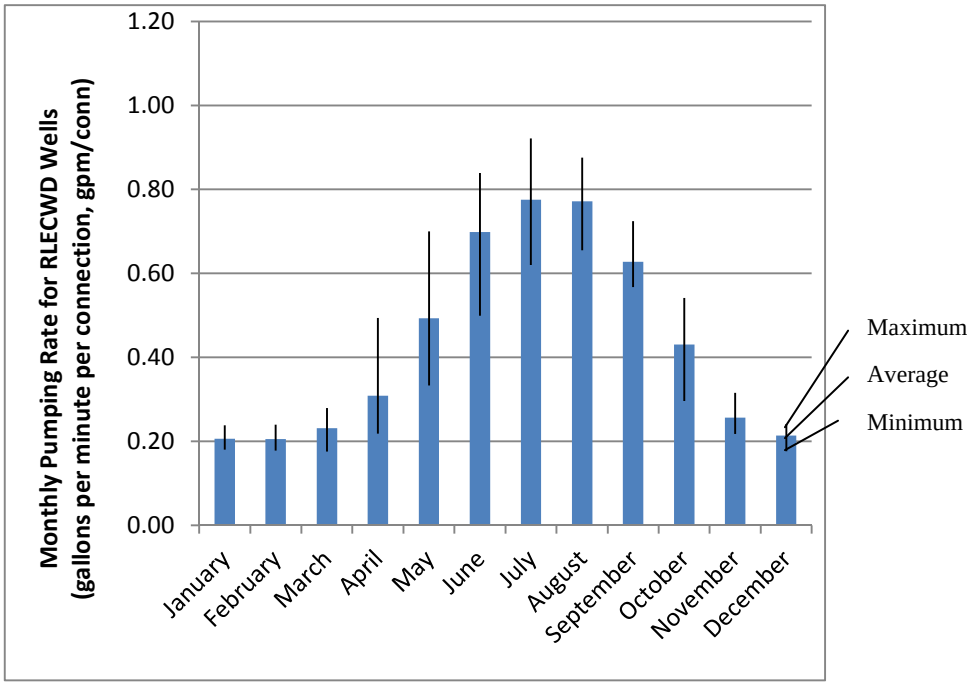


Figure 2. RLECWD Monthly Groundwater Production (2003 to 2012) in gpm/connection

The California Waterworks Standard presents a simplified method to calculate maximum day and peak hour demands. This method, which is described in Section 64554, estimates maximum day and peak hour demand based on demand factors (maximum day factor = 1.5 times average day in maximum month in the past 10 years, and peak hour factor = 1.5 times maximum day demand).

For the District, maximum month average demand is approximately 0.92 gpm per connection and was recorded in July 2005 (refer to Figure 3). Therefore, estimated maximum day and peak hour demands per connection for RLECWD are:

Maximum day demand per connection = 0.92 x 1.5 ≈ **1.38 gpm per connection**

Total Maximum day demand = 1.38 gpm/conn x 4800 conn ≈ **6,624 gpm**

Peak hour demand per connection = 1.38 x 1.5 ≈ **2.07 gpm per connection**

Total Peak hour demand = 2.07 gpm/conn x 4800 active conn ≈ **9,936 gpm**

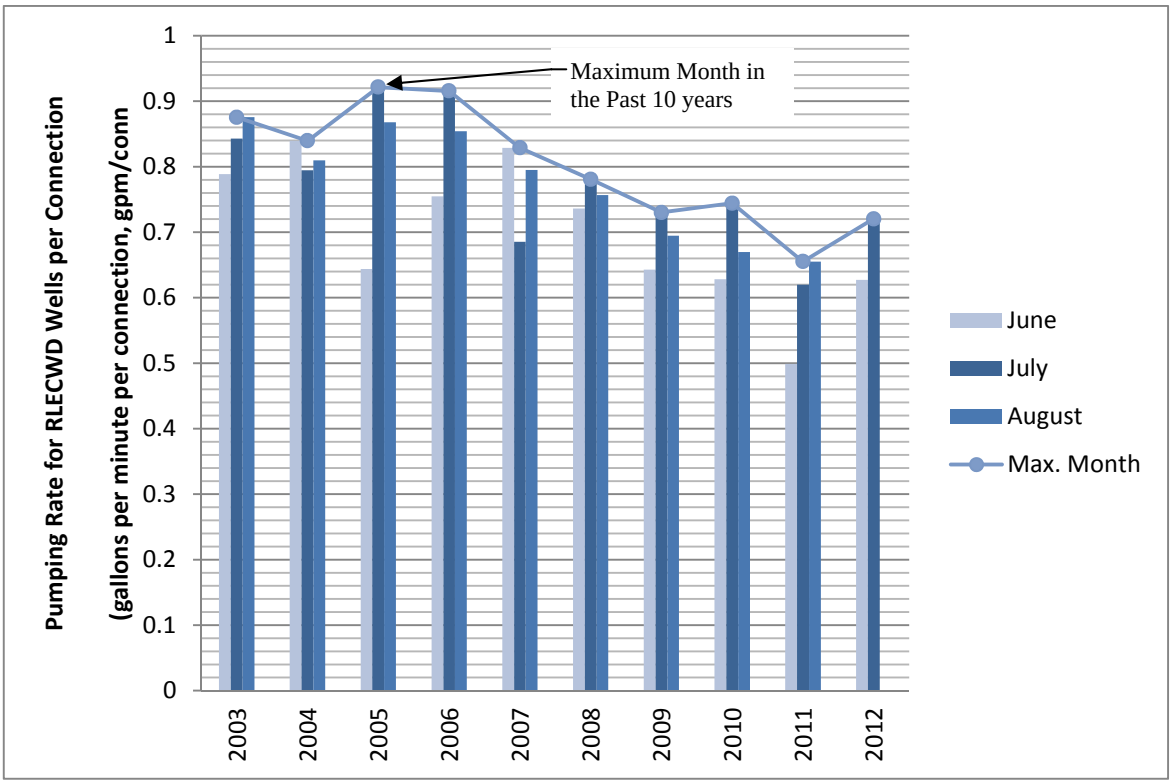


Figure 3. RLECWD Maximum Monthly Groundwater Production (2003 to 2012)

System Redundancy

It is also important to note that in addition to meeting the demand requirements described above including maximum day plus fire flow (9,624 gpm) and peak hour demands (9,936 gpm) a water system must provide redundancy throughout the system. Redundancy in the supply will ensure that during an emergency when a source may be off-line due to power or other issues the system can still meet the minimum system requirements. The Waterworks Standard requires that the District meet demand as calculated (9,936 gpm) with the largest source of supply off-line. This amendment to the SRF Report will describe how redundancy in the system will be met with the proposed tank and booster pump station.

C. Source Redundancy

The proposed tank and booster pump station will be designed as major sources of water during peak hour demands. In addition to these new sources, the Sacramento Suburban Water District (SSWD) connection can supply emergency flow up to 1000 gpm. This source is factored into the source capacity water extreme conditions. The RLECWD system must be able to meet peak system demands with the largest sources offline to be a redundant system as described above. In the case where Well 15 is offline the new tank and booster pump station must be capable of providing supply during peak hour demands. Additionally, if the new tank and booster station were to be offline the existing system with the newly constructed Well 15 and emergency supply from the SSWD connection would be required to provide supply during peak hour demands. Table 1 shows that the system has the capacity to provide flow during each of these peak hour demands scenarios.

Table 1. RLECWD Redundant Capacity scenarios (gpm)

Demand Condition Scenario	Estimated Peak Hour Water Demand	Current Available Well Source Capacity	Emergency SSWD Capacity	Capacity Provided by Well 15	Capacity Provided by New Tank	Additional Capacity Required
Peak Hour Without Well 15	**9,900**	**6,400**	**1,000**	**0**	**3,500**	**0**
Peak Hour Without New Tank	**9,900**	**6,400**	**1,000**	**2,800**	**0**	**0**

From Table 1 it can be seen that under either scenario the system has excess capacity to meet peak hour system demands. These scenarios exclude the existing 0.1 MG elevated tank which can also contribute short term capacity to the system if needed. In addition to the system redundancy described above, the new tank and booster station will have two booster pumps and backup generator to provide redundancy at the tank itself. In the unlikely event that flow from the tank is unavailable, the existing wells with the newly constructed Well 15 and supplemental

emergency flow from the SSWD is capable of supplying the peak hour demands (The District has used up to 1000 gpm from SSWD in the past).

D. Tank and Booster Pump Station Analysis

This section amends the previous tank and booster pump station analysis in the Updated SRF Report. Previous modeling efforts assumed a peak hour system demand of 9,160 gpm. This updated model reflects the increase in demands stated earlier in this amendment (9,900 gpm).

Storage Tank and Booster Pump Station

As previously described in the SRF Report, Well 12 will be rerouted to supply the new storage (approximately 400-600 gpm). With Well 15 off-line and no supply from SSWD the District will be short of its peak hour demand by 3,500gpm. For a minimum of 4 hours of use a minimum storage capacity of 840,000 gallons is required (3,500gpm x 4 hours x 60min/hr). An additional 30% of tank capacity is recommended to allow usage of the required storage without emptying the tank and allow for some additional emergency storage. Therefore a minimum tank size of 1,100,000 gallons is recommended for the District with a 3,500gpm booster pump station to meet redundancy requirements.

Figure 4 demonstrates the ability of the system to fill and use a tank and is based on a diurnal demand curve and maximum day conditions. Figure 4 confirms that the storage tank can meet existing peak hour needs in the District while allowing the tank to refill during off peak times. Modeling of the system assumes that the tank starts the day at 50% of its capacity. As the graph shows the tank supplies flow during the maximum day (with peak hour) and fills during off-peak times returning to 41% full at the end of the day. This demonstrates the system's ability to adequately fill the tank in order to utilize the tank during multiple days of peak demands. These results assume that Well No. 15 is off-line and SSWD is providing up to 500 gpm of emergency flow to assist in re-filling the tank. Additionally, Figure 5 shows that under this scenario the minimum pressure is above 30 psi throughout the system.

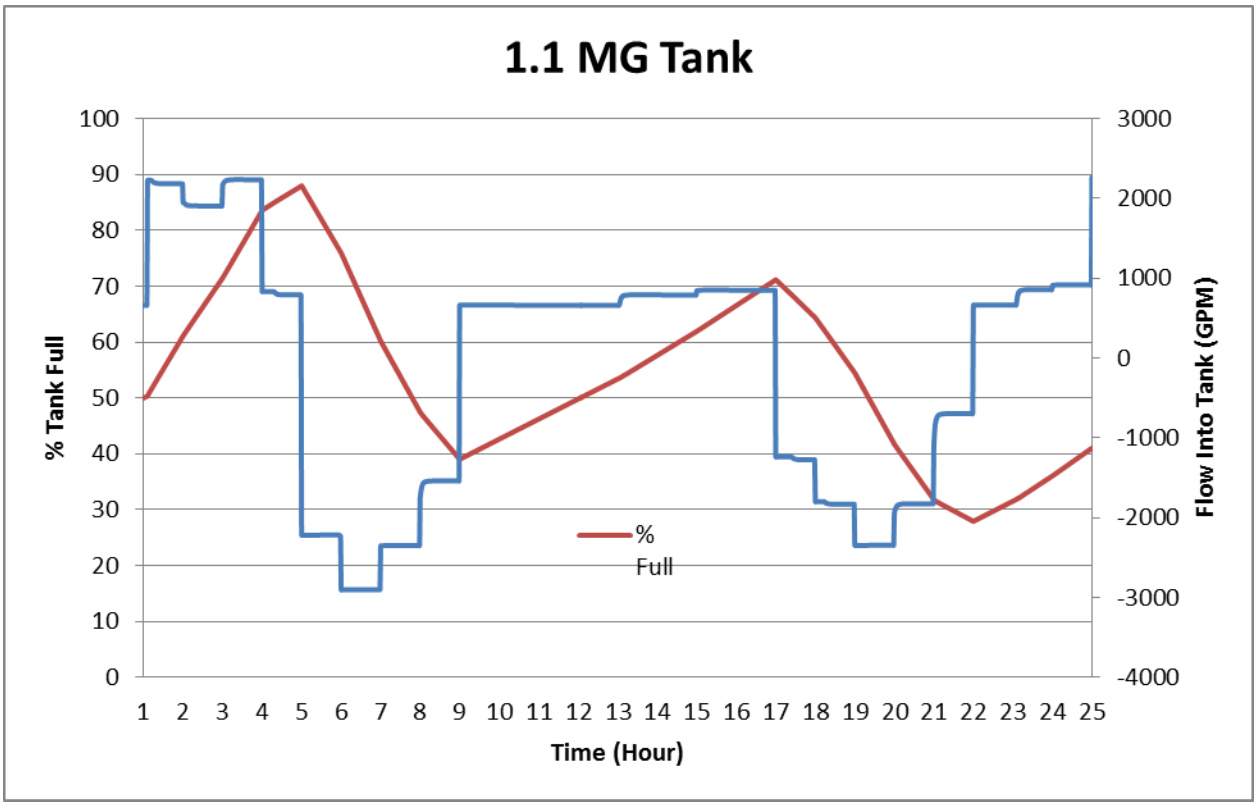
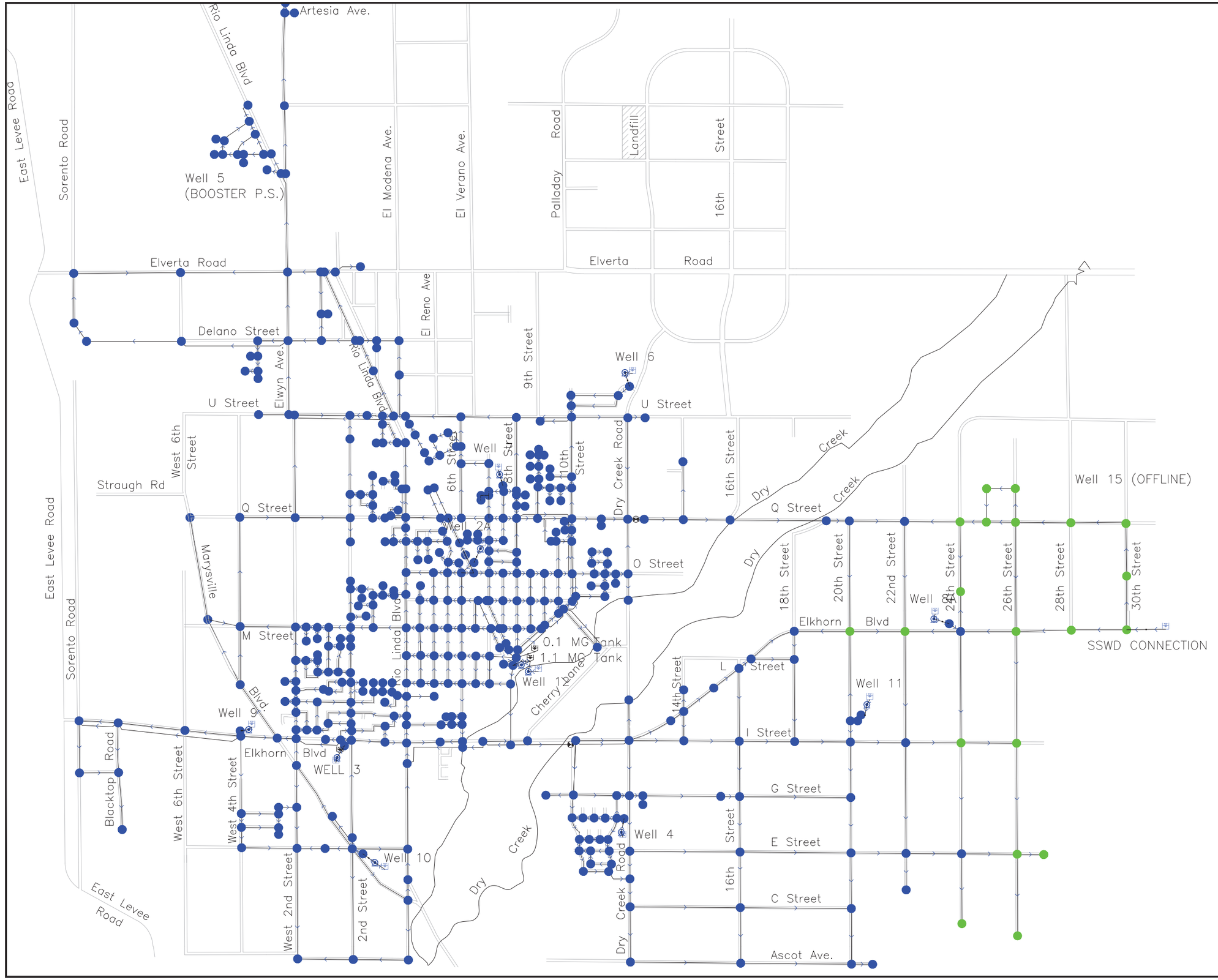


Figure 4. Meeting Peak Demands in the District using a 1.1 Million Gallons Storage Tank



Rio Linda/ Elverta
Community Water District

System Pressure during Peak Hour Demand Conditions

(Existing Source Capacity With New 1.1MG Tank)

Legend

- Well and Pump
- Pressure Valve

Pressure (psi)

- <20
- 20-30
- 30-40
- >40

E. Updated Project Cost

New Storage Tank and Booster Pump Station Cost Breakdown

Costs associated with the storage tank alternative include a 1,100,000 gallon above-ground steel tank and 3,500 gpm redundant booster pumping station. The tank site will be located at the District's Main Office site near Well 12. The project would connect to existing 12-inch pipelines in the vicinity of the site minimize the need for new pipeline. Additionally, the costs include the reconfiguration of Well 12 to pump directly into the new storage tank. The costs also include a permanent emergency generator to replace the existing one at Well No. 12.

Administration = $35,000
Engineering Plan Preparation = $200,000
Construction Administration = $200,000
Tank and Booster Pump Station = $2,710,000
Pipeline improvements = $205,000
Contingency Costs = $350,000
Total = $3,700,000

The District has increased its source capacity by adding Well No. 15. To meet redundancy requirements the District will add a 1.1 million gallon storage tank and booster pump station. To address emergency needs the District has provided an emergency power generator at Well No. 15 and will provide an emergency power generator at the proposed new storage tank and booster pump station.

The following table provides updated total estimated costs for the proposed projects:

Table 2. Cost estimate summary

Project Component (Phase)	Estimated Costs
Well No. 15 (Phase I)	$3,799,000
1.1MG Storage Tank and BPS (Phase II)	$3,700,000
Total Priority Projects =	**$7,499,000**

As seen in the table above, the overall costs for the projects are still within the limits of the existing CDPH loan of $7,499,000.

Appendix C. CDPH Compliance Order

State of California—Health and Human Services Agency
California Department of Public Health

RON CHAPMAN, MD, MPH
Director & State Health Officer

EDMUND G. BROWN JR.
Governor

May 13, 2013

PWS No.: 3410018

Certified Mail
7009 1680 0001 3114 5301

Ms. Mary Henrici
General Manager
Rio Linda/Elverta Community Water District
730 L Street
Rio Linda, CA 95673

Dear Ms. Henrici:

COMPLIANCE ORDER NO. 01-09-13R-001-3410018-WW TO RESOLVE WATER PRESSURE AND SUPPLY PROBLEMS ISSUED TO THE RIO LINDA / ELVERTA COMMUNITY WATER DISTRICT

Enclosed is Compliance Order No. 01-09-13R-001-3410018-WW, issued to the Rio Linda/Elverta Community Water District, to direct resolution of water pressure and supply problems. The deadlines listed in the Directives are consistent with those discussed in prior meetings between our offices. There is no civil penalty associated with this Order. However, failure to comply with the Directives of the Order may lead to an assessment of civil penalties.

If you have any questions regarding this matter, please contact me at (530) 224-4867, or Salvador Turrubiartes at (916) 552-9998, or Salvador.turrubiartes@cdph.ca.gov.

Sincerely,

Richard L. Hinrichs, P.E., Chief
Northern California Section
Drinking Water Field Office Branch

Enclosed: Compliance Order No. 01-09-13R-001-3410018-WW

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

RE: Rio Linda / Elverta Community Water District
730 L Street
Rio Linda, CA 95673

COMPLIANCE ORDER

Compliance Order Number 01-09-13R-001-3410018-WW

SYSTEM NO. 3410018

STATEMENT OF FACTS

Rio Linda Elverta Community Water District (hereinafter, District) is currently operating its water system under a domestic water supply permit (Permit No. 65-42) issued by the Department of Public Health (hereinafter, Department) on March 29, 1965, and amended on February 5, 1979, March 18, 1988, March 16, 1994, and March 23, 2012.

The District is a community water system, as defined in California Health and Safety Code (CHSC), Section 116275. The District serves an estimated year-round population of 13,386 through 4,616 active service connections. The distribution system contains one pressure zone with the service area being relatively flat, ranging from about 35 to 90 feet above mean sea level (MSL). The active sources

of water supply for the District consist of groundwater sources, which are disinfected prior to being served to the distribution system.

As more fully set forth below, the Department is informed and believes that the Company is in violation of HSC, Section 116555(a) and the California Waterworks Standards, Title 22, California Code of Regulations (CCR), Chapter 16, Articles 1-5.

The District experienced repeated incidents of low pressure in its distribution system during the month of September 2007. On November 19, 2007, the Department issued Compliance Order 01-09-07-CO-004 to the District for water source capacity and low system pressure violations and directed the District to study solutions to resolve the violations and to take measures to closely monitor the system pressure and flow rates from its sources. Also imposed by Compliance Order 01-09-07-CO-004 was a service connection moratorium, based on the understanding that any additional demand on the distribution system, including additional service connections would have resulted in further violations of existing regulations. On April 1, 2008, the District began monitoring its pressure at multiple pressure recording stations. Specific and recent low pressure events reported by the District are documented in Compliance Order 01-09-09-CO-004, issued December 28, 2009.

In response to the Order, the District submitted a study titled "Evaluation of Source Capacity and Compliance Plan" in compliance with Directive 6 of Compliance Order 01-09-07-CO-004, proposing that the District construct three new wells (Wells 14, 15, and 16) in the Rio Linda area to provide additional source capacity to the water

system. At the time it received the study, the CDPH deemed the recommendations as appropriate and an acceptable means of returning the District to compliance.

On March 5, 2009, the District held a meeting to discuss the status of the completion of the Compliance Order's Directives. Consulting engineers Camp Dresser and McKee had completed another study for the District, which reinforced and confirmed the previous Study's evaluation of the current source capacity. The Interim General Manager, Mr. Gilbert Tafoya, also stated that the District intended to construct a 1.5-million gallon storage tank in addition to providing arsenic treatment at Well 14. At this point it appeared that the District would continue following the recommendation to construct three new wells (Wells 14, 15, and 16).

On August 18, 2009, a meeting was held at the CDPH Sacramento District office to discuss the District's plan for satisfying Compliance Order 01-09-07-CO-004. Due to many delays, the submitted Technical Report and schedule were no longer feasible for the District and the District wished to discuss changes in water source projects. The District had decided to no longer continue to pursue Well 14 with the addition of arsenic treatment due to operation and maintenance costs. The District still planned to construct three wells to meet current and future water demands, and to return the District to compliance. The three wells were designated to be Well 15, Well 16, and Well 17. On October 30, 2009, the District submitted a final schedule for the project to construct Wells 15, 16, and 17, and to place them in service by no later than January 1, 2011.

On July 28, 2010, the District submitted a request for extension for the completion of the three new wells, Wells 15, 16, and 17. Based on the information provided

and CDPH knowledge of the situation with both the District and the environmental clearance from the Army Corps of Engineers and from the State Historic Prevention Office, the request was granted. On July 29, 2010, CDPH granted an extension to Directives 3 and 4 of Compliance Order No. 01-09-09-CO-004, to complete all improvements to the water system to correct the water capacity problem and ensure the system could provide a reliable and adequate supply of pure, wholesome, healthful, and potable water, which is in compliance with all primary drinking water standards by no later than June 1, 2011.

On June 30, 2011, the District and CDPH executed State Revolving Funding Agreement No. SRF11CX107 for a construction loan in the amount of $7,499,045 to construct Wells 15, 16, and 17 in the Rio Linda area. The CDPH approved SRF Project 3410018-001, based on plans and specifications approved by the State on April 11, 2011. The project deadline to complete the three new wells was defined to be not later than three years from the date of execution, June 30, 2011. On July 22, 2011, the CDPH extended the deadline again for Directives 3 and 4 of Compliance Order 01-09-09-CO-004, to correspond to the same deadline date defined in the Funding Agreement. The District was to complete all improvements to the water system to correct the capacity problem and ensure the system is provided with a reliable and adequate supply of pure, wholesome, healthful and potable water, and is to be in compliance with all primary drinking water standards by no later than June 30, 2014.

On March 11, 2012, the District and CDPH executed Funding Agreement No. SRF11CX107 Amendment A-1 in response to the District submitting a change in Scope of Work of Project 3410018-001 on August 18, 2011. Due to circumstances

beyond the District's control, Well 16's construction could not continue at the site approved by CDPH on July 27, 2010. The District's request for a Scope of Work change resulted in changes in the plans and specs for Well 15 and Well 16. Well 16 was relocated to Well 14's site and the name changed to Well 14A, to serve as a replacement well to Well 14. Although the changes in Scope of Work involved adding additional piping and changing the location of one well, the total cost of the project remained the same with no additional costs. The deadline established for the District to complete the necessary changes remained the same, June 30, 2014.

On July 24, 2012, the District submitted a technical memo, dated July 9, 2012, by Domenichelli and Associates, Inc., suggesting to re-calculate required source capacity based on the last 10 years (2003 – 2012) of water production data and update the SRF Project Alternative Analysis. Since the 2009 Source Capacity Study was performed, water demand for the District has slowly and steadily declined over the years. The technical memo determined a new calculated maximum day demand (MDD) and a new calculated peak hourly demand (PHD) and proposed that the District would be able to meet both MDD and PHD with Well 15 if it reactivated Well 3 and provided additional source capacity or storage on the west side of the water system. The alternatives evaluated in the memo were: 1) search for another viable well location to construct a new well, 2) provide arsenic treatment at Well 14/14A, 3) or construct a storage tank with a capacity of at least 800,000 gallons on the west side of the water system. A meeting with the District and CDPH on July 27, 2012, discussed the technical memo and the results of Well 14A's test well water quality data. Water quality data from a test well at Well 14A's site indicated high arsenic and manganese concentrations that would need treatment prior to delivering water to the distribution system. Treatment was not

considered at Well 14A under Funding Agreement No. SRF11CX107 Amendment A-1. Alternatives to constructing Well 14A were discussed, CDPH requested that an Engineering Report be developed analyzing SRF Alternatives to Well 14A and Well 17.

On October 1, 2012, the District submitted a SRF Applicant Engineering Report Update, re-evaluating the MDD and PHD for the water system based on the latest 10 years of water production; the last Source and Storage Capacity Study was performed in May 2010. The District also met with CDPH to re-evaluate alternatives to meeting the Water Works Standards since Well 15 is reportedly able to produce 2,800 gallons per minute (gpm). The Engineering Report determined the water system has sufficient source capacity to meet MDD and could accommodate PHD with additional storage capacity. According to the Engineering Report, the most cost efficient solution for the District, under the new circumstances, would be to construct a storage tank with a capacity of at least 1.0 million gallons (MG) near the District Office on the west side of the water system. The completion of the project would also involve the installation of approximately 3,200-feet of new 12-inch pipeline in the District's west side area near the Well No. 5 Booster Pump Station, to increase pressure and water supply to a low pressure area in the District's west side. The District also submitted another request to change the Scope of Work dated October 1, 2012, to include the construction of a storage tank with a capacity of at least 1.0 MG and related improvements to the distribution system near the Well No. 5 Booster Pump Station rather than complete Wells 14A and Well 17.

APPLICABLE AUTHORITIES

Title 22, Section 64554(a)(1) and (a)(3) of the CCR states:

a) At all times, a public water system's water source(s) shall have the capacity to meet the system's maximum day demand (MDD).

(1) For systems with 1,000 service connections, the system shall be able to meet four hours of peak hourly demand (PHD) with source capacity, storage capacity, and/or emergency source connections.

(3) Both the MDD and the PHD requirements shall be met in the system as a whole and in each individual pressure zone.

Title 22, Section 64602(a) of the CCR states:

a) Each distribution system shall be operated in a manner to assure that the minimum operating pressure in the water main at the user service line connection throughout the distribution system is not less than 20 pounds per square inch (PSI) at all times.

Section 116555(a) of the CHSC states in relevant part:

a) Any person who owns a public water system shall ensure that the system does all of the following:

(3) Provides a reliable and adequate supply of pure, wholesome, healthful, and potable water.

Section 116655 of the CHSC states in relevant part:

a) Whenever the Department determines that any person has violated or is violating this chapter, or any permit, regulation, or standard issued or

adopted pursuant to this chapter, the director may issue an order doing any of the following:

(1) Directing compliance forthwith.

(2) Directing compliance in accordance with a time schedule set by the department.

(3) Directing that appropriate preventive action be taken in the case of a threatened violation.

b) An order issued pursuant to this section may include, but shall not be limited to, any or all of the following requirements:

(1) That the existing plant, works, or system be repaired, altered, or added to.

(2) That purification or treatment works be installed.

(3) That the source of the water supply be changed.

(4) That no additional service connection be made to the system.

(5) That the water supply, the plant, or the system be monitored.

(6) That a report on the condition and operation of the plant, works, system, or water supply be submitted to the Department.

DETERMINATIONS

Based on the above Findings of Fact, the Department determines that the District has violated/(or continues to violate) the following:

(1) Section 64554(a)(1) & (3) of the CCR; specifically, the District continues to exhibit inadequate source capacity and/or storage capacity in its distribution system to meet MDD and PHD.

(2) Section 64602(a) of the CCR; specifically, the District failed to ensure the water pressure in the distribution system remained above 20 PSI.

(3) Section 116555(a)(3) of the CHSC; specifically, the District failed to ensure the system was provided with a reliable and adequate supply of water at minimum operating pressure (20 psi in the distribution system) to ensure that the water delivered to its customers is at all times pure, wholesome, healthful, and potable.

ORDER

Pursuant to Section 116655, Article 9, Chapter 4, Part 12, Division 104 of the Health and Safety Code, the Department and its Director hereby orders and directs the District to:

Directive 1. The District shall submit 95% design plans and specifications for its storage reservoir and related water main improvements to the Department for review and approval by **no later than September 16, 2013**.

Directive 2. The District shall complete construction and have the storage tank [and piping improvements to the Elverta subdivision] in service by **no later than June 30, 2014**.

Directive 3. In accordance with Title 22, Section 64600 of the CCR, **by no later than December 31, 2013**, the District shall submit an operations and maintenance plan for the District's storage reservoir. The plan shall include a schedule for

routine inspections and the procedures for cleaning and disinfection of the new storage reservoir.

Directive 4. **The service connection moratorium established by Compliance Order No. 01-09-04-CO-004 issued on November 19, 2007, shall remain in place**. On or after the date of this Order, the District shall not add any new service connections to the system and shall not issue any "will serve" letters to potential water users. This moratorium shall stay in effect until the Department determines that the water system has adequate facilities and capacity to provide a safe, wholesome, and potable supply of domestic water to users in the service area; and gives the District written notification that the moratorium has been lifted.

The Department reserves the right to make such modifications to this Order as it may deem necessary to protect public health and safety. Such modifications may be issued as amendments to this Order and shall be effective upon issuance.

The directives from this Order shall supersede all previous directives from past Orders issued.

All submittals required by this Order shall be submitted to the Department at the following address:

Richard L. Hinrichs, P.E., Chief
Northern California Section
Drinking Water Field Operations
California Department of Public Health
1616 Capitol Avenue, MS 7407
P.O. Box 997377
Sacramento, CA 95899-7377

The District's failure to comply with any directives set forth in this Order by the time prescribed herein, may result in further administrative and/or judicial enforcement action against the District, including imposition of administrative penalties in the amount of up to $200 per day per violation, pursuant to the California Health and Safety Code, Section 116650, and/or other civil penalties as permitted by law, including without limitation California Health and Safety Code, Section 116725.

The State of California shall not be liable for any injuries or damage to persons or property resulting from acts or omissions by the District, its employees, agents, or contractors in carrying out activities pursuant to this Order; nor shall the State of California be held as a party to any contract entered into by the District or its agents in carrying out activities pursuant to this Order. By issuance of this Order, the Department does not waive its rights to take any further or additional enforcement action(s) against the District.

PARTIES BOUND

This Order shall apply to and be binding upon the District, its officers, directors, agents, employees, contractors, successors, and assignees.

SEVERABILITY

The directives of this Order are severable, and the District shall comply with each and every provision thereof, notwithstanding the effectiveness of any provision.

Richard L. Hinrichs, P.E., Chief
Northern California Section
DRINKING WATER
FIELD OPERATIONS BRANCH

5/13/2013
Date

Appendix D. EBMUD Executive Summary

METER SIZING FOR RESIDENTIAL FIRE SPRINKLERS

East Bay Municipal Utility District

November 2010

EXECUTIVE SUMMARY

Effective January 1, 2011, the California Building Code (CBC) will require automatic fire sprinkler systems in all new construction of one- and two-family dwellings (including townhomes). This will substantially increase the number of dual (domestic plus fire sprinkler demand) meters in EBMUD's service area.

The CBC recommends automatic fire sprinkler systems be designed and installed in accordance with National Fire Protection Associations Standard for the Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes (NFPA-13D). The NFPA-13D regulation recommends sizing water meters to accommodate the required fire sprinkler demand flow plus a 5 gallon per minute (gpm) domestic allowance.

EBMUD currently sizes meters to supply the total combined domestic peak demand (in gallons per minute) based on fixture unit count plus the fire sprinkler demand when fire sprinklers are required by the local fire agency. To ensure EBMUD is providing adequate capacity for both domestic and fire sprinkler demands from a single meter in accordance with the CBC and NFPA-13D recommendations, staff reviewed the proposed regulation, analyzed the impacts, and developed recommended changes to EBMUD's meter sizing and selection process. A summary of the study analysis and recommendations are included in this report. EBMUD concluded a more appropriate domestic allowance should be 15 gpm.

Based on this study, a standard 1.5-inch tap and copper lateral service configuration is recommended for all new combined fire and domestic services, with a minimum 1-inch meter for a typical application where the total flow is equal to or less than 50 gpm. Meters for all new townhouses and one- and two-family dwellings shall be sized to supply the greater of either:

- fire sprinkler demand plus at least 15 gpm domestic allowance, or
- total domestic peak demand based on fixture unit count.

Staff also reviewed EBMUD Policies, Procedures, Engineering Standard Practices (ESP), Schedule or Rates and Charges, Regulations, and Standard Drawings to identify necessary revisions as a result of the new recommended standard fire service installation. Required changes are listed in Table 2 of this report.

Appendix E. Well 3 Water Quality Results

BSK Associates Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Date: 02/28/2013 15:29
Received Date: 02/20/2013
Received Time: 08:30

Lab Sample ID: A3B1401-01
Sample Date: 02/19/2013 10:12
Sample Type: Grab

Client Project: Well #3 Arsenic
Sampled by: Vinnie Vigallon
Matrix: Water
Sample Begin: 02/19/2013 00:00

Sample Description: Well #3

Field Data: Res. Cl =0.0 mg/L

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8	**11**	2.0	ug/L	1	A301913	02/21/13	02/27/13	

1414 Stanislaus Street **Fresno, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **www.bskassociates.com**

BSK Associates
Engineers & Laboratories

Ce□ifica□e □f A□a□□i□

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Re□□□□l□□□e Da□e: 04/09/2013 8:44
Recei□ed Da□e: 03/27/2013
Recei□ed Ti□ e: 08:45

Lab Sa□ □□e ID: A3C1932-01
Sa□ □□e Da□e: 03/25/2013 09:02 **Sa□ □□ed b□:** Vinnie Vigallon
Sa□ □□e T□□e: **Ma□i□:**

Sa□ □□e De□c□i□□i□□: Well 3

Me□a□□

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
A□□e□ic	EPA 200.8	**10**	2.0	ug/L	1	A303291	03/28/13	04/05/13	

1414 S□a□i□a□□ S□□ee□ **F□e□□□, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **□□□.b□□ab□.c□□**

BSK Associates
Engineers & Laboratories

Certificate of Analysis

Pat Goet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Date: 04/30/2013 17:19
Received Date: 04/17/2013
Received Time: 09:20

Lab Sample ID: A3D1613-01
Sample Date: 04/16/2013 08:30
Sample Time: Grab

Client Project: April Well 3 Arsenic Sample
Sampled by: Client
Matrix: Drinking Water

Sample Description: Well 3

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8	**9.9**	2.0	ug/L	1	A304195	04/19/13	04/23/13	

1414 Salla Street **Fresno, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **www.bsklab.com**

Certificate of Analysis

Sample ID: A3K1490-01
Sampled By: Vinnie Vigallon
Sample Description: Well 3 Arsenic November

Sample Date - Time: 11/19/13 - 08:04
Matrix: Ground Water
Sample Type: Grab

Metals

Analyte	Method	Result	RL	Units	RL Multiplier	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8	**8.3**	2.0	ug/L	1	A314454	12/05/13	12/09/13	

BSK Associates
Engineers & Laboratories

Ce□ifica□e □f A□a□□i□

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Re□□□□l□□□e Da□e: 08/30/2012 15:54
Recei□ed Da□e: 08/24/2012
Recei□ed Ti□ e: 08:45

Lab Sa□ □□e ID: A2H2297-01
Sa□ □□e Da□e: 08/23/2012 12:01
Sa□ □□e T□□e: Grab

Sa□ □□ed b□: Vinnie Vigallon
Ma□i□: Water

Sa□ □□e De□c□i□□i□□: Well 3 Raw

Me□a□□

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analy□ed	Qual
Ma□ga□e□e	EPA 200.7	**0.032**	0.010	mg/L	1	A209620	08/28/12	08/29/12	

1414 S□a□i□a□□ S□□ee□ **F□e□□□, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **□□□.b□k□ab□.c□□**

BSK Associates Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:02
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1193-01
Sample Date: 09/12/2013 07:45
Sample Type: Grab
Sampled by: Client
Matrix: Water

Sample Description: Well 2a

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**2.4**	0.20	ug/L	1	A310728	09/16/13	09/16/13	

2a 750
3 500
7 600
12 300
9 700
10 800
3650 43%

1414 Stanislaus Street Fresno, CA 93706 (559) 497-2888 FAX (559) 485-6935 www.bsklabs.com

BSK Associates Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:02
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1193-02
Sample Date: 09/12/2013 08:10
Sample Type: Grab
Sampled by: Client
Matrix: Water

Sample Description: Well 3

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**5.4**	0.20	ug/L	1	A310728	09/16/13	09/16/13	

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Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:02
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1193-04
Sample Date: 09/12/2013 09:15
Sample Type: Grab

Sampled by: Client
Matrix: Water

Sample Description: Well 7

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**7.0**	0.20	ug/L	1	A310728	09/16/13	09/16/13	

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BSK Associates
Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:05
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1194-04
Sample Date: 09/12/2013 09:52
Sample Type: Grab
Sampled by: Vinnie Vigallon
Matrix: Water

Sample Description: Well 12

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**8.0**	0.40	ug/L	2	A310756	09/16/13	09/16/13	

1414 Stanislaus Street Fresno, CA 93706 (559) 497-2888 FAX (559) 485-6935 www.bsklabs.com

BSK Associates Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:02
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1193-05
Sample Date: 09/12/2013 08:30
Sample Type: Grab
Sampled by: Client
Matrix: Water

Sample Description: Well 9

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**8.1**	0.20	ug/L	1	A310728	09/16/13	09/16/13	

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Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:02
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1193-06
Sample Date: 09/12/2013 08:50
Sample Type: Grab
Sampled by: Client
Matrix: Water

Sample Description: Well 10

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**9.0**	0.20	ug/L	1	A310728	09/16/13	09/16/13	

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BSK Associates Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:05
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1194-01
Sample Date: 09/12/2013 08:04
Sample Type: Grab
Sampled by: Vinnie Vigallon
Matrix: Water

Sample Description: Well 4

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**11**	0.40	ug/L	2	A310756	09/16/13	09/16/13	

15 2500
4 600
11 700
8 500
6 550
5850
8500 57% 90%

BSK Associates Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:02
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1193-03
Sample Date: 09/12/2013 09:30
Sample Type: Grab
Sampled by: Client
Matrix: Water

Sample Description: Well 6

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	11	0.40	ug/L	2	A310756	09/16/13	09/16/13	

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Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:05
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1194-05
Sample Date: 09/12/2013 08:34
Sample Type: Grab

Sampled by: Vinnie Vigallon
Matrix: Water

Sample Description: Well 15

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	11	0.40	ug/L	2	A310756	09/16/13	09/16/13	

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BSK Associates
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Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:05
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1194-03
Sample Date: 09/12/2013 09:24
Sample Type: Grab
Sampled by: Vinnie Vigallon
Matrix: Water

Sample Description: Well 11

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**13**	0.40	ug/L	2	A310756	09/16/13	09/16/13	

1414 Stanislaus Street Fresno, CA 93706 (559) 497-2888 FAX (559) 485-6935 www.bsklabs.com

BSK Associates
Engineers & Laboratories

Certificate of Analysis

Pat Goyet
Rio Linda Elverta Water Dist.
730 "L" Street
Rio Linda, CA 95673

Report Issue Date: 09/26/2013 17:05
Received Date: 09/13/2013
Received Time: 08:00

Lab Sample ID: A3I1194-02
Sample Date: 09/12/2013 09:00
Sample Type: Grab
Sampled by: Vinnie Vigallon
Matrix: Water

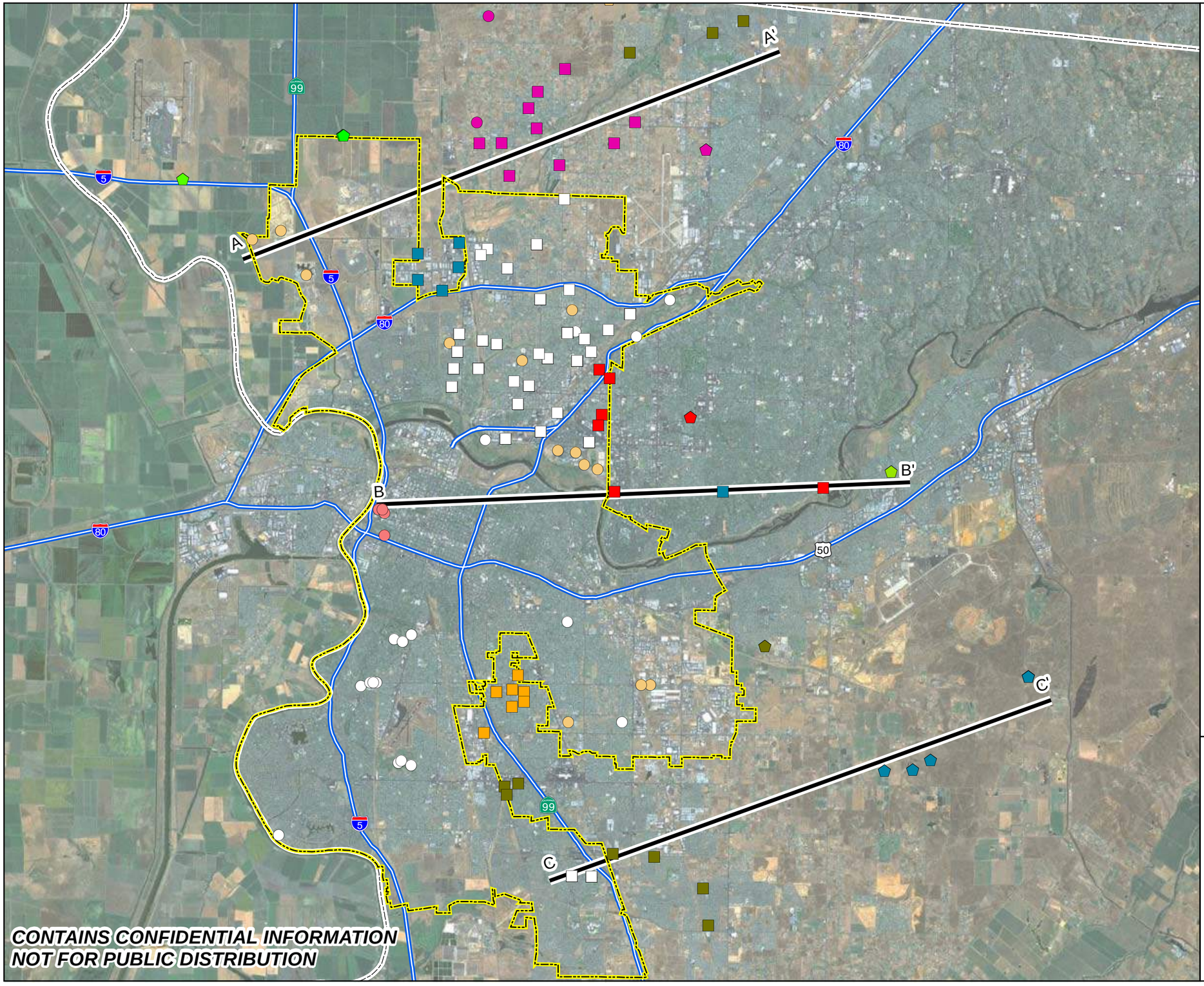
Sample Description: Well 8a

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Hexavalent Chromium	EPA 218.6	**15**	0.40	ug/L	2	A310756	09/16/13	09/16/13	

1414 Stanislaus Street Fresno, CA 93706 (559) 497-2888 FAX (559) 485-6935 www.bsklabs.com

Appendix F. City of Sacramento Hydrogeologic Figures



Legend

- City of Sacramento Service Area
- County Boundary
- Geologic Cross-Sections

Water District and State Agency Wells

- City of Sacramento
- Sacramento Suburban Water District
- Sacramento County Water Agency
- Golden State Water Company
- California American Water
- Fruitridge Vista Water Company
- Rio Linda/Elverta Community Water Disrtict
- State of California
- Department of Water Resources
- Private

Well Type

- Monitoring Well
- CDPH-Permitted Public Drinking Water Well
- Other Well

SOURCES: City of Sacramento, USGS, Street Map USA.

0 2 4 Miles

CITY OF SACRAMENTO WATER MASTER PLAN

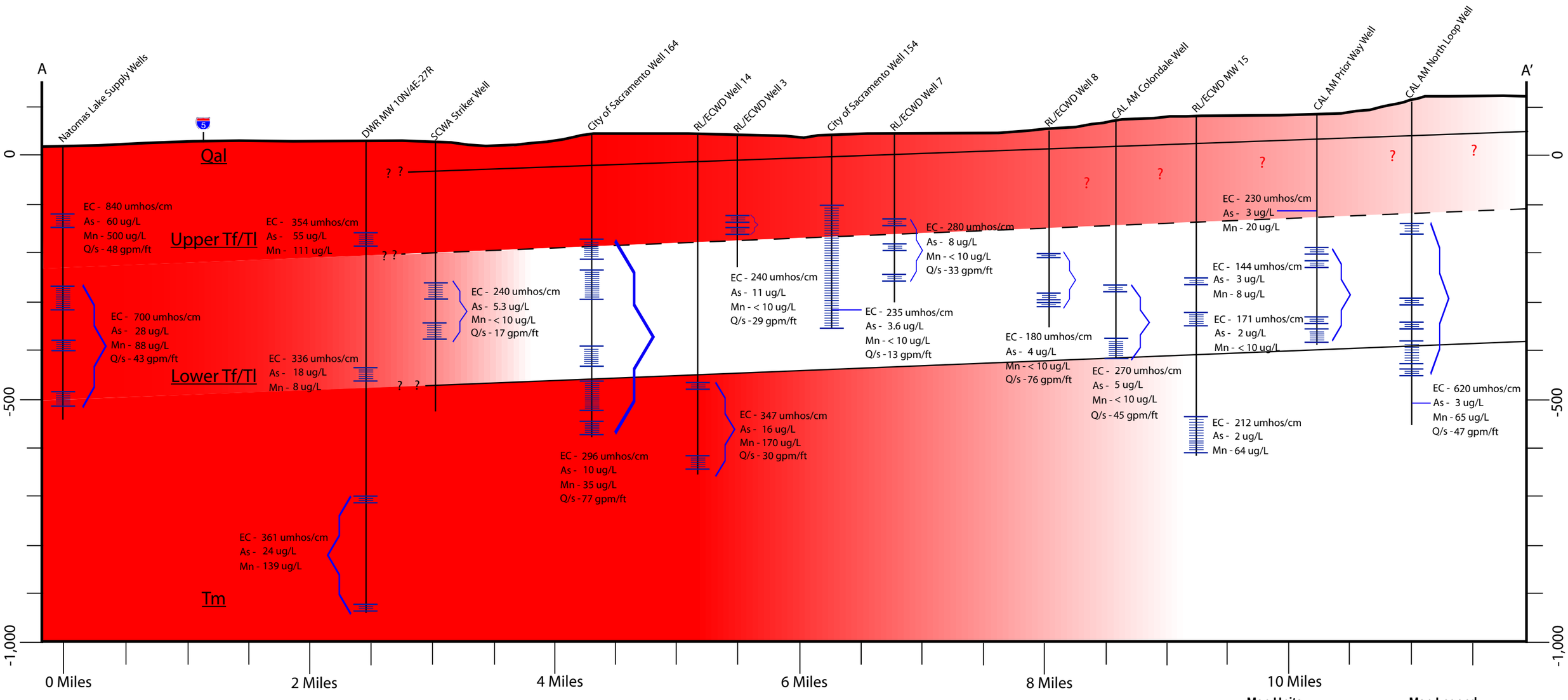
LOCATIONS OF SACRAMENTO-AREA WELLS AND GEOLOGIC CROSS-SECTIONS

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

FIGURE 5

J:\Jobs\8064_Groundwater\8064.013_Water Master Plan\GIS\Tasks\Figure 5 Location of Sacramento Area Wells and Geologic Cross Section.mxd 9/16/2010 1:09:48 PM bdemucha

City of Sacramento
Geologic Cross-Section with Arsenic Distribution
A to A'



WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

Map Units

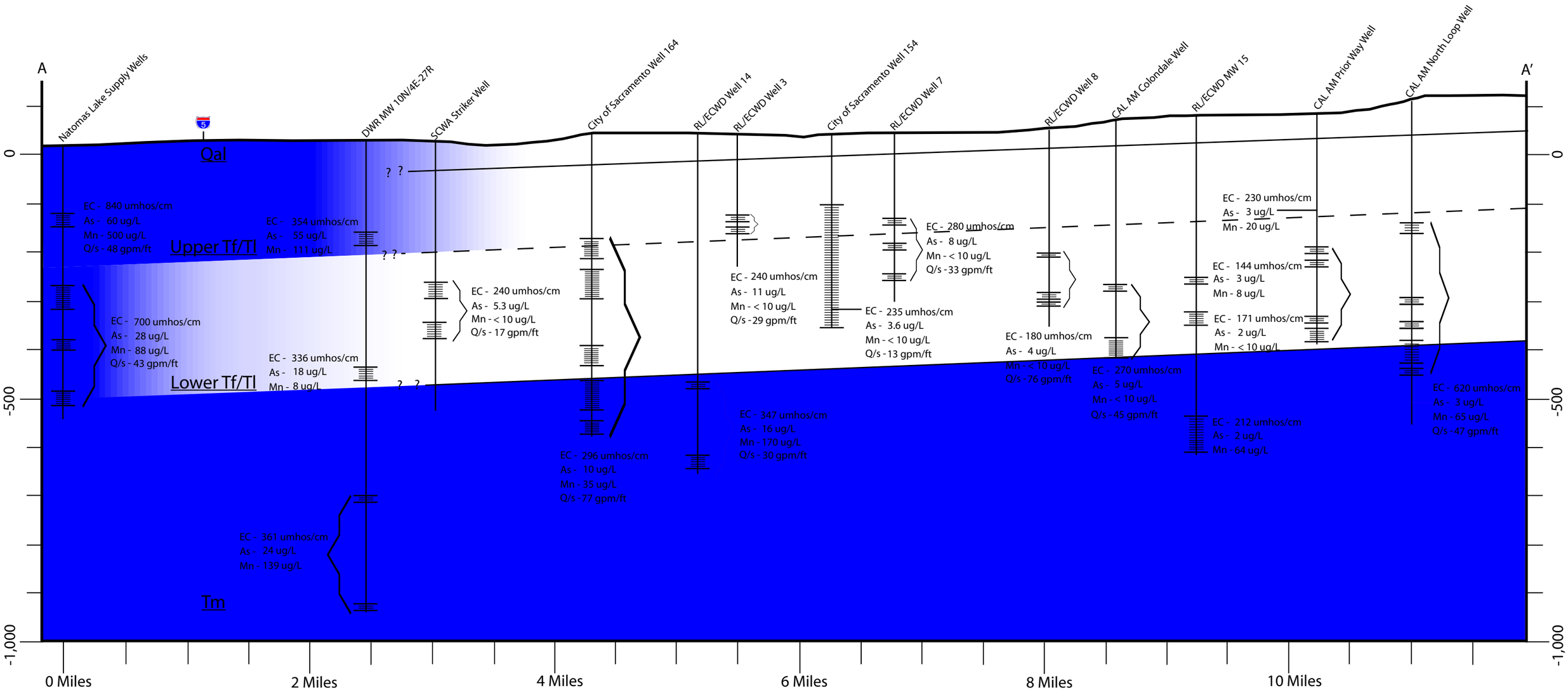
Qal - Recent Deposits
Tf/Tl - Fair Oaks/Laguna Formation
Tm - Mehrten Formation
Arsenic Concentrations < 5 ug/L
Arsenic Concentrations 5 - 10 ug/L
Arsenic Concentrations > 10 ug/l

Map Legend

Composite Well Data
Well Screens
? Area with Insufficient Data
* Questionable Data

FIGURE 6

City of Sacramento
Geologic Cross-Section with Manganese Distribution
A to A'



WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

Map Units

Qal - Recent Deposits
Tf/Tl - Fair Oaks/Laguna Formation
Tm - Mehrten Formation
Manganese Concentrations < 10 ug/L
Manganese Concentrations 10 - 50 ug/L
Manganese Concentrations > 50 ug/L

Map Legend

Composite Well Data
Well Screens
? Area with Insufficient Data
* Questionable Data

FIGURE 7

Appendix G. CPUC Energy Efficiency Program

FINAL

OPERATIONAL ENERGY EFFICIENCY PROGRAM (OEEP)

APPLICATION GUIDE

B&V PROJECT NO. 172706 PHASE 0100

PREPARED FOR

California Public Utilities Commission

ISSUE DATE

13 DECEMBER 2011

Appendix H. SGA Water Accounting

Basin Sustainability Goal | **Exchangeable Water**

Carmichael Water District	Target Pumping	Actual GW pumped	Total Demand	Transfer of Credits	Basin Sustainability Balance	Surface Water for Conjunctive Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
	6,646									40,049
2012		1,580	9,895	0	5,066	8,315	0	0	5,066	45,115
2013										
2014										
2015										
2016										

Basin Sustainability Goal | **Exchangeable Water**

City of Sacramento	Target Pumping	Actual GW pumped	Total Demand	Transfer of Credits	Basin Sustainability Balance	Surface Water for Conjunctive Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
	20,591									36,568
2012		13,554	38,084	0	7,037	24,530	0	0	7,037	43,605
2013										
2014										
2015										
2016										

Basin Sustainability Goal | **Exchangeable Water**

California American Water	Target Pumping	Actual GW pumped	Total Demand	Transfer of Credits	Basin Sustainability Balance	Surface Water for Conjunctive Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
	17,995									7,115
2012		13,595	14,186	0	4,400	591	0	0	591	7,706
2013										
2014										
2015										
2016										

Basin Sustainability Goal | **Exchangeable Water**

Del Paso Manor Water District	Target Pumping	Actual GW pumped	Total Demand	Transfer of Credits	Basin Sustainability Balance	Surface Water for Conjunctive Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
	1,465									0
2012		1,499	1,499	0	-34	0	0	0	0	0
2013										
2014										
2015										
2016										

Basin Sustainability Goal						Exchangeable Water				
Golden State Water Company	Target Pumping	Actual GW pumped	Total Demand	Transfer of Credits	Basin Sustainability Balance	Surface Water for Conjunctive Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
	1,098									0
2012		1,119	1,119	0	-21	0	0	0	0	0
2013										
2014										
2015										
2016										

Basin Sustainability Goal						Exchangeable Water				
Rio Linda / Elverta CSD	Target Pumping	Actual GW pumped	Total Demand	Transfer of Credits	Basin Sustainability Balance	Surface Water for Conjunctive Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
	2,882									109
2012		2,857	2,882		25	25	0	0	25	134
2013										
2014										
2015										
2016										

Basin Sustainability Goal						Exchangeable Water				
Sacramento County WA	Target Pumping	Actual GW pumped	Total Demand	Transfer of Credits	Basin Sustainability Balance	Surface Water for Conjunctive Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
	4,288									0
2012		5,211	5,211		-923	0	0	0	0	0
2013										
2014										
2015										
2016										

Basin Sustainability Goal						Exchangeable Water				
Sacramento Suburban Water District	Target Pumping	Actual GW pumped	Total Demand	Transfer of Credits	Basin Sustainability Balance	Surface Water for Conjunctive Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
	35,035									183,034
2012		27,530	38,089	0	7,505	10,559	0	0	7,505	190,539
2013										
2014										
2015										
2016										

Appendix I. TM Facility Assessment

Affinity Engineering Inc.

3433 Mardi Gras Court
Rancho Cordova, CA 95670

TECHNICAL MEMORANDUM

To:	Mychael Cardinas, Luis M. Ching, Rio Linda/Community Water District
From:	Jim Carson, Affinity Engineering Inc.
Date:	June 3, 2010
Subject:	**Rio Linda / Elverta Community Water District Facility Assessment**

This Technical Memorandum (TM) describes the findings of the facility assessment that was performed at Rio Linda/Elverta Community Water District's nine well sites on May 16, 2010. The purpose of the assessment was to analyze the components at the well sites to identify deficiencies that could compromise water supply reliability. The TM details the operation, findings for each well. Recommendations are then presented to address the assessment findings. The recommendations are then prioritized into one of the following three categories:

- Priority A: recommendations that should require immediate corrective action to remedy a condition that poses an imminent threat to employees, water quality, or the facility. RLECWD staff will be notified as soon as reasonably possible of any Priority A deficiencies.
- Priority B: recommendations that address an immediate risk of compromising the water supply/quality from the facility. The recommendations associated with this priority should be completed within the next year.
- Priority C: recommendations require attention in the medium or long-term. These recommendations are related to best operating practices, efficiency and water supply/quality reliability and should be budgeted based on available funding.

The field assessment consisted of a one day field trip with approximately a visual review that lasted no more than 30 minutes. The assessment was not intended to identify all issues at the facilities but to identify items through a quick review of the facilities. The assessment did not include any operational issues that were not able to be seen visually.

Facility Assessments:

The following is the assessment for each well site:

General Assessments: Common to each of the well sites:

G-1. Above grade piping is showing signs of corrosion
G-2. Two pressure transducers to measure the system pressure and well water level.
G-3. Propeller type production meter with 4-20 mA output signal for remote flow reading
G-4. No shaft guards on the well discharge head
G-5. No sound attenuation for the well pump motors
G-6. No security on the well's HOA switch and disconnect except Wells 2A, 3, 4A and 6
G-7. There are no locks on the SCADA panels on all wells except Well 3
G-8. There is not a common key for the well's padlocks or deadbolts
G-9. The conduit and antenna cable is exposed on all wells except Well 3
G-10. Chlorine Buildings:
  a. The chemical feed pumps are electrical pulse type pumps (need to get model and type)
  b. There is no secondary containment for the chlorine storage
  c. There is no ventilation fan in the chlorine building. Signs of corrosion on all metal in the buildings
G-11. The freeze protection insulation on all of the small control pipes is degrading with some small pipes exposed to freezing.
G-12. There is no landscaping in the front of the well sites.
G-13. The pavements on the well sites are showing signs of deterioration
G-14. The production meters are located in the wrong location and the air in the column pipe at startup is used to charge the hydropneumatic tanks for all wells except 2A and 12. The air in the column causes air to go past the production meters and creates inaccurate meter reads. The meters in the wrong location cause turbulent water flow and also increases the error in the meter reads.
G-15. The hydropneumatic tank (tank) has a stamp but it does not look like it has a pressure rating or it is an ASME tank stamp.
G-16. Several wells are located adjacent to live stock such as goats and horses.

Specific Assessments: Assessment specific to each of the well sites:

Well 2A

During outages is there any local power to run the pump control valve or the chlorination system?

Condition Assessment:

CA-1. The well site is partially graveled with concrete around some of the facilities.
CA-2. The hydropneumatic tank has been disconnected and is no longer in use.
CA-3. There is no light in the chorine building.
CA-4. The chlorine building exterior is degrading.
CA-5. There is graffiti on the SCADA panel.
CA-6. The hose bib attached to the exterior of the chlorine building is leaking causing a mud area.
CA-7. Two locations where there is a broken electrical conduit with conductors showing near the pump shaft packing area.
CA-8. (Spare)

CA-9. On the pump control valve limit switch conduit line. There is an open conduit from the chorine building to the motor control center creating a corrosion path from the chlorine building to the motor control center.
CA-10. (Spare)
CA-11. In the concrete vault at the front of the well site, the gate can lid is missing.
CA-12. The oil in the gear box seems dark and may need to be replaced.
CA-13. The meter is located to close to the bend to operate accurately.

Well 3 – (Currently not operating)

The well is currently on operational due to arsenic levels exceeding the MCL. DPH will allow the facility to be put on line in a standby operation and operated in the case of an abnormally low pressure such as a fire flow condition. For the facility to be put into standby operation, the following would be required:

- New chlorine building would need to be installed. The existing building has been destroyed and is lying collapsed at the well site.
- New chlorine meter pump and tank (existing tank might be able to be used) and associated electrical.
- The meter needs to be relocated. It is too close to the check valve to be accurate.
- The weeds need to be removed from the access path and well site and the access path needs to have gravel installed.
- The car, boat and any other equipment in the access road need to be removed.
- At startup, the motor needs to be meggered and the pump needs to be checked to make sure it is pumping at its design rate. The chlorination control needs to be confirmed that it is working correctly.
- Water sampling needs to be performed prior to putting the well on line.

Condition Assessment:

CA-14. When accessing the well site, the gate at the road was not locked.
CA-15. The gate to the well site was not the main key.
CA-16. Access to the well site is through a long path that is between two homes.
CA-17. Someone is storing an old car, boat and other equipment in the access path.
CA-18. The westerly homeowner is using the path as an access to their backyard.
CA-19. There is an extensive amount of weeds on the access path and well site.
CA-20. The chlorine building has collapsed.
CA-21. There is a gas can, chlorine tablets and an open bucket of chlorine tablet at the site.
CA-22. A chemical feed pump and feed pump parts are lying on the ground.
CA-23. The well's electric panel is new and secure.
CA-24. There is a new system pressure transducer, propeller meter with remote read and well water level transducer.
CA-25. The meter is bolted to the check valve which will cause inaccurate reading because there is not a proper upstream run above the meter.
CA-26. There is an open pipe on the inlet to the hydropneumatic tank.

Well 4A

Condition Assessment:

CA-27. An alternative key was required to access the well site.
CA-28. There is a concrete approach to the well site that is located between two backyards.
CA-29. The well site is gravel with weeds.
CA-30. There is a hose bib on the pump side of the check valve.
CA-31. The electrical panel is secured with an enclosure, but the enclosure itself does not appear to be sturdy.
CA-32. There is an open box with wire inside the enclosure.
CA-33. The electrical enclosure does not appear to be sturdy.
CA-34. There are some signs of corrosion on the exterior of the above grade piping.
CA-35. A post is broken on the chain link fence.
CA-36. On the pump to waste valve, bolts are missing and there is no screen on the outlet pipe.

Well 5 – (Currently not operating)

The well is currently on operational due to arsenic levels exceeding the MCL. DPH will allow the facility to be put on line in a standby operation and operated in the case of an abnormally low pressure such as a fire flow condition. For the facility to be put into standby operation, the following would be required:

- A new motor and discharge piping will be required. This includes a check valve and production meter.
- The chorine feed system will need to be assessed as to how existing equipment (if any) can be used. No access to the chemical building was obtained because none of the District keys provided unlocked the building door.
- At startup, the motor needs to be meggered and the pump needs to be checked to make sure it is pumping at its design rate. The chlorination control needs to be confirmed that it is working correctly.
- Water sampling needs to be performed prior to putting the well on line.

Condition Assessment:

CA-37. The well site is gravel with a small concrete section around the well site.
CA-38. The pump and discharge head are at the facility.
CA-39. The motor and discharge piping have been removed.
CA-40. The electric service and motor control panel is still active.
CA-41. There is a diesel generator at the site.
CA-42. There are livestock (goats) farm located adjacent to the well site.
CA-43. None of the District's keys were able to open the lock on the facilities building. Because of this, the building was not assessed.

Well 6

Condition Assessment:

CA-44. The well site and its approach are concrete.
CA-45. A portion of the well site that is around the hydropneumatic tank is gravel.
CA-46. The well entrance concrete is not extended to the street.
CA-47. The well is located very close to the back of an adjacent house.
CA-48. The well was operating during the assessment and was make a normal loud motor hum.
CA-49. The lock on the chlorine build has been broken and the building is not secure.
CA-50. Control conduit for the meter and pressure transducer is running on top of the concrete pad.
CA-51. The meter is located next to a bend and does not have a proper downstream run to operate accurately.
CA-52. The electrical panel has been secured with an enclosure that appears to not be sturdy.
CA-53. There is a 12-inch PVC pipe that is sticking out of the ground adjacent to the hydropneumatic tank that the use needs to be identified or the pipe removed.

Well 7

Condition Assessment:

CA-54. The well site and approach is gravel.
CA-55. The well has a manual pump to waste line that does not have a screen or blind flange.
CA-56. The pump to waste drain is missing its grate.
CA-57. There is a broken conduit on the back side of the chlorine building.
CA-58. The sight glass on the hydropneumatic tank does not show a tank water level.
CA-59. The chlorine building's slab has a broken corner.
CA-60. The power to the chemical feed pump is located outside of the chemical building in an unsecure location.
CA-61. The meter is connected to the pump side of the check valve with no proper downstream run. The piping arrangement causes the meter to read incorrectly.

Well 8A

Condition Assessment:

CA-62. The well site is paved with asphalt.
CA-63. The well pump has a manual pump to waste line that is missing its blind flange.
CA-64. The pump to waste gate valve is missing a bolt where it is connected to the flanged tee along with a blind flange.
CA-65. The sand separator is connected to close to the meter. This causes the meter to read inaccurately.
CA-66. There is a gate can that does not have a lid.
CA-67. The keys provided did not work in the lock for the chlorine building.
CA-68. There is no air gap on the hydropneumatic tank drain line.
CA-69. There is a broken conduit on the electrical line that feeds the chlorine building.
CA-70. The telephone line that is behind the electrical panel should be in a conduit to protect the line.

CA-71. Livestock is within 50 feet of the well.
CA-72. During the assessment the well was cycling off and on approximately every 4 minutes with and on pressure of 40 psi and an off pressure of 65 psi.

Well 9

Condition Assessment:

CA-73. The well site and driveway is paved with asphalt.
CA-74. The driveway does not extend to the road.
CA-75. The meter is on the pump side of the check valve which causes the meter to be inaccurate.
CA-76. The SMUD transformer exterior is corroded.
CA-77. The wells pump to waste line is open with no screen.
CA-78. The hydropneumatic tank drain line does not have an air gap.
CA-79. Livestock is within 50 feet of the well.
CA-80. Goat feces are next to the perimeter fence.
CA-81. The sight glass showed no water in the hydropneumatic tank.

Well 10

Condition Assessment:

CA-82. The well is paved with concrete except for gravel on the back portion where the hydropneumatic tank is located.
CA-83. The well pump is driven with a diesel motor and an electric motor.
CA-84. A couple of conduits around the motor are broken with conductors showing.
CA-85. There are some conduits that are sealed with duct tape.
CA-86. The door to the engine's control panel is not locked.
CA-87. There is livestock that can roam within 50 feet of the well site.
CA-88. There is a hose bib on the pump side of the check valve.
CA-89. The meter is located on the pump side of the check valve which causes the meter to read inaccurately.
CA-90. There is no air gap on the hydropneumatic tank drain.
CA-91. The air release valve and sight glass is missing on the tank.
CA-92. The gear drives motor's oil is dark and may need to be replaced.

During outages is there any local power to run the pump control valve or the chlorination system?

Well 11

Condition Assessment:

CA-93. The well site has a concrete path to the well and chlorine building. The concrete does not extend to the road. The rest of the well site is gravel.
CA-94. There is some asphalt spoils that has been dumped in the front of the well site.

CA-95. The well pumping level pressure transducer electric line has been sealed on both ends with electrical tape.
CA-96. There is a plug missing that has created a hole in the electrical panel.
CA-97. The well pumps through an Ames hydraulically operated pump control valve to minimize water hammer at the site and acts like a check valve to prevent water from going back down the well.
CA-98. The wells manual pump to waste line is not screened.
CA-99. A pressure gauge on the hydropneumatic tank (tank) is incorrectly reading the pressure as 80 psi when the pressure transducer is showing 54 psi.

Well 12

Condition Assessment:

CA-100. The well site is located towards the back of the corporation yard.
CA-101. The site is concrete within the fenced area.
CA-102. The well is a submersible pump through a sand separator.
CA-103. The meter is too close to bends on its downstream side and can cause the meter to be inaccurate.
CA-104. The well has backup power from a diesel generator located within the corporation yard.
CA-105. The pump to waste line is leaking.
CA-106. The electric power line fitting for the well water level transducer at the pump discharge head are schedule 40 PVC and not electrical fittings.
CA-107. The sand separators drain line does not have an air gap.

Distribution System Sampling Station

Condition Assessment:

CA-108. The door to the enclosure had been pride opened. The door is bent and cannot be locked.
CA-109. The sample ports are located outside of the box and exposed to outside elements.
CA-110. One of the sample ports are leaking with mold growing on the outlet.

Recommendations

Priority A:

There was no Priority "A" items found during the assessment.

Priority B:

General Findings: Common to more than one well site.

B-1. (G-4) Well Discharge Head Shaft Guards: There are no shaft guards on any of the vertical turbine pumps. Shaft guards should be added on all wells as required by OSHA to provide protection against rotation parts.

B-2. (G-6) Security: Wells 6, 7, 8A, 9, 10, 11 and 12 controls are not secure. These wells HOA switch needs to have a lockable cover to prevent someone from shutting off the well. The wells disconnect locks should be installed to keep them from being tampered with.

B-3. (G-7) Security: None of the wells SCADA cabinets have locks on them. (CA-5) At well 2A graffiti is on the panel proving that unauthorized people are getting access to the well sites. The equipment is very expensive and should be protected. The graffiti should be removed from the SCADA cabinet door at 2A.

B-4. (G-10-b) Secondary Containment: It is required that all hazardous chemicals have secondary containment. None of the liquid chlorine feed facilities have secondary containment.

B-5. (G-10-c) Chlorine Building Vent Fans: None of the chlorine buildings have vent fans to keep fresh air within the buildings. Because of this, there are significant signs of corrosion within the buildings. It is recommended that fans be installed in each of the chlorine buildings. The fans should be intake fans and the building should have exhaust vents located near the bottom of the buildings to exhaust the air. The fans should be intake fans to keep the chlorine gas off of the fans. The fans should be wired to operate continuously.

B-6. (G-11) Freeze Protection: The existing freeze protection insulation over the small pipes within the well sites is failing and needs to be replaced before next winter.

B-7. (G-14) Inaccurate Meters: The following are recommended corrections that are required address the inaccurate meters.

a. Most of the wells use the column air to refill the hydropneumatic tanks. This causes the air to go through the propeller meter causing the meter to measure inaccurately. It is recommended that a whitewater type pump be installed on the hydropneumatic tank and air release vacuum breaker valves on the well discharge.

b. (CA-13)(CA-25)(CA-61)(CA-89) Meters are located in the wrong location. Some meters are located on the wrong side of the well's discharge check valves. When the well shuts down, the meter becomes empty and during startup its does not read correctly. The meters need to be relocated on the system side of the check valve with proper upstream and downstream runs per the manufacturer's recommendations.

c. (CA-51)(CA-65)(CA-103) Meters with improper upstream and downstream runs due to being too close to bends, valves or other fittings. The meters need to either be replaced or relocated to meet the manufacturer's recommendations to maintain meter accuracy.

d. Meter calibration: All propeller meters are required to be calibrated annually. It is recommended that the meters be calibrated with calibration records logged annually.

B-8. (G-15) Hydropneumatic Tank Stamps: There are not pressure rating stamps on the hydropneumatic tanks. The tanks should either be recertified for an operating pressure of no less than 100 psi (assuming the maximum operating system pressure does not exceed this pressure) or the tanks are removed/or replaced.

Well 2A

B-9. (CA-6) The leaking hose bib on the chlorine building should be repaired or replaced to stop the leaking.

B-10. (CA-7) The two electrical conduits that are broken and are showing the conductors should be repaired to protect the conductors.

B-11. (CA-10) The open conduit from the chlorine building to the motor control center should be sealed to prevent chlorine from entering the motor control center.

B-12. (CA-11) The missing valve can lid need to be replaced to keep someone from getting hurt by falling into the valve can.

B-13. (CA-12) The oil in the gear box looks dark. The oil should be looked and replaced if necessary.

Well 3

B-14. (CA-17)(CA-18) The cars and boats on the access road need to be removed to maintain full access to the well site. The access road property or easement needs to be verified legally. The adjacent property owner is using the access road for access to his backyard garage. If this is a shared easement, agreements need to be put in place that makes sure the District has full access to the well at all times.

B-15. (CA-19) There is an excessive amount of weeds on the site that impairs the operation of the facility. The weeds on the access path and the well site need to be removed. It is recommended that ¾-inch aggregate based be installed after the weeds have been removed.

B-16. (CA-20)(CA-22) The chlorine building has collapsed and needs to be replaced if the well is to be put into operation as a standby well. New chlorine feed system and associated electrical and controls need to be installed. The District should secure the existing chemical feed pump and parts that are at the facility and plan to use them when the facility is operational.

B-17. (CA-21) There are hazardous chemicals on site that need to be removed and disposed of properly. These chemicals include a gas can and chlorine tablets.

B-18. (CA-26) The open pipe that is on the inlet to the hydropneumatic tank should be capped to prevent dirt or animals from getting into it.

Well 4A

B-19. (CA-30) The hose bib on the pump side of the check valve needs to be removed to eliminate a potential cross connection situation. Per the Department of Public Health, no threaded hose bib connections are allowed on the pump side of the check valves. This is because when the well pump shuts down it creates a vacuum as the water from the column pipe goes back down the well.

B-20. (CA-32) Inside the enclosure there is an open box with conductors exposed. The new cover to the box should be installed.

B-21. (CA-36) The missing bolts on the pump to waste valve should be replaced and a screen should be installed at the end of the pump to waste line to keep it sanitary. As an option a blind flange or cap could be installed rather than installing a screen.

Well 5

B-22. (CA-39) The well pump motor and discharge piping are missing. In order to reactivate the well, these items will need to be replaced.

Well 6

B-23. (CA-49) The chlorine building lock is broken causing the building to not be secure and requires replacement.

B-24. (CA-53) The PVC that is sticking up should have its use identified to determine if it needs to be removed or maintained.

Well 7

B-25. (CA-55) The pump to waste line should either have a screen on it or as an alternative a blind flange to prevent animals from getting into it as well as keep the line sanitary.

B-26. (CA-56) The pump to waste drain grate is missing. The missing grate should be replaced.

B-27. (CA-57) The broken electrical conduit on the back side of the chlorine building should be repaired to protect the electrical conductors.

B-28. (CA-58) The hydropneumatic tank's sight glass showed no water in the tank. A review of the operation of the tank needs to be performed to determine if the tank is operating properly.

B-29. (CA-60) The chlorine feed pump's power line is located outside of the building on an unsecured outlet. It is recommended that the outlet be secured to avoid tampering by unauthorized persons.

Well 8

B-30. (CA-63)(CA-64) The pump to waste line is missing its blind flange. A new blind flange should be installed to replace the existing flange. The gate valve is also missing a bolt on its connection to the flanged Tee.

B-31. (CA-66) One of the onsite gate valve cans is missing its lid. A new gate valve lid is recommended to replace the missing lid.

B-32. (CA-67) No key provided was able to open the well's chlorine building. The lock should be changed to match the other similar style locks.

B-33. (CA-68) There was no air gap on the hydropneumatic tank's drain line. A proper air gap is required to prevent a potential cross connection.

B-34. (CA-69) There is a broken conduit on the electrical line that feeds the chlorine building exposing the conductors. The conduit should be repaired to protect the electrical conductors.

B-35. (CA-72) The frequent cycling of the well will result in premature motor and/or pump failure. The wells pressure settings were 25 psi which ordinarily should not cause the well to cycle a lot. An analysis on the wells operation, get away piping and sequencing with other wells needs to be done to develop ways to reduce the number of on/off cycles.

Well 9

B-36. (CA-76) The exterior of the SMUD transformer shows signs of corrosion. It is recommended that SMUD be call to perform routine maintenance on their transformer and repair any internal corrosion that may exist.

B-37. (CA-77) The pump to waste line is missing its screen. As an option a blind flange or cap could be installed to prevent contamination from going into the pump to waste line.

B-38. (CA-78) There was no air gap on the hydropneumatic tank's drain line. A proper air gap is required to prevent a potential cross connection.

B-39. (CA-81) The hydropneumatic tank's sight glass showed no water in the tank. A review of the operation of the tank needs to be performed to determine if the tank is operating properly.

Well 10

B-40. (CA-83) The well pump is driven normally off of utility electric power. During power outages, the well pump is driven by a diesel gas engine motor. Does the District have all SAQMD operating permit for the diesel engine? During power outages, is there power to operate the chlorine feed system?

B-41. (CA-84)(CA-85) The electrical conduits around the motor are broken and some are sealed with duct tape. The conduits need to be repaired to protect the electrical conductors. The duct tape needs to be removed and the conduits should be sealed with electrical parts per NEC code.

B-42. (CA-86) The engine control panel was not locked. The door needs to be locked. A new lock needs to be installed if the existing lock does not work to protect the engine controls.

B-43. (CA-88) The hose bib on the pump side of the check valve needs to be removed to eliminate a potential cross connection situation. Per the Department of Public Health, no threaded hose bib connections are allowed on the pump side of the check valves. This is because when the well pump shuts down it creates a vacuum as the water from the column pipe goes back down the well.

B-44. (CA-90) There was no air gap on the hydropneumatic tank's drain line. A proper air gap is required to prevent a potential cross connection.

B-45. (CA-91) The sight class is missing on the hydropneumatic tank. The new sight glass needs to be installed to replace the missing sight glass. The sight glass is needed to monitor the water level in the hydropneumatic tank in order for the tank to operate correctly. A whitewater hydropneumatic air compressor is recommended to maintain the water level in the tank.

B-46. (CA-92) The motor gear drive's oil appears dark and should be replaced for minimize wear on the gear drive.

Well 11

B-47. (CA-93) The driveway should be extended to the roadway pavement to maintain accessibility. The gravel portion of the well site should have its weeds removed; the area sterilized to prevent weeds from reforming and new ¾-inch aggregate based should be installed over the gravel area.

B-48. (CA-94) There is some asphalt spoils at the well site. This asphalt can be considered a hazardous waste and should be removed from the well site and disposed of properly.

B-49. (CA-95) The electrical tape on the pressure transducer's electrical line should be removed and the conduit should be sealed properly using electrical standards per NEC code.

B-50. (CA-96) On the face of the electrical panel a plug is missing creating a hole in the electrical panel. The hole should be sealed to prevent water or corrosion from affecting the wells electrical equipment.

B-51. (CA-98) The pump to waste line should have a screen on the end. As an option, a blind flange or cap could be installed to prevent contamination from entering the line.

B-52. (CA-99) The inaccurate pressure gage should be removed and replaced or reinstalled if the gauge can be recalibrated.

Well 12

B-53. (CA-104) The well pump is driven normally off of utility electric power. During power outages, the well pump motor is powered by a diesel generator. The generator appears to power both the District office and the well site facilities. Does the District have all SAQMD operating permit for the diesel generator?

B-54. (CA-105) The pump control valve is leaking and should be repaired.

B-55. (CA-106) The electrical conduit needs to be repaired as it goes into the discharge head by using electrical conduit fittings.

B-56. (CA-107) The drain line on the sand separate needs to be re-piped so the drain line has a proper air gap to avoid a cross connection.

Distribution Sampling Station

B-57. (CA-108)(CA-110)The sample station door should be repaired so the door can be locked to secure the interior of the station. The leaking valve should be replaced so the sample port that is leaking is fixed.

Priority C:

General Finding:

C-1. (G-1)(CA-34) On Site Painting: All of the well sites above grade piping are showing signs of corrosion as stated in G-1. The pipe should be recoating to prevent further corrosion.

C-2. (G-5) (CA-47)(CA-48) Sound Attenuation: None of the VHS motors have any sound attenuation. Well close to homes such as Well 6 should be budgeted for a motor enclosure to reduce the motor sound. Well 6 should be the highest priority well to have a sound enclosure due to its proximity to an adjacent home.

C-3. (CA-31)(CA-52) Deteriorated Enclosures: Wells 4A and 6 have wrap around enclosures that secure the controls but are showing signs of deterioration and are recommended to be replaced as a Priority C project.

C-4. (G-8)(CA-15)(CA-27)(CA-43) Security: A common key for the padlocks and a common key for the deadbolts should be obtained. The makes is easier to access the well site during emergencies.

C-5. (G-9) Exposed Cables: Most of the SCADA cabinets are located in boxes above the ground with the antenna cables exposed. Vandals would have access to these cables and may look to steel them. It is recommended that the lower portion of the SCADA panel be enclosed to protect these cables.

C-6. (G-12) Landscaping: There is no landscaping at any of the well sites. It is recommending that landscaping be installed at the well sites to blend them into the community. The priority of well site landscaping should be based on the wells with the exposure to the community being the highest exposure such as Well 8A.

C-7. (G-13) Pavement Failure: Weeds need to be removed, pavement needs to be resurfaced and new crushed rock needs to be installed at the well sites. This is required to maintain access to the well site and reduce weed control maintenance.

C-8. (G-13)(C-29) Re-gravel: Weeds are going in the unpaved and gravel areas. The weeds need to be removed, an approved soil sterilant applied and the area re-graveled with ¾-inch aggregate base. This will provide for better well access, lower future maintenance costs and improve the look of the well sites to the community.

C-9. (G-16)(CA-42)(CA-79)(CA-80)(CA-87) Livestock roams within 50 feet of several wells. Monthly bacteriological testing is recommended to ensure that the livestock is not affecting the wells water quality.

Well 2A

C-10. (CA-2) Remove Hydropneumatic Tank: The hydropneumatic tank has been disconnected from the well. If the hydropneumatic tank is not required then it should be removed along with its footing to reduce site maintenance and improve accessibility around the well.

C-11. (CA-3) There is no light in the chlorine building. A light should be installed in the chlorine building in order to be able to monitor the chemical feed system at night.

C-12. (CA-4) The chlorine building is deteriorating. The build should be repaired and deteriorated wood replaced and the building painted or the building should be replaced.

Well 4A

C-13. (CA-35) Fence Post Broken: One of the fence posts are broken on the perimeter fence that should be repaired.

Well 6

C-14. (CA-46) The entrance should be extended to the edge of the road pavement to maintain well access.

C-15. (CA-50) The control conduit is running on top of the concrete and could cause a tripping hazard. It is recommended that the concrete be cut and the conduit be reinstalled below grade.

Well 7

C-16. (CA-59) The corner of the chlorine building's concrete floor slab is broken. The concrete corner should be repaired.

Well 8

C-17. (CA-70) The external telephone line behind the electrical panel is not weather protected. It is recommended that the telephone line be installed inside electrical conduit to protect the wiring.

Well 9

C-18. (CA-74) The well's driveway should extent to the street's pavement to maintain a reliable access.

Well 11

C-19. (CA-97) The use of the Ames pump control valve should be analyzed to determine if this valve is needed and of the well could be operated more efficiently.

Distribution System Sample Station

C-20. (CA-109) The sample stations should be replaced with sample stations that the sample ports are located inside the box and protected from exposure to weather.

Appendix J. Letter to CDPH on Proposed HC MCL

Rio Linda Elverta Community Water District
730 L Street
Rio Linda, CA 95673

October 8, 2013

Dr. Dave Mazzera, Ph.D.
Division Chief: Drinking Water and Environmental Management
California Department of Public Health
Office of Regulations and Hearings
MS 0507
P.O. Box 997377
Sacramento, CA 95899-7377

Regarding: Proposed Hexavalent Chromium MCL (DPH-11-005)

Dear Dr. Mazzera:

Rio Linda/Elverta Community Water District (District) is submitting a public comment based on the California Department of Public Health proposing to establish a maximum contaminant level (MCL) for hexavalent chromium (HC) of 10 ppb from the current total chromium MCL of 50 ppb. The District objects to this lowering of the MCL due to the fact that there is insufficient information and no backup support available that can substantiate this change. Additional data still needs to be collected to fully understand the effect of this change to water purveyors throughout the state. For example, the impact to small districts is still unknown since they were not required to sample for HC under the unregulated contaminate collection rule (UCMR) in 2001.

The District is a relatively small water district that supplies water to approximately 4,700 customers in the northwestern part of Sacramento County. Recent water quality sampling of HC on the District's wells have shown that approximately 58 percent of the District's water supply exceeds CDPH's proposed MCL of 10 ppb. If the proposed MCL is adopted at 10 ppb, this will require the District to more than double its water rates in order to mitigate this impact.

As you know, CDPH has estimated that the cost for HC treatment with 1,000 to 10,000 service connections will be approximately $326 per year or $27.17 per month. This cost does not take into account that the District wells are located on small lots in residential areas and if treatment would be required some of these wells would need to be replaced in order to centralize the treatment. The District has estimated that the cost impact to its customers to comply with the proposed MCL of 10 ppb would be over $13,500,000 in capital costs with an

additional $1,600,000 in annual operation and maintenance costs and would equate to a 135 percent increase to the District's customers.

This increase in cost will cause a significant negative impact to the community in several ways as follows:

1. Financial Hardship to Disadvantaged Communities within the District: A large portion of the District has been designated as disadvantaged. A rate increase of this magnitude would be devastating to customers that are already having trouble paying their current water bill.
2. Discourages Economic Growth: A water rate increase of this magnitude would discourage development within the District by having developers avoid the District and develop other areas in the region where the impact to the water supply is less.
3. Reduce District Capital Improvement (CIP) Program: The District is in the process of updating their CIP which focuses on replacing water mains and improving its water supply facilities to make the water supply reliable. The cost of adding HC treatment will take away the funding for these important projects by having them deferred to help pay for this treatment cost.

The District is currently under a moratorium because its water demands exceed its water supply partially due to a loss in water supply resulting from the arsenic MCL that was established in 2007. The District had to receive a State Revolving Fund (SRF) loan to minimize the rate increase that was required to pay for water supply improvements that are being constructed to get the moratorium lifted. If the new HC MCL is established at 10 ppb, the District will again be faced with another rate increase to pay for water supply/treatment improvements in order to meet the HC MCL before the moratorium will be lifted.

The District requests that the implementation of the MCL be delayed to allow further study of the science and economic impacts that the proposed MCL has on water systems and include the collaboration with EPA to ensure that the regulations in California and those being considered by EPA are based on the same scientific findings and conclusions.

If CDPH continues to establish a MCL for HC, the District requests the following:

1. Reconsider setting the MCL at 10 ppb and use a MCL of 20 ppb due to the financial impact this will have on the District
2. Extend the comment period for another 60 days to allow for additional comments from our state politicians, community leaders, and customers

3. If the MCL is set at 10 ppb, the District is requesting that a reasonable grace period (3 to 5 years) be established to allow for the optimization of a treatment system for this constituent
4. Making grants and low interest loans available to the District to minimize the financial impacts to the Rio Linda and Elverta communities

We appreciate the ability to comment on the proposed MCL for HC and hope that CDPH considers our comments prior to adopting this change.

Respectfully,

Mary Henrici
General Manager
Rio Linda/Elverta Community Water District

Copied to:

Supervisor Ms. Roberta MacGlashan
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Supervisor Phil Serna
Sacramento County – District 1

State Senator Mr. Darrell Steinberg
California Senator – District 6

State Assemblymen Ted Gaines
California Assemblymen – District 4

Representative Doris Matsui
California 6th Congressional District

Representative John Garamendi
California 3rd Congressional District

Senator Dianne Feinstein

Senator Barbara Boxer

Governor Mr. Jerry Brown