Appendix WS-1

Elverta Specific Plan Water Supply Strategy

Appendix WS-1

Rio Linda / Elverta
Community Water District

Elverta Specific Plan Water Supply Strategy

Final

January 2016

AFFINITY ENGINEERING

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1. Introduction

This water supply strategy update addresses the Sacramento County's PF-8 water supply requirements of the Elverta Specific Plan. This document once approve by the District's Board of Directors will be incorporated in the next District Master Plan update.

The Elverta Specific Plan (ESP) is a proposed 1,756-acre development located in the north eastern side of the Rio Linda/Elverta Community Water District's (District) service boundary (see Figure 1.1). The ESP owners provided water demand projections and a supply plan approximately six years ago, but the owners put the development on hold and that water supply plan was never implemented. The landowners group is now moving forward with the project and has requested that the District provide a current water supply plan which incorporates the localized water plans, District's Master Plan objectives, and changes in regional water supply. This report presents the current water supply strategy and infrastructure requirements for the ESP Development.

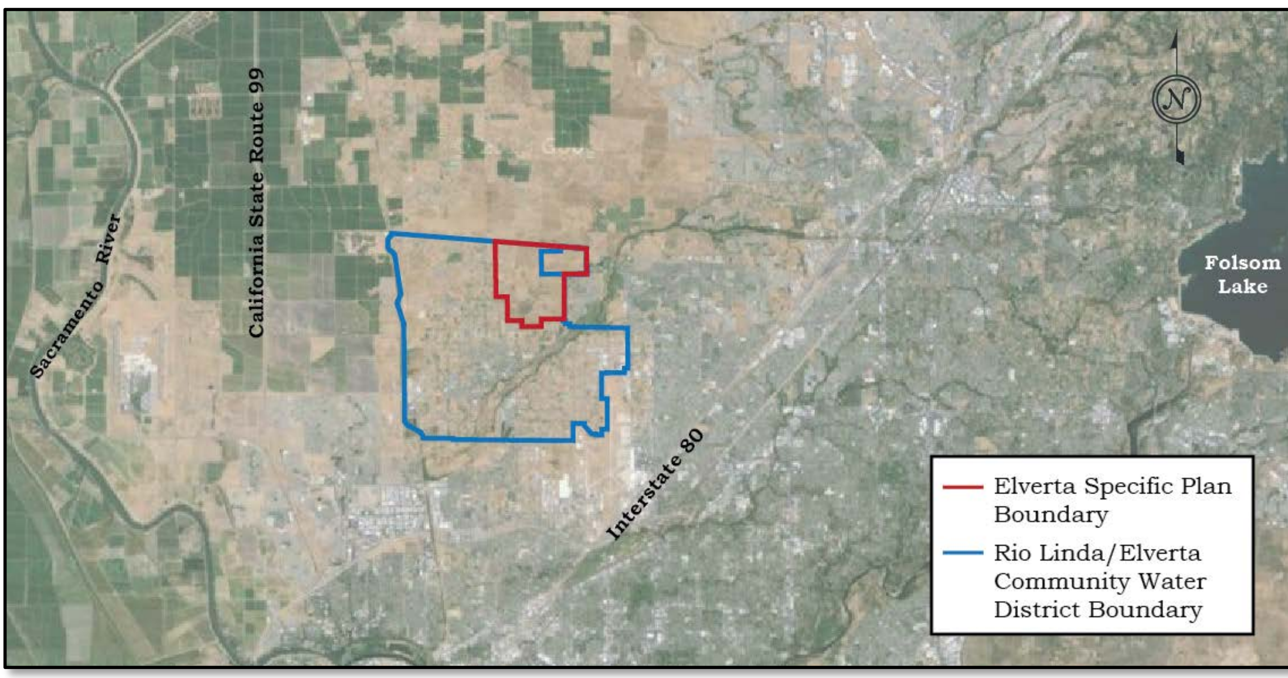

Figure 1.1 Elverta Specific Plan Area.

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2. *Projected Demand*

2.1 Annual Water Demands

The projected land use water demands and totals are shown in Table 2.1. The 6,425 units includes the ESP holding capacity with the approved density bonus and the updated Northborough density. The density bonuses allow developers to obtain more favorable local development requirements in exchange for offering to build more types of homes such as senior or low income. All land use information was provided by the developers in December 2015. Demand and supply values will be updated upon final approval of land use plans and service area boundaries (see Appendix A for the last updated land use map). The industry standard for unaccounted water factor (10 percent) is added to the land use water demand total to determine the total water demand of 4,303 acre-feet per year (AFY). For the use of supply investigation, total water demands are rounded up to 5,000 acre-feet per year to account for above-average annual demands.

Table 2.1 Land Use Demand Projections

Land Use ID	Area (acres)	Dwelling Units	Unit Demand Factor (AF/DU or AF/ac)	Water Demand (AFY)
AR 1,5	237.74	216	1	216.0
AR 1	44.54	48	1	48.0
RD 1,2	10.98	19	1	19.0
RD 2	0	-	0.7	-
RD 3,4,5	717.6	3,339	0.6	2,003.4
RD 6,7	282.11	1,486	0.4	594.4
RD 10	5.7	46	0.3	13.8
RD 20	42.49	687	0.3	206.0
Commercial	17.5	--	2.5	43.8
Office / Professional	4.4	--	2.5	11.0
Parks	88.8		2.5	222.0
Schools	20.1	--	3.1	62.3
Drainage / Trails / Detention / Open Space (Irrigated)	51	--	1.3	63.8
Drainage / Trails / Detention / Open Space	163	--	0	0.0
Major Roads (irrigated)	39.4	--	2.5	98.5
Major Roads / Other	30.9	--	0	0.0
Total Residential	**1,341**	**5,841**	**--**	**3,101**
Residential Density Bonus	**--**	**584**	**--**	**310**
Total Non-Res	**415**	**--**	**--**	**501**
Subtotal:	**1,756**	**6,425**	**--**	**3,912**
Unaccounted Water (10%)	**--**	**--**	**--**	**391**
Total:	**1,756**	**6,425**	**--**	**4,303**

2.2 Initial Development Demands

The initial development phase demands are used to size the initial infrastructure required to serve development. Initial supply infrastructure will be installed to meet the first phase of demand projections. Supply infrastructure will be expanded beyond that time to match the pace of development growth. However, to eliminate redundancy and its associated higher ultimate cost, major supply infrastructure such as pipelines or other elements will be sized for ultimate build out initially as determined by the District. For planning purposes, it is assumed the initial development demands will total 2,500 acre-feet per year, which are approximately the total demands for ESP Phase 1 and Northborough.

The projected monthly and total demands for the ESP initial development and build out are summarized in Tables 2.2 and 2.3.

Table 2.2 ESP Initial Development Monthly Demands (2,500 acre-feet per year)

Month	Month Factor	Average Monthly Demand (AF)	Average Day (MGD)	Maximum Day (MGD)	Peak Hour (MGD)
January	0.47	97	1.0	1.1	1.6
February	0.43	89	1.0	1.1	1.7
March	0.54	113	1.2	1.3	1.9
April	0.71	147	1.6	1.7	2.6
May	1.16	242	2.5	2.7	4.1
June	1.58	329	3.6	3.8	5.7
July	1.86	387	4.1	4.3	6.5
August	1.78	372	3.9	4.2	6.3
September	1.41	293	3.2	3.4	5.1
October	0.99	206	2.2	2.3	3.5
November	0.57	119	1.3	1.4	2.1
December	0.50	104	1.1	1.2	1.8
Total:	--	2,500	--	--	--

Table 2.3 ESP Build Out Monthly Demands (5,000 acre-feet per year)

Month	Month Factor	Average Monthly Demand (AF)	Average Day (MGD)	Maximum Day (MGD)	Peak Hour (MGD)
January	0.47	194	2.0	2.2	3.3
February	0.43	178	2.1	2.2	3.3
March	0.54	226	2.4	2.5	3.8
April	0.71	295	3.2	3.4	5.1
May	1.16	484	5.1	5.4	8.2
June	1.58	658	7.2	7.7	11.5
July	1.86	773	8.1	8.7	13.0
August	1.78	743	7.8	8.4	12.5
September	1.41	587	6.4	6.8	10.2
October	0.99	413	4.3	4.6	7.0
November	0.57	239	2.6	2.8	4.2
December	0.50	209	2.2	2.3	3.5
Total:	--	5,000	--	--	--

2.3 Equivalent Dwelling Unit

Equivalent Dwelling Unit (EDU) demand values are required to determine infrastructure phasing needs. An EDU and other respective design parameters are summarized in Table 2.4. The design parameters are based on the design criteria developed in the District's Master Plan (2014).

Table 2.4 EDU Analysis

Parameter	Value	Units	Notes
ESP Total Demand	3,411	AFY	DU demand only
ESP Dwelling Units	6,425	DU	Maximum bonus density DU
Demand/DU	0.53	AF/DU	Average annual
10 Percent UAW	0.053	AF/DU	Average annual
Total Demand/DU, AFY	0.583	AF/DU	Average annual
Total Demand/DU, gpd	520	gpd/DU	Average annual
Avg Day in Max Month, gpd	967	gpd/EDU	1.86 factor from SRF Report monthly peaking factor analysis
Max Day, gpd	1,034	gpd/EDU	1.07 times max month average day
Peak hour, gpm	1.08	gpm/EDU	1.5 factor on max day based on SRF report
Storage Factors			Total Storage = three parameters added together
Peak Hour Storage	259	gal/EDU	Peak hour for 4 hours
Emergency Storage	258	gal/EDU	25 percent of max day
Fire Flow Storage	960,000	gallons	4,000 gpm for 4 hours

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3. Supply Strategy

The previous 2008 supply strategy was developed under different circumstances and requirements. Since that time, the region has increased regional supply management efforts through the Water Forum Agreement implementation, SGA and West Placer Groundwater Management Plans, and the RWA Integrated Regional Water Management Plan. The supply strategy is updated to support these regional supply planning efforts and goals.

3.1 Previous Supply Strategy

The ESP supply planning documents from previous efforts evaluated numerous supply sources and strategies to serve the development under the PF-8 requirements. PF-8 was conditioned on the Development by the County to ensure proper long-term groundwater management. The selected strategy included a mix of groundwater, surface water, and recycled water. The supply strategy proposed a conjunctive use of groundwater and surface water. New wells would be drilled to supply groundwater in the quantity required for the ESP's maximum day demand. The District would purchase surface water from the Sacramento Suburban Water District (SSWD) during the off peak seasons and serve both ESP and other District demands in quantities sufficient to offset the annual groundwater pumping volumes. SSWD would sell surface water from its contract with Placer County Water Agency (PCWA), treated at the San Juan Water District's surface water treatment plant, and delivered to the District through the existing and extended Cooperative Transmission Pipeline. The District would also implement a recycled water program with the City of Roseville. The District would buy reclaimed water from Roseville and divert it from Dry Creek to serve the Cherry Island Golf Course and Gibson Ranch Park. These two parks would in turn cease groundwater pumping, providing a reduction in basin groundwater pumping.

As part of this updated Water Supply Analysis, the previous supply strategy was re-evaluated with respect to reliability, cost, and complexity. Both PCWA and SSWD staff indicated concern with the surface water reliability, as it is projected that SSWD will only receive supply from PCWA approximately six in ten years (based on inflow to Folsom Reservoir and other parameters). SSWD staff also indicated that PCWA may no longer have the available surface water rights to supply the District even during wet years. In addition, the draft supply agreement with SSWD indicated that the District would be the first customer eliminated in the event of supply shortages. Past planning efforts were halted before supply costs were developed. However, the draft supply agreement included high connection fees that were associated with numerous non-supply payments to address past legal, environmental, design, and construction issues between the District and SSWD concerning the Cooperative Transmission Pipeline. Delivering the supply to the District would require coordination between four agencies (RLECWD, SSWD, SJWD, and PCWA). The coordination between these agencies that is required to schedule supply availability and treatment capacity is considered complex.

The City of Roseville staff was contacted regarding the recycled water supply strategy. The staff indicated that they now may not have excess recycled water supply to sell the District due to their potential needs within their city. The City of Roseville staff are re-evaluating their needs and are not prepared at this time to commit to any recycled water supply.

The previous supply strategy is not recommended due to the low water supply reliability and the associated high connection fees and supply costs.

No reclaimed water is available in this area of Sacramento County. Discussions with SRCSD should be conducted about the possibility of adding a scalping plant to enable the use of reclaimed water.

3.2 Recommended Supply Strategy

Alternative supply strategies were investigated with the goal to develop a supply strategy that maximizes supply reliability and minimizes long-term operational costs. Each potential supply partner was contacted to review supply opportunities and constraints. Supply alternatives were either eliminated or not investigated further based on these initial discussions. High potential supply options were identified and further investigated as the District developed its recommended water supply strategy. A supply strategy for the entire RLECWD service area was developed in the 2014 Master Plan. The Master Plan supply strategy supports the regional planning efforts to enhance conjunctive use abilities region-wide.

3.2.1 Regional Planning Efforts

The North American River Groundwater Basin is extensively managed through current management plans and regional planning efforts to increase conjunctive use. The basin is not adjudicated, but managed through regional cooperation. Multiple public agencies and governmental boundaries overlay the basin. The Sacramento Groundwater Authority (SGA) manages the basin portion within Sacramento County, known locally as the North Area Basin. SGA is a joint powers authority formed in 1998 as a result of the Sacramento Area Water Forum. SGA developed and actively maintains the Groundwater Management Plan and produces an annual Basin Management Report that provides an update on basin objectives and programs and results (SGA Basin Management Report – 2013 Update). SGA has developed the water accounting framework (SGA Water Accounting Framework Phase III Effort, June 2010) to facilitate conjunctive use strategies and partnerships within the basin. SGA also leads ongoing basin monitoring activities as the reporting agency for the California Statewide Groundwater Elevation Monitoring Program (CASGEM). SGA monitors groundwater elevations and quality throughout the basin through a network of 23 groundwater-sampling sites.

The Water Forum process is a regional multi-stakeholder process to help meet water needs through 2030 and also meet environmental flow requirements on the lower American River. Extensive groundwater modeling and analysis was conducted as part of the process. Results recommended a total safe sustainable yield for the North Basin of

131,000 acre-feet per year (AFY). The 2014 SGA Groundwater Management Plan estimates the average pumping over the last 13 years of approximately 99,500 AFY. The ESP groundwater supply is estimated at 5,000 AFY, well within the Water Forum sustainable yield.

Additional modeling and planning of the groundwater basin has been conducted since the Water Forum Agreement. The Regional Water Authority developed and updates the American River Basin Integrated Regional Water Management Plan (ARB IRWMP). The ARB IRWMP provides a framework for the region to implement the vision: "The American River Basin Region will responsibly manage water resources to provide for the lasting health of our community, economy, and environment". The document contains numerous goals, principals, objectives, and strategies to meet the vision. Water Resources Strategy 2 calls for an increase of groundwater production to 550 mgd by 2030. The 2013 production capacity is approximately 400 mgd. The ESP wells (approximately 9 mgd) will help meet this goal and will support the other goals of conjunctive use opportunities for increased reliability.

The West Placer County Groundwater Management Plan (WPCGMP) was developed by Placer County Water Agency, City of Roseville, City of Lincoln, and California American Water. The plan covers the North American Groundwater Basin portion that is in west Placer County, which abuts the northern edge of RLECWD's service area. Both the SGA GWP and the WPCGMP address the same groundwater basin, although the plans cover two different political boundaries. Both the Water Forum and SGA participated in the WPCGMP, and each WPCGMP agency also is a member of the Water Forum, SGA, RWA, and/or the ARB IRWMP. The WPCGMP identifies the WFA estimated sustainable yield in Sacramento County at 131,000 AFY, Placer County at 95,000 AFY, and Sutter County at 175,000 AFY. Basin Management Objective 2 indicates groundwater use will result in basin level fluctuations, and the management goal is to maintain an acceptable "operating range." The ESP supply wells are within the 131,000 AFY sustainable yield, and will also help conjunctive use strategies, supporting the goals of the WPCGMP.

The District investigated supply options through the SGA Groundwater Accounting Framework. The District solicited purchasing groundwater credits from City of Sacramento, SSWD, and Carmichael WD, no agreement with any of these Agencies could be made.

3.2.2 RLECWD Supply Strategy

The Master Plan recommended supply strategy supports the regional planning efforts to enhance conjunctive use abilities region-wide. To achieve this, the region needs to increase its groundwater production capacity and enhance surface water supply sources and volumes. Cooperative efforts amongst agencies throughout the region will involve conjunctive use strategies between groundwater pumpers, surface water users, and those with both supplies. RLECWD will continue to serve existing and new customers with groundwater. RLECWD will collaborate within the region to enhance conjunctive use strategies. As part of this effort, RLECWD is participating in efforts to develop a new surface water treatment plant on the Sacramento River. The new treatment plant will increase regional supply reliability, and also afford RLECWD a potential supplemental supply for conjunctive use within its own service area. However, regardless of regional partner participation, RLECWD intends to construct a surface water treatment plant and obtain surface water supplies to enhance service to its customers as stated in its April 2014 Water Master Plan. RLECWD will continue to develop a surface water treatment plant project on two parallel efforts: one with other partners, and one with just RLECWD.

3.2.3 ESP Supply Strategy

Based on the evaluation of several water supply strategies, it is recommended that RLECWD serve the ESP Development with groundwater. New groundwater wells will be constructed in or near the ESP development area. The ESP distribution system will be connected to the existing RLECWD distribution system to increase system-wide reliability and operational efficiencies.

The District is currently completing a rate case study that sets a connection fee to fund supply, storage, and distribution associated with growth. Surface water facilities are included as a component of the connection fee. Once surface water is made available to the District, it will be used to supplement the groundwater and assist in the overall health of the regional groundwater management efforts.

A new transmission loop is also included as part of the connection fee. This loop will enable the distribution of surface and groundwater throughout the District.

4. Phases of Development

The infrastructure will be phased to match ESP growth. The initial infrastructure must be in place to provide supply before any new customers can be connected. Additional infrastructure will be added as necessary to match growth.

4.1 Initial Development Infrastructure Phasing Requirements

The initial infrastructure is planned to serve the initial development areas as shown in Figure 4.1. Table 4.1 lists the initial development infrastructure requirements that must be built prior to connecting customers. It is assumed some form of groundwater treatment will be required. Actual requirements will be determined after the well is drilled, pump tested, and the well's water quality is sampled. Initial development infrastructure is shown on Figure 4.1.

Figure 4.1 shows the transmission mains that will be needed to serve the initial phases of ESP. These initial developments are shown in red hatching on the figure. ESP will be connected to the District's existing system with two initial off-site main extensions. The first main extension will be from ESP to Dry Creek Road and Q Street. The second main extension will be from ESP in 16th Street to Q Street then east to 24th Street. The two main extensions will provide redundant connectivity from ESP to the District's water system. The second main extension will enable the District's newest well (Well 15) to provide water supply backup to the wells being drilled as part of ESP initial infrastructure phase. The location of the wells, reservoir, and pump station are shown at a tentative location. The exact location will be based on the results of the hydrogeological study and the property available (See Figure 4.1).

Figure 4.2 shows the initial phase of the conceptual groundwater treatment plant (GWP) that is planned to be constructed as part of the initial development of ESP. The facility consists of drilling groundwater Wells 16 and 17 and equipping only Well 16 for this initial phase. It is planned that both wells will be located on the same property. The exact location will be based on the recommendations within the hydrogeological study to avoid treatment and minimize cross effect that each well may have on each other. Both wells are being drilled with the water quality sampled to determine the type, if any, of treatment that is required. Well 16 will pump through treatment if necessary and fill a new 3 MG reservoir to supply ESP as its source of supply during normal operations. There will be four booster pumps that will draw from the reservoir and pump into the distribution system to supply ESP's MDD and PHD for their initial development. The facility will be equipped with a generator that will be sized for the initial electrical load and provide power to the facility during utility power outages.

Table 4.1 Initial Development Infrastructure Requirements

Parameter	Capacity	Units	Notes
Groundwater Well	1,500 gpm	1	Assumes one well will produce 1,500 gpm.
Groundwater Treatment	1,500 gpm	1	Assumes treatment is required.
Booster Pumping Station	4,530 gpm	1	Sized for initial development peak hour.
Storage Tanks	3 MG	2	Assumes one 3-million gallon tank, construction would be phased within initial development.
Transmission Mains	12-inch 16-inch 24-inch	23,000 LF 23,500 LF 13,500 LF	Pipelines would be phased within initial development depending on actual location of individual development.

4.2 ESP Buildout Infrastructure Requirements

The full infrastructure requirements at buildout for ESP are shown on Figure 4.3. Once initial infrastructure is installed, the District will monitor the rate of new connections, demands, capacities, and water quality. The District will implement the remaining infrastructure requirements in a phased approach to meet the water demand as development occurs. Ultimate buildout infrastructure requirements are summarized in Table 4.2.

Figure 4.3 shows the ultimate build out of the groundwater supply system. This includes the equipping of Well 17, expanding treatment if necessary, increasing backup power, and expanding the capacity of the booster station to supply ESP to meet their ultimate MDD and PHD. ESP Build Out Infrastructure Requirements

Parameter	**Capacity**	**Units**	**Notes**
Groundwater Wells	1,500 gpm	4	4 wells with assumed 1,500 gpm capacity.
Groundwater Transmission	16-inch	5,000 LF	Assume 2,500 for wells 3 and 4 each to connection to transmission loop.
Groundwater Treatment	8.7 mgd	4	Max day demands, assume treatment at each well.
Booster Pumping Station	9,000 gpm	2	Peak hour demands, up to two stations depending on ultimate storage tank locations.
Storage Tanks	5.5 MG	4	Assume one 3-million gallon tank at well treatment site and remainder combined with other storage throughout District.
Transmission Mains	12-inch 16-inch 24-inch	30,500 LF 23,500 LF 13,500 LF	

4.3 Supplemental Supply Infrastructure Requirements

The supplemental surface water supply project will require 25 mgd capacity (14,500 AFY) for RLECWD conjunctive use needs (RLECWD Master Plan – 2015 Update). The project may be larger depending on participation of other partners. For the purposes of this study and apportioning costs, it is assumed the project will be for RLECWD only. The initial capacity of the Supplemental Water Project (SWP) will be 5 MGD with 5 MGD capacity increases up to an ultimate capacity of 25 MGD. All new connections will pay a proportionate share to fund this program.

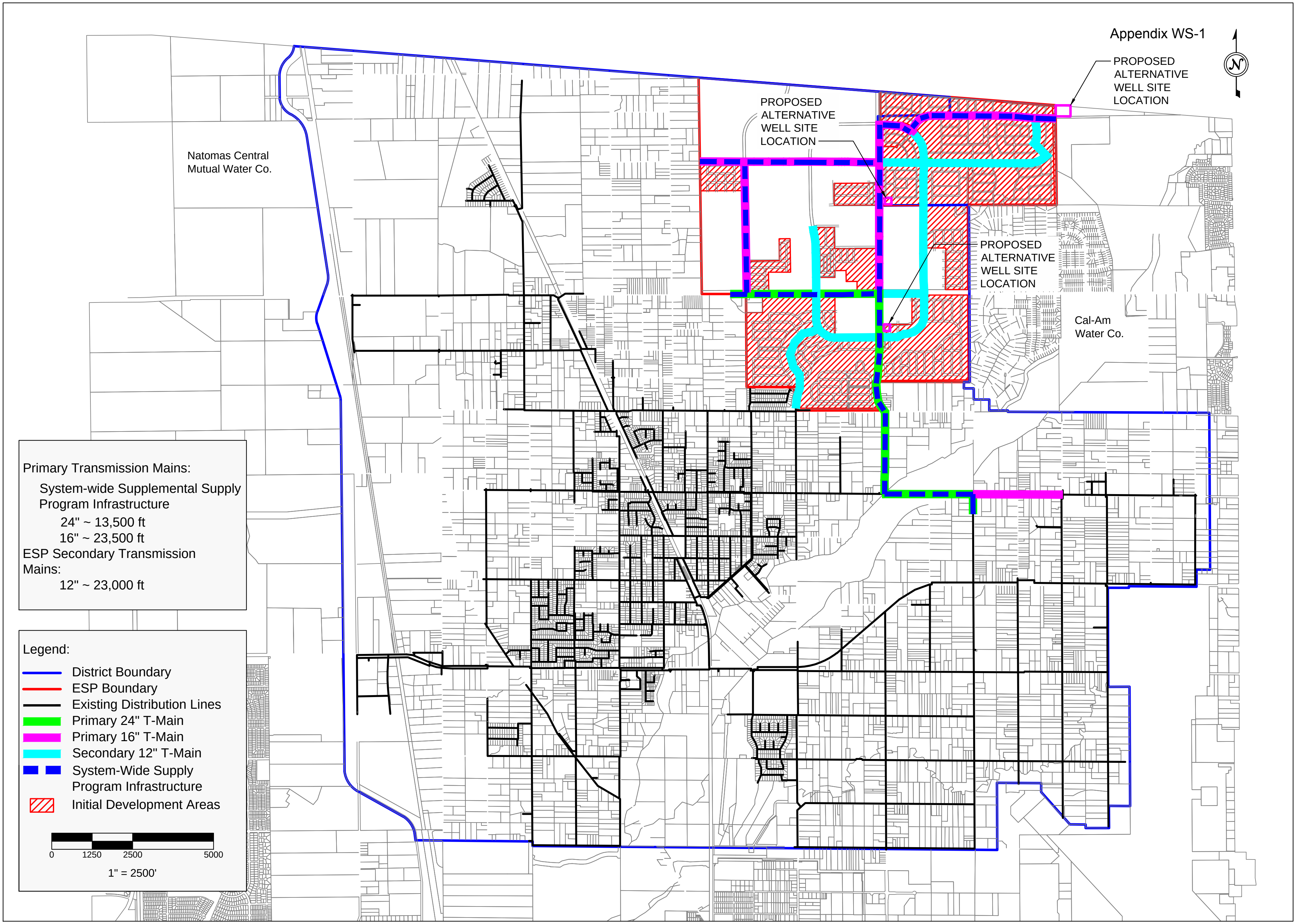
The program includes a service water treatment plant, raw water transmission main, and a transmission loop throughout the RLECWD service area. The SWP infrastructure requirements are summarized in Table 4.3. Figure 4.4 illustrates the supplemental supply project infrastructure. Locations shown are for illustrative purposes only; actual locations will be determined in the design phase.

Table 4.2 Supplemental Supply Infrastructure Requirements

Parameter	Capacity	Units	Notes
Surface Water Infrastructure			
Raw Water Pumping Station	25 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.
Treated Booster Pumping	25.2 MGD		Max day only, peak hour pumping met by distribution system booster pumping/storage sites.
Distribution System Infrastructure			
System Storage	13.5 MGal		Size and unit number to be determined. Located throughout District.
36-inch T-Main	6,000 LF		See figure for general location, actual locations and length determined in design.
24-inch T-Main	53,400 LF		
16-inch T-Main	31,000 LF		

5. Infrastructure Probable Costs

Tables 5.1 and 5.2 provide the probable costs for ESP's initial development phase and ultimate buildout, respectfully. The ESP costs are compared to the full groundwater and supplemental supply infrastructure costs for the 14,500 AFY ultimate demand in Table 5.3 (from the RLECWD Master Plan – 2015 Update). The ESP financing plan will assign costs in a fee program to fund the construction of the necessary infrastructure.



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

FIGURE 4.1

ELVERTA SPECIFIC PLAN INITIAL DEVELOPMENT INFRASTRUCTURE

JANUARY 2016

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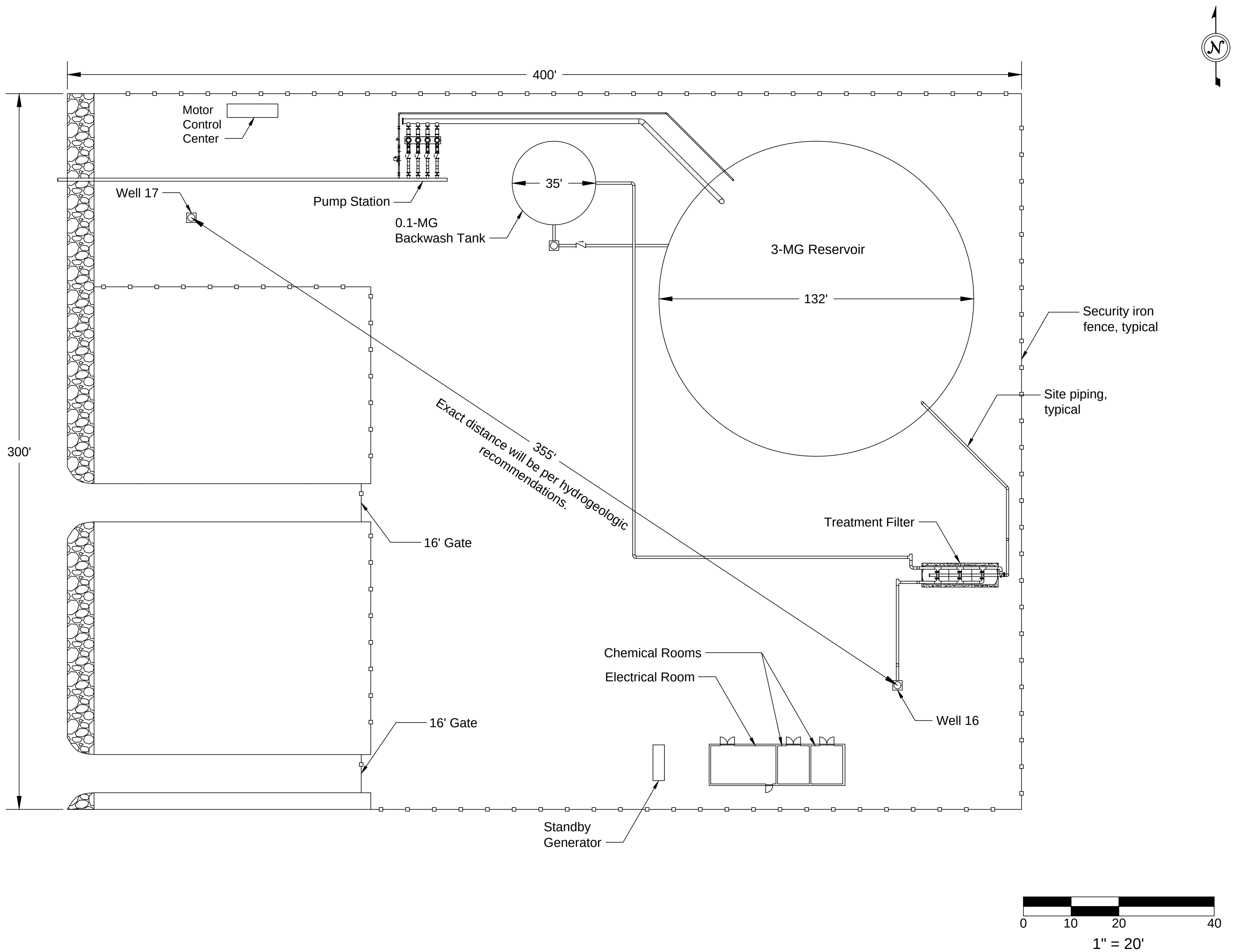

Rio Linda / Elverta Community Water District 730 L Street Rio Linda, CA 95673	**FIGURE 4.2**	**JANUARY 2016**
	CONCEPTUAL ESP GROUNDWATER SUPPLY/TREATMENT FACILITY INITIAL DEVELOPMENT	AFFINITY ENGINEERING

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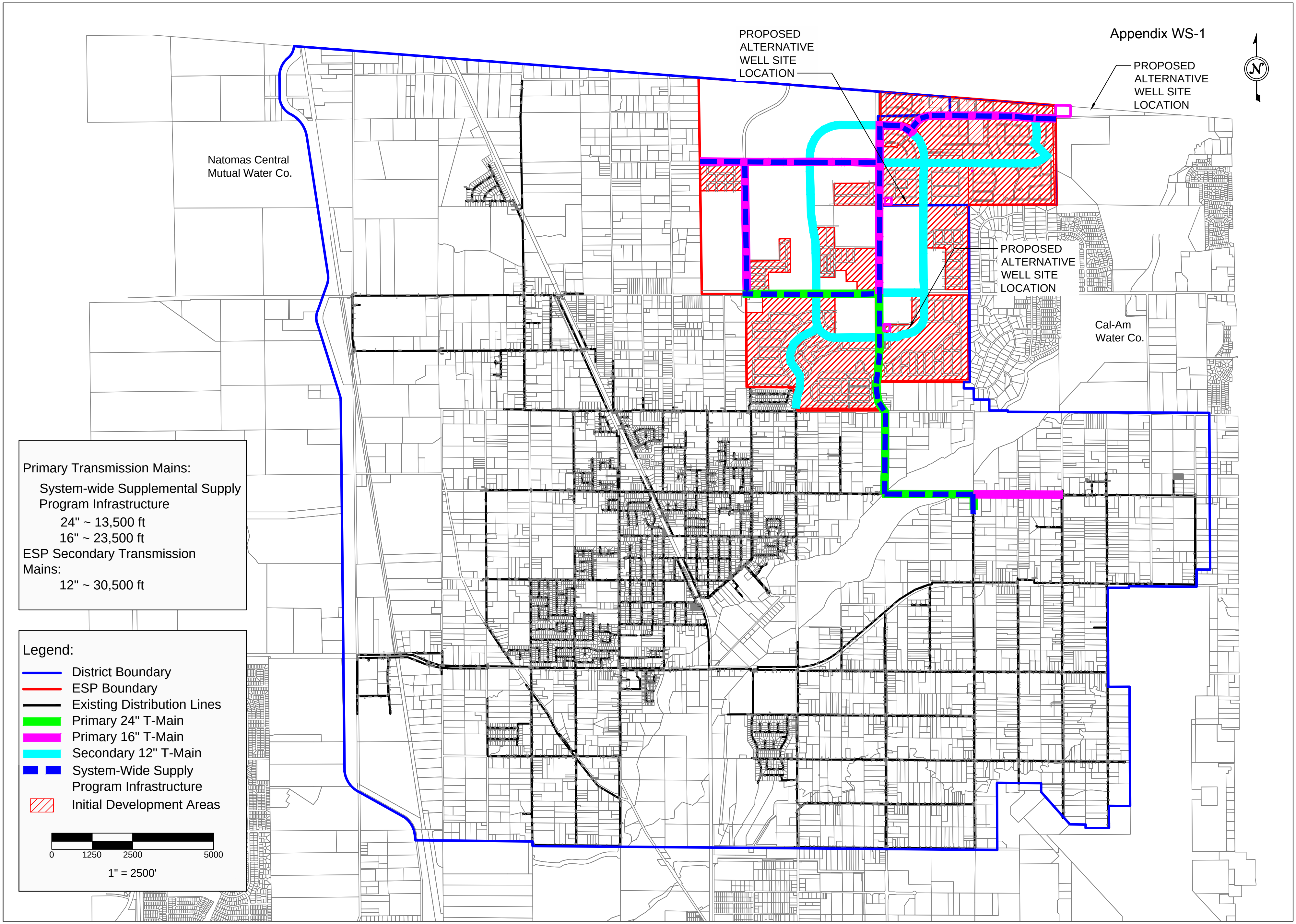

Rio Linda / Elverta Community Water District
730 L Street
Rio Linda, CA 95673

FIGURE 4.3

ELVERTA SPECIFIC PLAN FULL BUILD OUT INFRASTRUCTURE

JANUARY 2016

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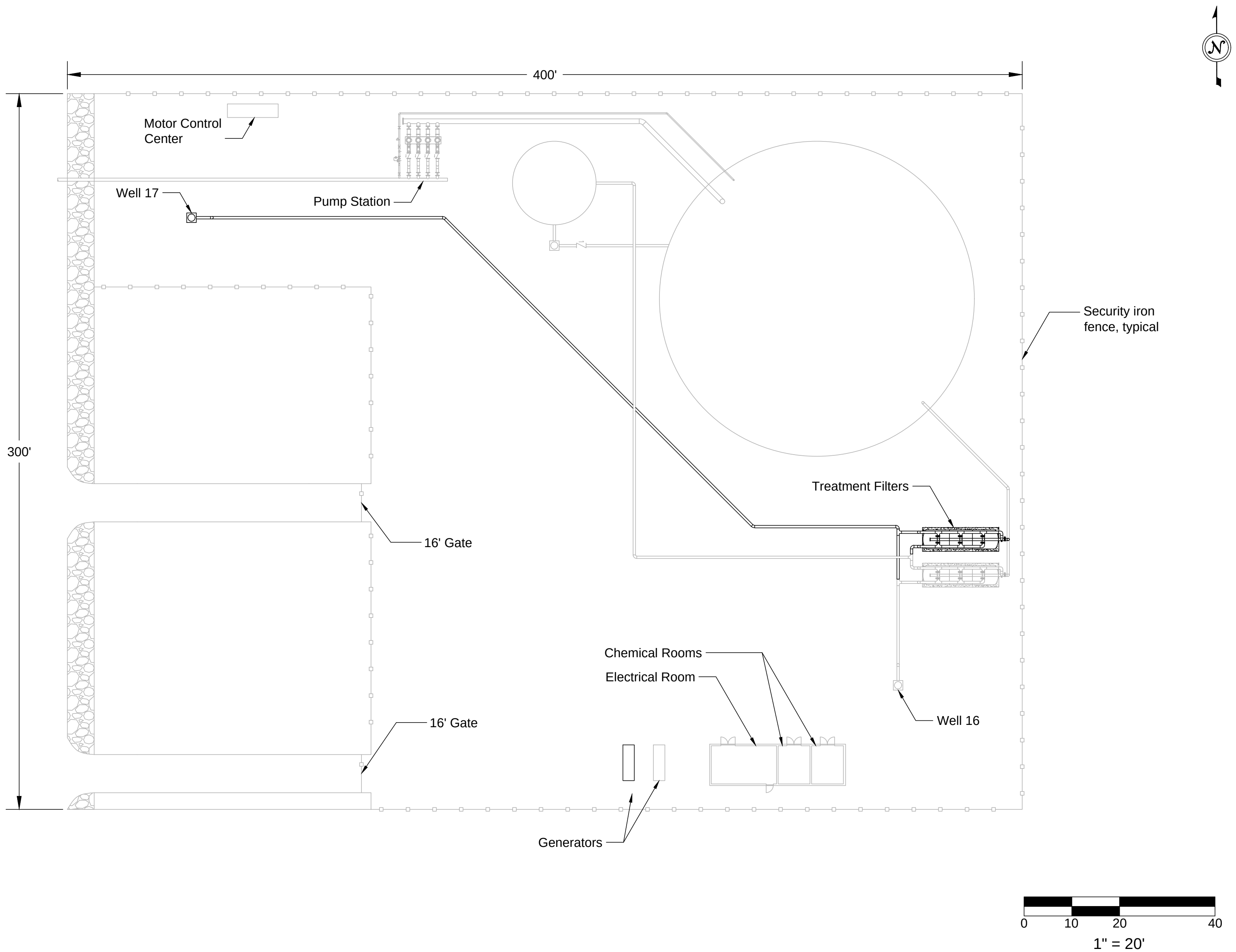
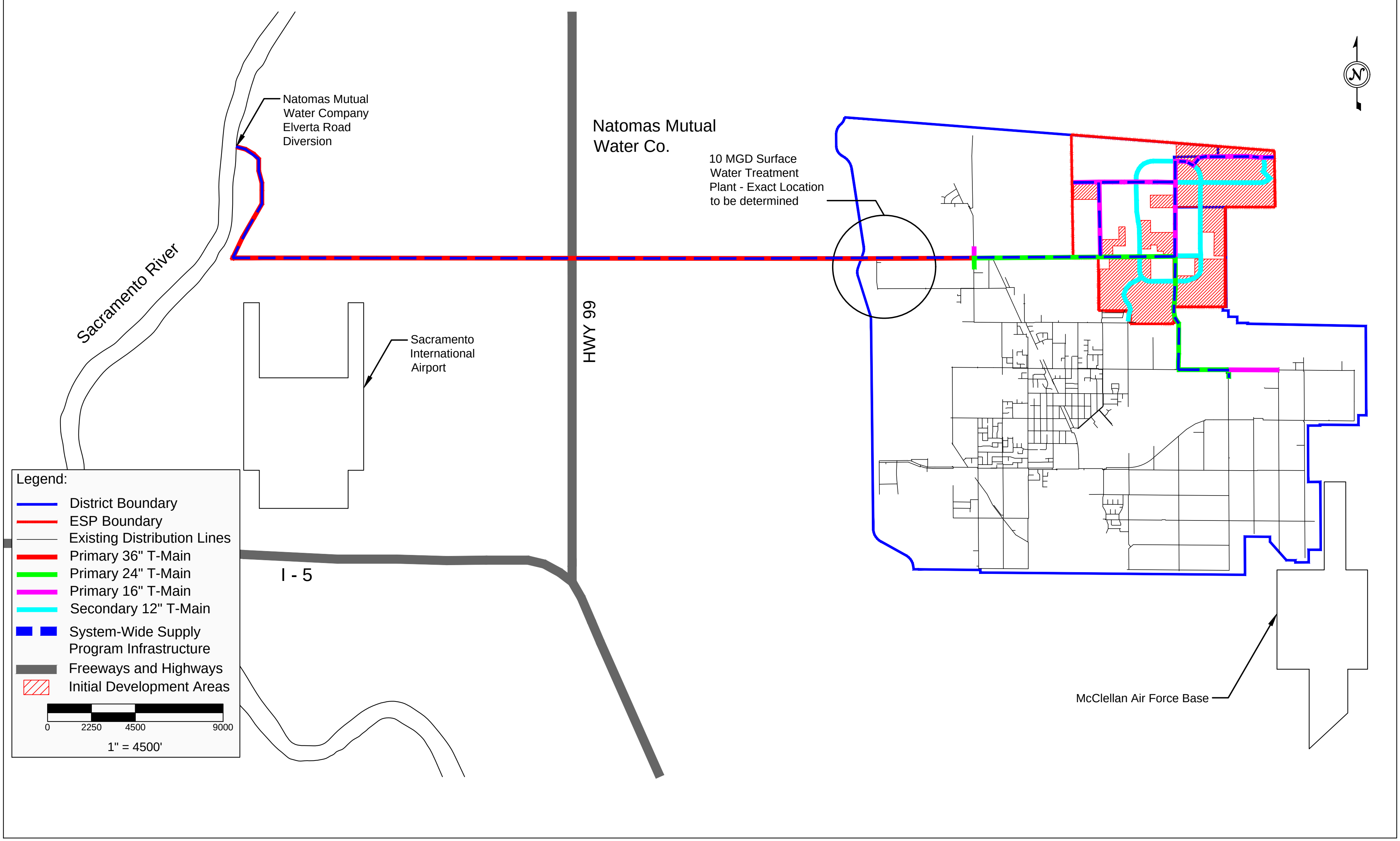


Rio Linda / Elverta Community Water District 730 L Street Rio Linda, CA 95673	**FIGURE 4.4** **CONCEPTUAL ESP GROUNDWATER SUPPLY/TREATMENT FACILITY ULTIMATE BUILD OUT**	**JANUARY 2016** AFFINITY ENGINEERING



Rio Linda / Elverta Community Water District 730 L Street Rio Linda, CA 95673	**FIGURE 4.5**	**JANUARY 2016**
	SURFACE WATER SUPPLY PROJECT	AFFINITY ENGINEERING

Table 5.1 ESP Initial Development - Opinion of Probable Supply Infrastructure Costs

Item	Capacity	Unit Cost	Cost	Notes
Groundwater Well	1,500 gpm	$2,000,000/well	$2,000,000	Assumes one well will produce 1,500 gpm.
Groundwater Treatment	3,000 gpm	$1,000/gpm	$3,000,000	Assumes treatment is required.
Booster Pumping Station	4,530 gpm	$600/gpm	$2,718,000	Sized for initial development peak hour.
Storage Tanks	3.1 MG	$1/gal	$3,100,000	Construction could be phased within initial development.
12-inch Trans. Main	23,000 LF	$150/ LF	$3,450,000	Pipelines could be phased within initial development depending on actual location of individual development.
16-inch Trans. Main	23,500 LF	$200/ LF	$4,700,000	
24-inch Trans. Main	13,500 LF	$310/ LF	$4,185,000	
		Subtotal:	$23,153,000	
		Contingency:	$6,945,900	Construction contingency at 30 percent
		Construction Total:	$30,098,900	
		Program Costs	$6,320,769	Engineering, construction management, administration, permitting, CEQA, legal, right of way at 20 percent – assume 20 percent.
		Total:	$37,000,000	Rounded.

Table 5.2 ESP Ultimate Buildout - Opinion of Probable Supply Infrastructure Costs

Item	Capacity	Unit Cost	Cost	Notes
Groundwater Well	1,500 gpm	$2,000,000/well	$8,000,000	Assumes 4 wells each produce 1,500 gpm.
Water Transmission	10,000 LF	$200/LF	$2,000,000	Each well assume 2,500 LF to connect to loop.
Groundwater Treatment	6,000 gpm	$1,000/gpm	$6,000,000	Assumes treatment is required.
Booster Pumping Station	9,061 gpm	$600/gpm	$5,436,600	Sized for initial development peak hour.
Storage Tanks	5.3 MG	$1/gal	$5,300,000	Assumes one 3-million gallon tank, construction could be phased within initial development.
12-inch Trans. Main	30,500 LF	$150/ LF	$4,575,000	Pipelines could be phased within initial
16-inch Trans. Main	23,500 24-	$200/ LF	$4,700,000	development depending on actual
24-inch Trans. Main	13,500 LF	$310/ LF	$4,185,000	location of individual development.
		Subtotal:	$40,196,000	
		Contingency:	$12,058,980	Construction contingency at 30 percent
		Construction Total:	$52,255,580	
		Program Costs	$10,973,700	Engineering, construction management, administration, permitting, CEQA, legal, right of way - assume 20 percent.
		Total:	$63,500,000	Rounded.

Table 5.3 Comparison of Supply Infrastructure Costs

	ESP Phase 1	ESP Ultimate Buildout	Full District Buildout
Annual Demand	2,500 AFY	5,000 AFY	14,500 AFY
Total Cost	$37,000,000	$63,500,000	$351,000,000

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Appendix A. ESP Land Use Plan Map

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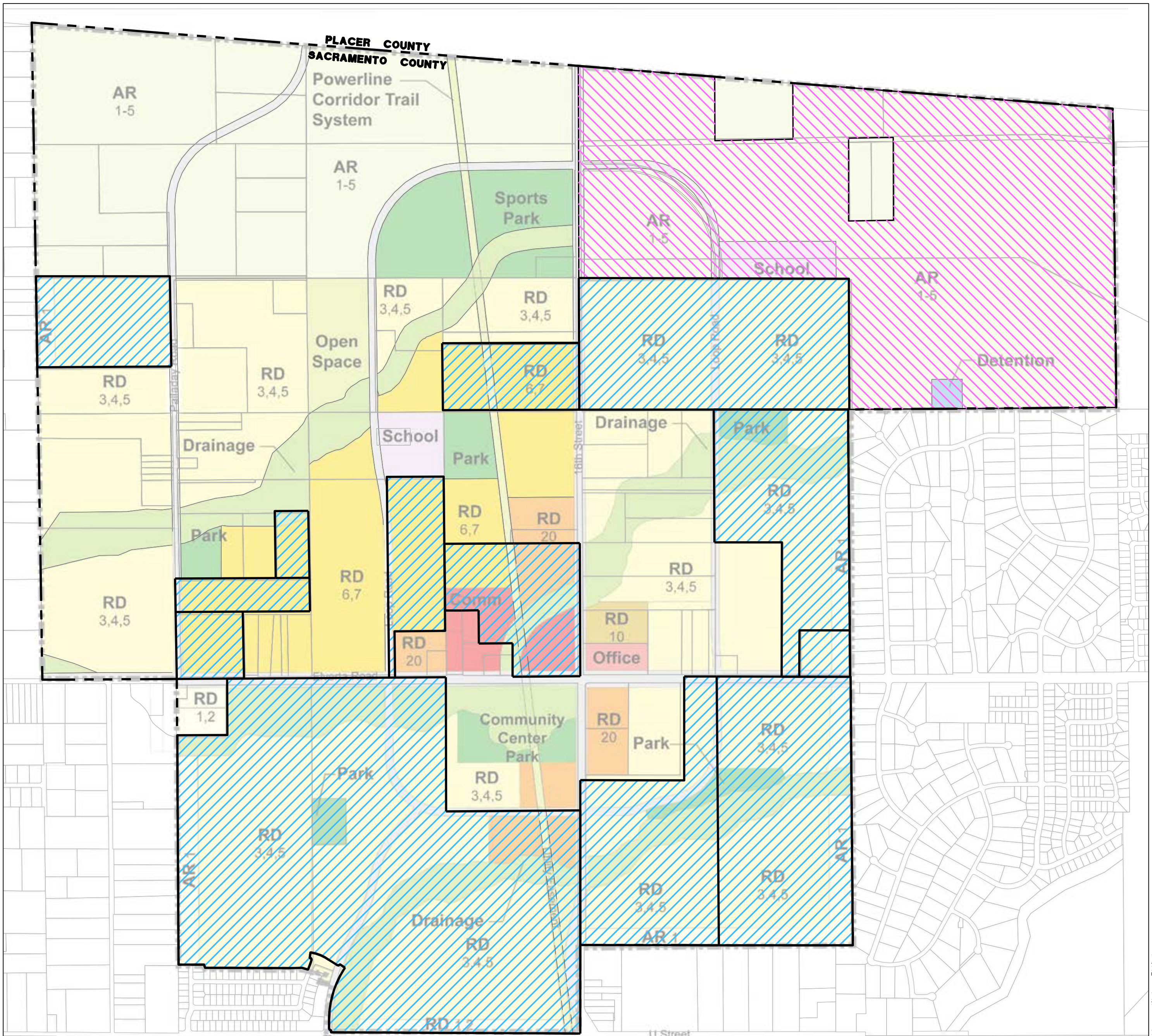

LEGEND

- PHASE 1 PROPERTIES
- NORTHBOROUGH
- REMAINDER

Elverta SPA

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Date: 12/16/15
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Appendix WS-2a

Northborough Water Supply Assessment

Elverta Specific Plan

Water Supply Assessment

FINAL

January 2016

AFFINITY ENGINEERING

J. CROWLEY GROUP

1. Introduction

The State passed legislation SB610 (amending Water Code Section 10631 et al.) and SB221 (Government Code Sections 65867.5, 66455.3, and 66473.7) in 2002. The legislation requires local planning agencies upon review of a tentative map involving "subdivision" to include, as a condition of approval, that "sufficient water supply" is available for the project. A "subdivision" includes a residential development with more than 500 dwelling units. The local planning agency is required to notify the local water supplier and request a Water Supply Assessment (WSA) to identify sufficient water supply. The WSA is subject to the requirements set forth in Water Code Sections 10910 through 10915.

The Elverta Specific Plan (ESP) is a 1,785-acre development that was approved by Sacramento County Board of Supervisors in August 20 2007. The ESP developer group contacted Rio Linda Elverta Community Water District (RLECWD) in 2013 and informed the District they were moving forward with the project. RLECWD reviewed the past water supply strategies, investigated new options in light of current conditions, and developed the recommended water supply strategy for the ESP.

The Sacramento County Department of Community Development is processing the entitlements for the ESP. The County Planning Department determined that the ESP is a project under CEQA and identified the RLECWD as the public water supply per California Water Code (CWC) Section 10910(b). Per SB610 requirements, the County requested that RLECWD prepare this Water Supply Assessment (WSA) for the development planning process. The WSA is subject to all requirements as specified in CWC Sections 10910 through 10915.

Subsequent to the County Board of Supervisors approval of the ESP, a Minor SPA Amendment was also approved that included some land use changes Subsequent to adoption and amendment of the ESP, an application was submitted to Sacramento County for a change in land use entitlements for approximately 298± acres in the northeastern portion, known as the Northborough project. The Northborough project, while technically located within the ESP, is a separate project from the ESP in terms of land-use entitlements and CEQA review. Northborough is updating its land use, requiring an additional county planning and environmental process separately from the ESP, including a Specific Plan Amendment and an EIR.

This WSA covers the entire ESP development, and includes the updated Northborough land use water demands as reasonably foreseeable. Additionally, this WSA identifies the density bonus water demands within ESP under existing State laws that allow increases in density if certain Title 24 energy efficiencies are included in the housing being proposed.

RLECWD recently completed its 2014 Master Plan. Among other things, the document projected the potential full buildout of the existing service area and identified a conjunctive use strategy to meet future needs. The supply strategy includes supplemental surface water supply to increase reliability and maximize conjunctive use opportunities. RLECWD will exercise its right as a groundwater appropriator to extract groundwater from the basin for delivery to the ESP and groundwater will be used to supply all demands in the ESP, as well as Northborough water demands, if its land use entitlement application is approved by Sacramento County, until a supplemental water supply source is obtained.

2. Project Description

The proposed Elverta Specific Plan (ESP) is located in the east side of the District's service boundary (see Figure 2-1). The ESP is a 1,756-acre proposed development. Sacramento County certified the ESP EIR and approved the plan in 2007.

The Northborough Project is now submitting a modified land use plan to the County for approval. As part of the land use update, the Northborough landowners are also applying to LAFCO to include the entire Northborough area in the RLECWD service area as a portion of the Northborough project area is currently within the service area of a neighboring water purveyor, the California-American Water Company. (Cal-Am).

This WSA assumes the application is approved by LAFCO and RLECWD will serve all ESP demands. The revised ESP land use plan is presented in Figure 2-2 and summarized in Table 2-1. Table 2-1 indicates the ESP Phase 1, ESP Remainder, and Northborough land use totals, as well as the total ESP values. "AR" is defined as agricultural residential, with the numbers representing range of lot size. "RD" is residential with the numbers representing dwelling units per acre. For example, "RD 6, 7" is residential with 6-7 dwelling units per acre. The ESP total number of dwelling units represents the total capacity with density bonus allowances as allowed under state law for any project in the state that meets specific energy conservation requirements.

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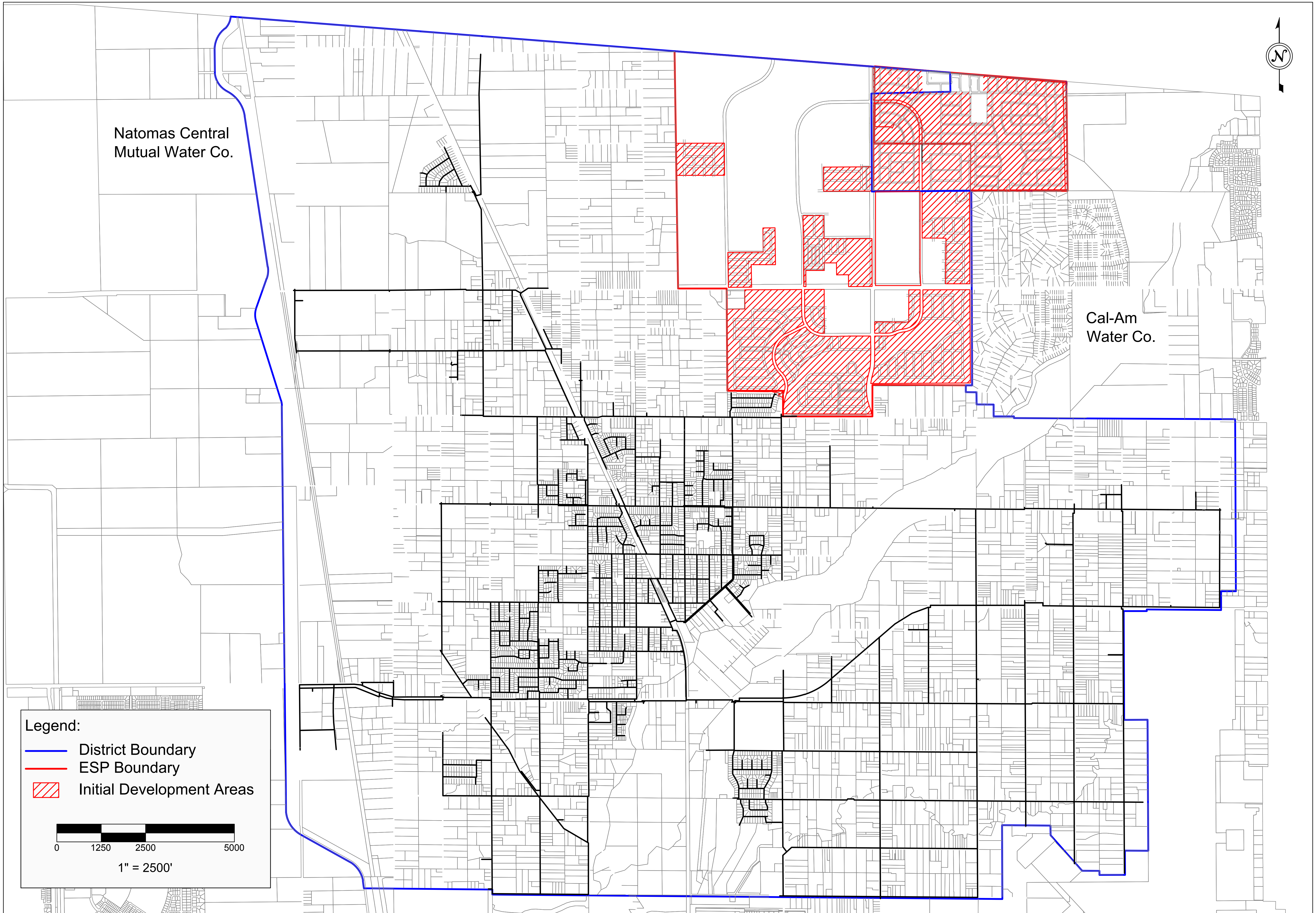


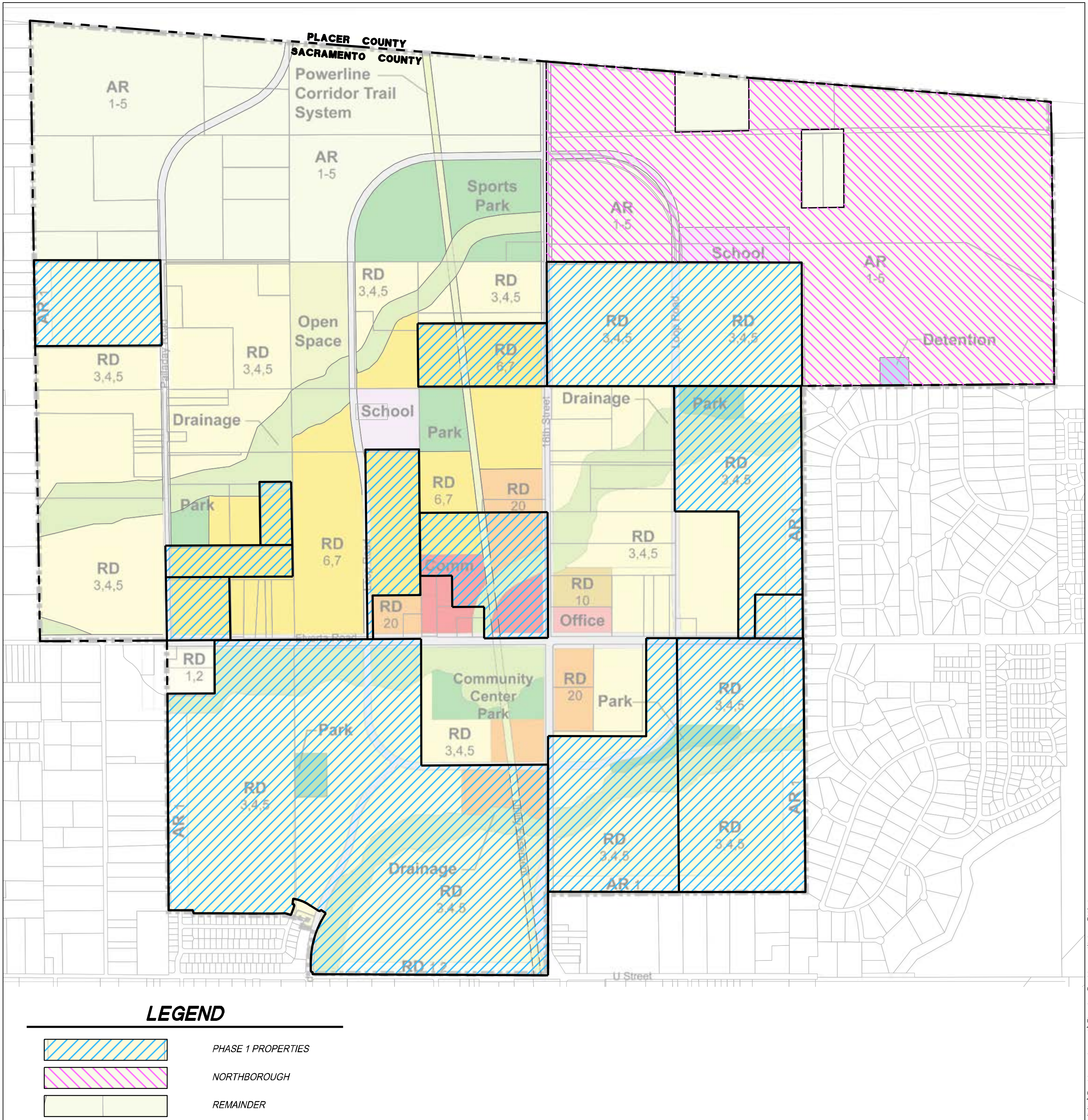
JULY 2015

AFFINITY ENGINEERING

FIGURE 2-1

ESP WSA

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



Elverta SPA

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Date: 12/16/15
Job No: 7501-30

Figure 2-2
ESP Land Use Plan

Table 2-1. ESP Land Use Totals

Land Use ID	ESP Phase 1		ESP Remainder		Updated Northborough		Total ESP	
	Acres	Dwelling Units	Acres	Dwelling Units	Acres	Dwelling Units	Acres	Dwelling Units
AR 1,5	-	0	237.7	216	0	-	237.7	216
AR 1	44.3	48	0.2	-	0	-	44.5	48
RD 1,2	5.6	10	5.4	9	0	-	11.0	19
RD 2	0	-	0	-	0	-	0	-
RD 3,4,5	407.8	1777	199.1	1,076	110.7	486	717.6	3,339
RD 6,7	64.7	370	100.5	461	116.9	655	282.1	1,486
RD 10	0	-	5.7	46	0	-	5.7	46
RD 20	14.9	250	27.6	437	0	-	42.5	687
Commercial	11.3		6.2		0		17.5	
Office / Professional	0		4.4		0		4.4	
Parks	14.6		56.7		17.5		88.8	
Schools	0		10.2		9.9		20.1	
Drainage / Trails / Detention / Joint Use	6.1		7.3		37.6		51.0	
Drainage / Trails / Detention / Joint Use	87.7		75.3		0		163.0	
Major Roads / Other	14.2		20.1		5.1		39.4	
Major Roads / Other	15.4		15.5		0		30.9	
Total Residential	537	2,455	576	2,245	228	1,141	1,341	5,841
Res. Density Bonus		246		224		114		584
Total Non-Res	149		196		70		415	
Total:	687	2,701	772	2,469	298	1,255	1,756	6,425

3. Projected Annual Water Demands

Water demand projections are based on unit demand factors for different types of dwelling units and non-residential land use types. Unit water demand factors are projected to change from past values due to changes in water demand management, development products (housing and landscape types), and regulatory requirements.

RLECWD is a signatory to the California Urban Water Conservation Council (CUWCC). As a signatory, RLECWD has committed to fully implement the CUWCC water conservation best management practices (BMPs) requirements. RLECWD submits its annual BMP reports to the CUWCC and in compliance with the Urban Water Management Plan (UWMP) requirements. The District's conservation program meets all CUWCC and UWMP requirements and is in compliance per the CUWCC and DWR UWMP recent reviews. In addition to the District's conservation program, State-wide changes to the plumbing code and design of large landscape areas area also expected to reduce average water demands. Senate Bill x7-7, signed into law by the Governor in November 2009, also required urban water suppliers to reduce their total demands 20 percent by 2020. The projected water demands include the projected savings from the conservation program, plumbing code, landscape ordinance, and 20x2020 requirements. Demand projections include an industry standard 10 percent additional demand factor to account for operational needs such as flushing, construction, emergencies, leaks, meter inaccuracies, background water loss, and other unidentifiable uses.

Projected average annual water demands for ESP are presented in Table 3-1. Table 3-2 presents demands for the ESP minus Northborough. Table 3-3 presents the Northborough demands. 5-year demands projected over the next 20 years for ESP minus Northborough and Northborough are presented in Tables 3-4 and 3-5, respectively. ESP Phase 1 is assumed to be built out in the first ten years, with the remainder of the ESP built out following Phase 1. Northborough is also assumed to be built out in the first tem years. . 5-Year demands for the entire ESP are summarized in Table 3-6. All demand projections assume the updated land use request for Northborough as this gives the maximum possible water demand. If the requested land use changes are denied, the original Northborough demands are less.

Table 3-1. ESP Average Annual Water Demand Projections (Includes Proposed Northborough Changes)

Land Use ID	Area, acres	Density Bonus Total Dwelling Units	Unit Demand Factor, AF/DU or AF/ac	Water Demand, AFY
AR 1,5	237.74	216	1	216.0
AR 1	44.54	48	1	48.0
RD 1,2	10.98	19	1	19.0
RD 2	0	-	0.7	-
RD 3,4,5	717.6	3,339	0.6	2,003.4
RD 6,7	282.11	1,486	0.4	594.4
RD 10	5.7	46	0.3	13.8
RD 20	42.49	687	0.3	206.0
Commercial	17.5	--	2.5	43.8
Office / Professional	4.4	--	2.5	11.0
Parks	88.8		2.5	222.0
Schools	20.1	--	3.1	62.3
Drainage / Trails / Detention / Open Space (Irrigated)	51	--	1.3	63.8
Drainage / Trails / Detention / Open Space	163	--	0	0.0
Major Roads (irrigated)	39.4	--	2.5	98.5
Major Roads / Other	30.9	--	0	0.0
Total Residential	1,341	5,841	--	3,101
Residential Density Bonus		584		310
Total Non-Res	415	--	--	501
Total:	1,756	6,425	--	3,912
Un-accounted Water (10%)	--	--	--	391
Total Demand	1,756	6,425	--	4,303

Table 3-2. ESP Average Annual Water Demand Projections Excluding Northborough

Land Use ID	Area, acres	Density Bonus Total Dwelling Units	Unit Demand Factor, AF/DU or AF/ac	Water Demand, AFY
AR 1,5	237.74	216	1	216.0
AR 1	44.54	48	1	48.0
RD 1,2	10.98	19	1	19.0
RD 2	0	-	0.7	-
RD 3,4,5	606.9	2,853	0.6	1,711.8
RD 6,7	165.21	831	0.4	332.4
RD 10	5.7	46	0.3	13.8
RD 20	42.49	687	0.3	206.0
Commercial	17.5	-	2.5	43.8
Office / Professional	4.4	-	2.5	11.0
Parks	71.3	-	2.5	178.3
Schools	10.2	-	3.1	31.6
Drainage / Trails / Detention / Open Space (Irrigated)	13.4	-	1.3	16.8
Drainage / Trails / Detention / Open Space	163	-	0.0	0.0
Major Roads (irrigated)	34.3	-	2.5	85.8
Major Roads / Other	30.9	-	0.0	0.0
Total Residential	1,114	4,700	--	2,547
Residential Density Bonus	--	470	--	255
Total Non-Res	345	--	--	367
Subtotal:	1,459	--	--	3,169
Un-accounted Water (10%)	--	--	--	317
Total	1,459	5,170	--	3,486

Table 3-3. Northborough Average Annual Water Demand Projections

Land Use ID	Area, acres	Density Bonus Total Dwelling Units	Unit Demand Factor, AF/DU or AF/ac	Water Demand, AFY
AR 1,5	0		1	-
AR 1	0		1	-
RD 1,2	0		1	-
RD 2	0		0.7	-
RD 3,4,5	110.7	486	0.6	291.6
RD 6,7	116.9	655	0.4	262.0
RD 10	0		0.3	-
RD 20	0		0.3	-
Commercial	0		2.5	0.0
Office / Professional	0		2.5	0.0
Parks	17.5		2.5	43.8
Schools	9.9		3.1	30.7
Drainage / Trails / Detention / Open Space (Irrigated)	37.6		1.3	47.0
Drainage / Trails / Detention / Open Space	0		0.0	0.0
Major Roads (irrigated)	5.1	-	2.5	12.8
Major Roads / Other	0	-	0.0	0.0
Total Residential	228	1,141	--	554
Residential Density Bonus	--	114	--	55
Total Non-Res	70	--	--	134
Subtotal:	298	--	--	743
Un-accounted Water (10%)	--	--	--	74
Total	298	1,141	--	817

Table 3-4. ESP 5-Year Water Demand Projections Excluding Northborough, AFY

Land Use ID	2017 Demand AFY	2022 Demand AFY	2027 Demand AFY	2032 Demand AFY	2037 Demand AFY
AR 1,5	0	0	0	120	216.0
AR 1	10	30	48.0	48	48.0
RD 1,2	5	10	10.0	15	19.0
RD 2	0	0	0	0	0
RD 3,4,5	300	800	1,066.2	1,500	1,711.8
RD 6,7	80	120	148.0	250	332.4
RD 10	0	0	0	10	13.8
RD 20	30	60	75.0	125	206.0
Commercial	15	20	28.3	35	43.8
Office / Professional	0	0	0	5	11.0
Parks	25	36.5	36.5	100	178.3
Schools	0	0	0	20	31.6
Drainage / Trails / Detention / Open Space (Irrigated)	7.6	7.6	7.6	12	16.8
Drainage / Trails / Detention / Open Space	0	0	0	0	0
Major Roads (irrigated)	30	35.5	35.5	85.8	85.8
Major Roads / Other	0	0	0	0	0
Total Residential	425	1,020	1,347	2,068	2,547
Residential Density Bonus	43	102	135	207	255
Total Non-Res	78	100	108	258	367
Total:	545	1,222	1,590	2,533	3,169
Un-accounted Water (10%)	55	122	159	253	317
Total Demand	600	1,344	1,749	2,786	3,486

Table 3-5. Northborough 5-Year Water Demand Projections

Land Use ID	2017 Demand AFY	2022 Demand AFY	2027 Demand AFY	2032 Demand AFY	2037 Demand AFY
AR 1,5	-	-	-	-	-
AR 1	-	-	-	-	-
RD 1,2	-	-	-	-	-
RD 2	-	-	-	-	-
RD 3,4,5	100	200	291.6	291.6	291.6
RD 6,7	100	200	262.0	262.0	262.0
RD 10	-	-	-	-	-
RD 20	-	-	-	-	-
Commercial	-	-	-	-	-
Office / Professional	-	-	-	-	-
Parks	20	30	43.8	43.8	43.8
Schools	20	30	30.7	30.7	30.7
Drainage / Trails / Detention / Open Space (Irrigated)	40	47	47.0	47.0	47.0
Drainage / Trails / Detention / Open Space	0	0	0.0	0.0	0.0
Major Roads (irrigated)	12.8	12.8	12.8	12.8	12.8
Major Roads / Other	-	-	-	-	-
Total Residential	200	400	554	554	554
Residential Density Bonus	20	40	55	55	55
Total Non-Res	93	120	134	134	134
Total:	313	560	743	743	743
Un-accounted Water (10%)	31	56	74	74	74
Total Demand	344	616	817	817	817

Table 3-6. ESP 20-Year Average Annual Water Demand Projection Summary

Development	2017 Demand, AFY	2022 Demand, AFY	2027 Demand, AFY	2032 Demand, AFY	2037 Demand, AFY
ESP Phase 1	600	1,344	1,749	1,749	1,749
Northborough	344	616	817	817	817
ESP Remainder	0	0	0	1,039	1,737
Total	944	1,960	3,566	3,603	4,303

Water demands can change during dry periods. Demands may increase as users apply more landscape water and/or lengthen the landscape irrigation season to start earlier and end later. If the dry periods extend longer than one year or if water users generally recognize an extended drought, demands may decrease.

Water users may minimize landscape use and implement landscape modifications to reduce water use during these times. These demand patterns have been visible in past dry periods. However, when considering new plumbing codes and conservation mandates, the changes in demands may be less pronounced as it is assumed water use will already be reduced through highly efficient indoor fixtures and drought tolerant landscapes.

For purposes of projecting project demands for dry-year occurrences, it is assumed that demands will increase five percent during a single dry year. It is assumed there is no increase from the average projected demands during multiple dry-year scenarios. Average, single dry-year, and multiple dry-year demand projections are presented in Table 3-7.

Table 3-7. Average, Single Dry Year, and Multiple Dry Year Water Demand Projections

Area	Average Water Demand, AFY	Single Dry Year Water Demand, AFY	Multiple Dry Year Water Demand, AFY
Total ESP including Northborough	4,303	4,518	4,303

The 2010 RLECWD Urban Water Management Plan (UWMP) did not include the ESP in future demand projections, nor did it address the potential demand from major developments from any of the undeveloped parcels within its service area. The UWMP did include a small amount of growth throughout the service area to account for infill and lot splitting.

Existing and 20-year projected demands from the 2010 UWMP are summarized in Table 3-8. Un-accounted for water is conservatively assumed to be the historical average of 12 percent due to the old age of the existing infrastructure. Starting in the year 2020, the demand projections reflect the 20 percent reduction required by State law. Based on the type of existing parcel development and landscape, it is assumed that demands remain constant over the average and dry-year periods.

Table 3-8. 2010 UWMP RLECWD Water Demand Projections

Customer Category	Water Demands, acre-feet per year				
	2015	2020	2025	2030	2035
Single Family	2,489	2,194	2,224	2,254	2,284
Multi-Family	43	43	43	43	43
Commercial	132	132	132	132	132
Industrial	33	33	33	33	33
Institutional/ Government	175	175	175	175	175
Landscape	29	29	29	29	29
Total:	2,901	2,606	2,636	2,666	2,696
Un-accounted Water (12%)	396	355	359	364	368
Total Demand (rounded)	3,296	2,961	2,995	3,030	3,064

The ESP demands are expected to increase over time as development occurs in phases. ESP Phase 1 and Northborough are expected to start in 2017 and buildout over ten years through 2027. Average annual ESP demands along with existing RLECWD demand projections for non-ESP growth over the next 20 years are summarized in Tables 3-9. The UWMP demands in table 3-8 were developed for the 2010 UWMP on 5-year even time periods per the UWMP requirements. However, due to a connection moratorium and other factors, the growth projected in the UWMP has not yet started. Therefore, the projected water demands in the UWMP are shifted two years as shown in Table 3-9.

Table 3-9. ESP and RLECWD
Projected 20-Year Average Annual Demands

Area	Average Annual Water Demands, acre-feet per year				
	2017	2022	2027	2032	2037
ESP excluding Northborough	600	1,344	1,749	2,788	3,486
Northborough	344	616	817	817	817
RLECWD (non-ESP growth)	3,229	2,668	3,002	3,037	3,071
Total:	4,173	4,628	6,568	6,640	7,374

The 2014 RLECWD Master Plan addressed the total potential demand of full buildout of the existing service area (including the ESP) and developed future supply and infrastructure needs. The total average annual demand at full buildout is projected at 17,500 acre-feet per year. However, other than the ESP demands, RLECWD is not aware of any other development process at this time that would contribute to this full buildout demand. This WSA does not consider these full buildout demands. The full buildout demand was projected for long-term supply and infrastructure purposes only so that RLECWD can properly plan for the future and participate in regional supply strategies.

4. Supply

All future supplies for the Rio Linda/Elverta Community Water District service area are consistent with the supply strategy developed and approved in the Water Forum Agreement (see below). The proposed water supply will use groundwater from new wells drilled in or near the ESP area. A supplemental surface water supply will be developed in the future to provide increased reliability and flexibility for all RLECWD customers, as well as other water agencies in the Sacramento region.

Connection fees for all new customers will include fees to support the cost of obtaining the surface water supply and developing the infrastructure to deliver the supply to the service area.

RLECWD's current supply is groundwater pumped from the basin underneath the service area. California Department of Water Resources (DWR) defines the underlying basin as the North American Subbasin, Basin 5-21.64 (Bulletin 118 – 2003 Update, California DWR). The basin is bounded on the south by the American River, on the west and north by the Sacramento River and Feather River, and on the east by the edge of the basin at the beginning of the foothills. DWR has not projected any overdraft conditions for the basin.

4.1. Basin Management

The basin is not adjudicated, but instead it is managed through regional cooperation. Multiple public agencies and governmental boundaries overlay the basin. The Sacramento Groundwater Authority (SGA) manages the basin portion within Sacramento County, known locally as the North Area Basin. SGA is a joint powers authority formed in 1998 as a result of the Sacramento Area Water Forum. The District is a member of the Water Forum and the SGA. SGA developed and actively maintains the Groundwater Management Plan and produces an annual Basin Management Report that provides an update on basin objectives and programs and results (SGA Basin Management Report – 2013 Update). SGA has developed the water accounting framework (SGA Water Accounting Framework Phase III Effort, June 2010) to facilitate conjunctive use strategies and partnerships within the basin. SGA also leads ongoing basin monitoring activities as the reporting agency for the California Statewide Groundwater Elevation Monitoring Program (CASGEM). SGA monitors groundwater elevations and quality throughout the basin through a network of 23 groundwater-sampling sites.

The Water Forum process is a regional multi-stakeholder process to help meet water needs through 2030 and also meet environmental flow requirements on the lower American River. Extensive groundwater modeling and analysis was conducted as part of the process. Results recommended a total safe sustainable yield for the North Basin of 131,000 acre-feet per year (AFY). The 2014 SGA Groundwater Management Plan estimates the average pumping over the last 13 years of approximately 99,500 AFY. The ESP groundwater supply is estimated at approximately 4,394 AFY, well within the Water Forum sustainable yield of 131,000 AFY.

Additional modeling and planning of the groundwater basin has been conducted since the Water Forum Agreement. The Regional Water Authority developed and updated the American River Basin Integrated Regional Water Management Plan (ARB IRWMP). The ARB IRWMP provides a framework for the region to implement the vision: "The American River Basin Region will responsibly manage water resources to provide for the lasting health of our community, economy, and environment". The document contains numerous goals, principals, objectives, and strategies to meet the vision. Water Resources Strategy 2 calls for an increase of groundwater production to 550 mgd by 2030. The 2013 production capacity is approximately 400 mgd. The ESP wells (approximately 12 mgd at buildout) will help meet this goal and will support the other goals of conjunctive use opportunities for increased reliability.

The West Placer County Groundwater Management Plan (WPCGMP) was developed by Placer County Water Agency, City of Roseville, City of Lincoln, and California American Water. The plan covers the North American Groundwater Basin portion that is in west Placer County, which abuts the northern edge of RLECWD's service area. Both the SGA Groundwater Management Plan and the WPCGMP address the same groundwater basin, although the plans cover two different political boundaries. Both the Water Forum and SGA participated in the WPCGMP, and each WPCGMP agency also is a member of the Water Forum, SGA, RWA, and/or the ARB IRWMP.

The WPCGMP identifies the WFA estimated sustainable yield in Sacramento County of 131,000 AFY, Placer County at 95,000 AFY, and Sutter County at 175,000 AFY. Basin Management Objective 2 indicates groundwater use will result in basin level fluctuations, and the management goal is to maintain an acceptable operating range. The additional groundwater that would be pumped associated with this WSA will be within the 131,000 AFY sustainable yield, and will also help conjunctive use strategies, supporting the goals of the WPCGMP.

4.2. Existing North Area Basin Conditions

The North Area Basin consists of two major water-bearing formations. The upper water-bearing units include the geologic formations of the Victor, Fair Oaks, and Laguna Formations and are typically unconfined. The lower water-bearing unit consists primarily of the Mehrten Formation, which exhibits confined conditions. The Mehrten Formation is the most productive fresh water-bearing unit in the eastern Sacramento Valley, though some of the permeable layers of the Fair Oaks Formation produce moderate amounts of water. Much of the recharge of these aquifer systems comes from the Sacramento and American Rivers and their tributaries where gravel deposits exist. To a lesser extent, aquifer recharge also occurs where the Merhten Formation reaches the surface in the foothills in eastern Sacramento and western El Dorado County. Supply wells in the Sacramento Region draw water primarily form the Mehrten and Fair Oaks formations and typically produce 500-1,500 gpm of good to excellent quality water (SGA GWMP, 2014).

The main water quality constituents of concern are iron, manganese, arsenic, radon, tetrachloroethylene (TCE), and Hexavalent Chromium (Cr6). All of these constituents are naturally occurring in the groundwater basin with exception of TCE, and possibly Cr6. TCE is a volatile organic compound used in solvents and other liquids. TCE is usually associated with contaminant plumes as discussed below.

Cr6 can be attributed to contamination, but also is a naturally occurring constituent. The State recently promulgated new regulations lowering the MCL for Hexavalent Chromium (Cr6) to 10 micrograms per liter (ug/L). RLECWD operates several wells with Chrome6 levels between 10-15 ug/L and is currently pilot testing treatment strategies to meet the new MCL requirements.

Historic Basin elevations are shown in Figures 4-1, 4-2, and 4-3 (2013 SGA Basin Management Repot). The Basin trends indicate a steady decline in elevation until the mid 1990’s. The elevations are highlighted by a cone of depression in the middle of the Basin as a result of historic pumping. Since the region began implementing conjunctive use programs in the 1990’s, the basin elevations have stabilized and/or increased, depending on location. As shown in the figures, the groundwater elevations within the RLECWD service area have stabilized or increased over the last 20 years.

SGA tracks the total municipal agency pumping on an annual basis. From 2000 to 2012, basin pumping has generally declined due to reduced customer demands and increased use of surface water. However, pumping is expected to increase in the near term due to recent drought conditions as conjunctive supply strategies switch to groundwater. Monthly data through Spring 2015 for select wells are shown on Figure 4-4. Results indicate some wells with steady basin water levels, and some wells with declining levels, as can be expected with a conjunctive use program in the groundwater supply phase of the supply cycle. Total pumping volumes from 2000-2012 are shown on Figure 4-5 (Figure 7, SGA 2013 BMP).

Successful basin management is also supported by the recent NASA report conducted by the Jet Propulsion Laboratory at California Institute of Technology (Tom Farr, 2015). The study utilized precise radar data to evaluate ground levels throughout California. Results indicate that ground elevations in the Sacramento area north of the American River between May and November 2014 fluctuated between -1 to +1 inches. The area immediately south of the ESP area was recorded at 0 to +1 inch. Other areas throughout the Central Valley with less basin management practices experienced land subsidence of up to -10 inches for this same period.

The following documents provide additional descriptions and data on the projected groundwater extractions from the groundwater basin, and the various programs that are currently underway to ensure that sustainable groundwater yields are met:

1. The *Environmental Impact Report (EIR) for the Water Forum Proposal* (Sacramento City County Office of Metropolitan Water Planning, October 1999).
2. The *Water Forum Agreement* (Water Forum, January 2000).
3. The Water Forum Successor Effort's (WFSE) "Central Sacramento County Groundwater Forum" (*WFSE 5-Year Review and Evaluation*, Sacramento Region Water Forum, 2005).
4. The *Environmental Impact Report (EIR) for the Water Forum Proposal* (Sacramento City County Office of Metropolitan Water Planning, October 1999) provides detailed descriptions of the projected groundwater extractions.
5. The *Environmental Impact Report (EIR) for the Water Forum Proposal* (Sacramento City County Office of Metropolitan Water Planning, October 1999).
6. The *Sacramento Groundwater Authority Groundwater Management Plan* (Sacramento Groundwater Authority, December 2014).

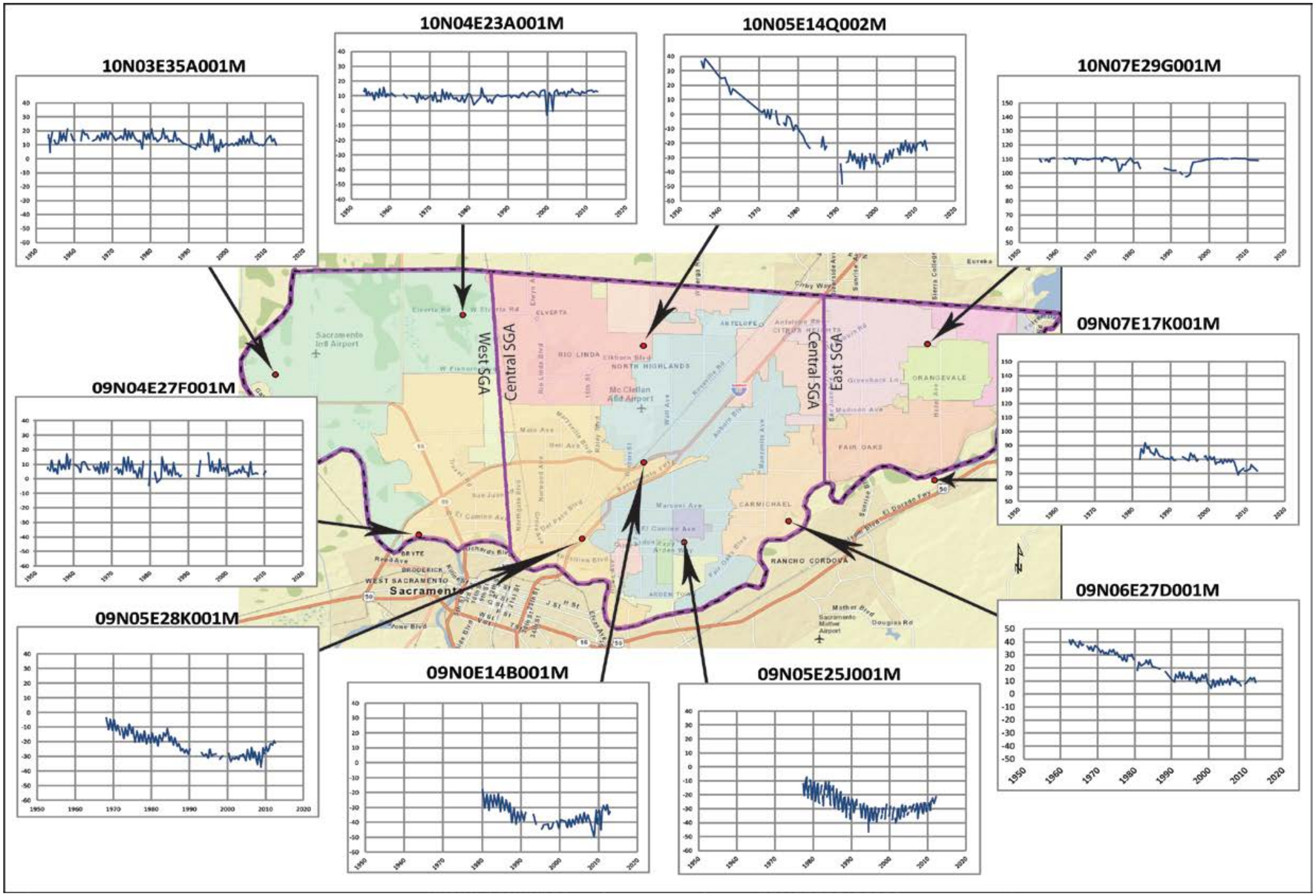

Figure 4-1. North Area Basin Historic Levels (source: 2013 SGA BMP)

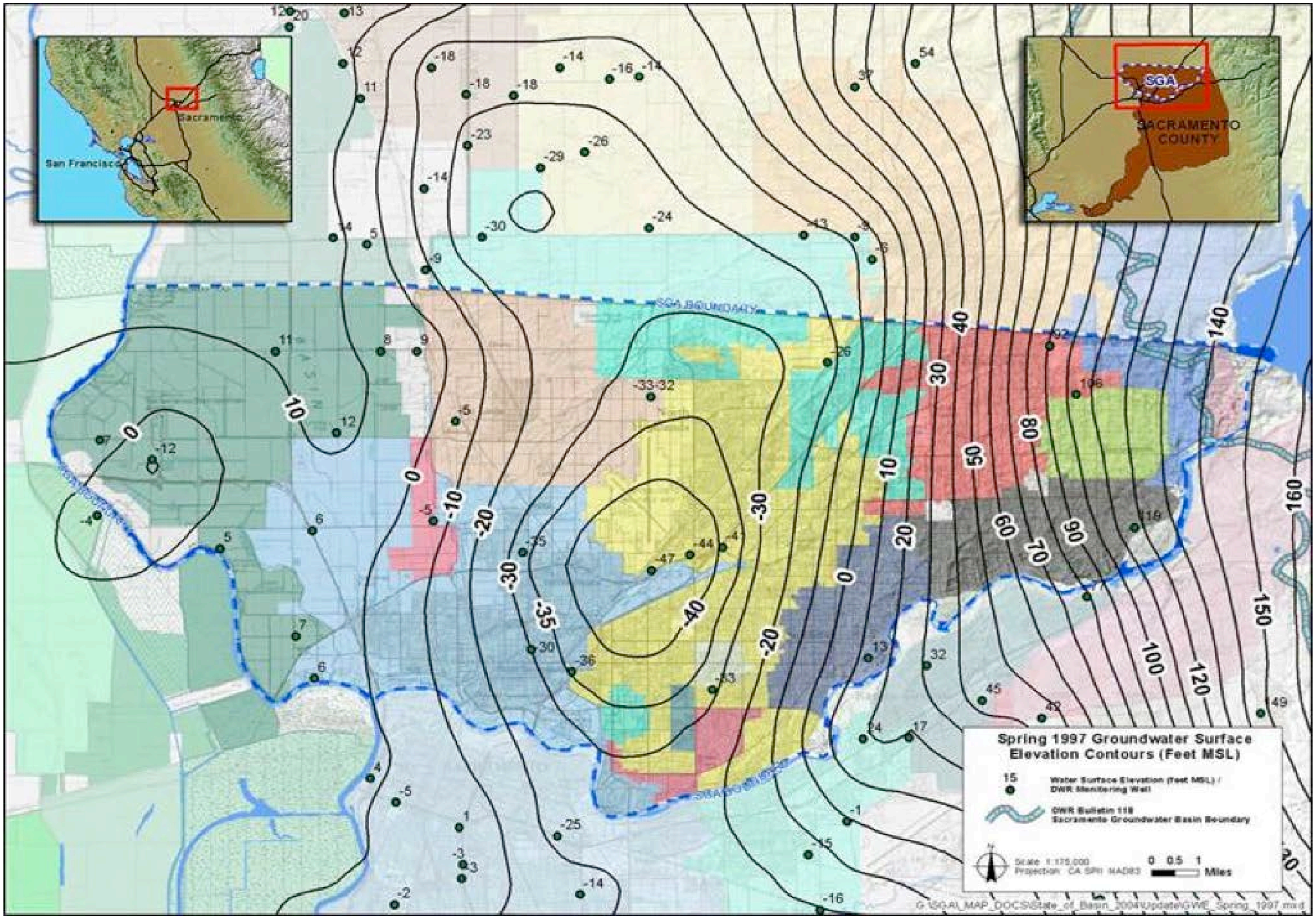

Figure 4-2. North Area Basin 1997 Levels (source: 2013 SGA BMP)

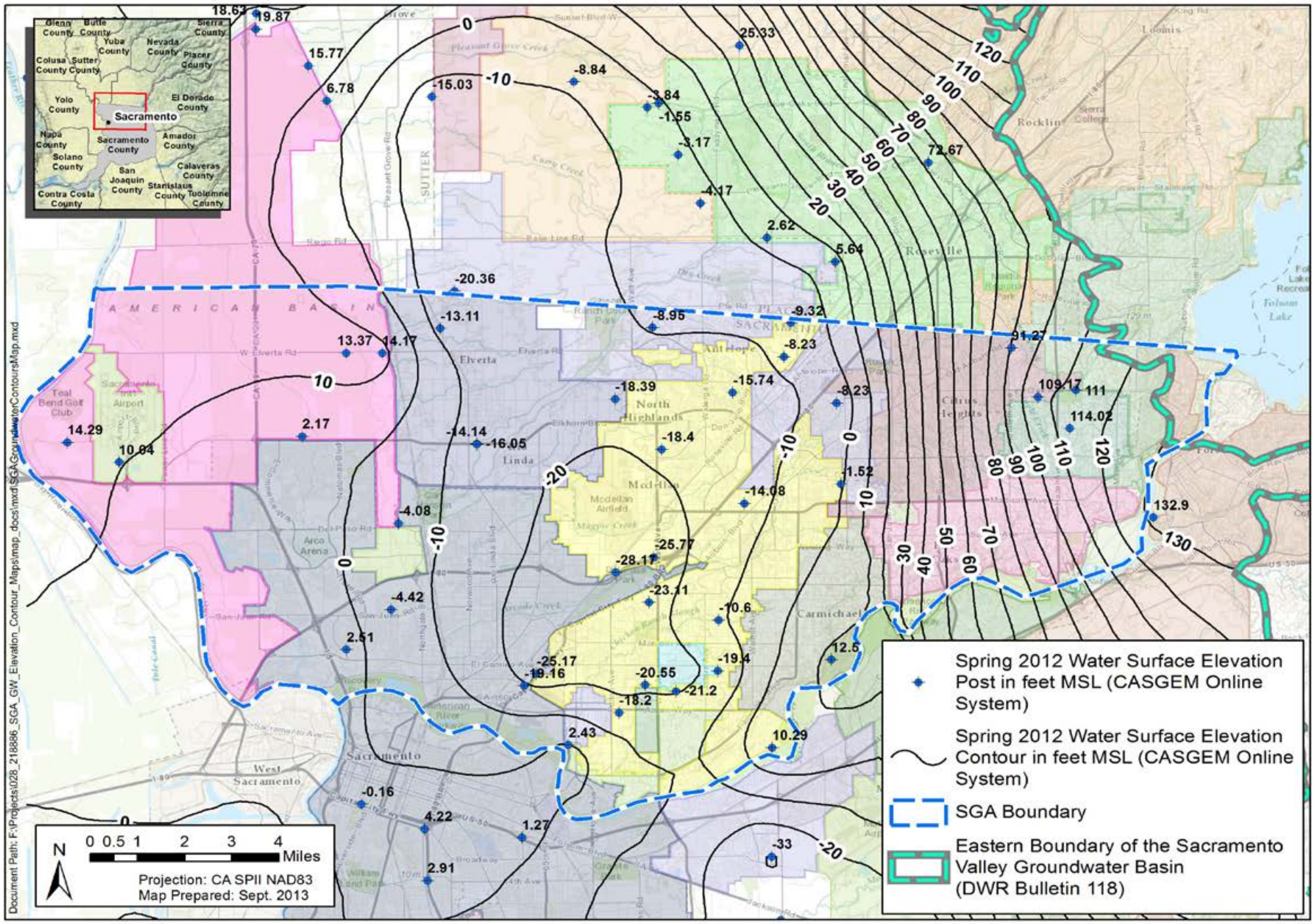

Figure 4-3. North Area Basin 2012 Levels (source: 2013 SGA BMP)

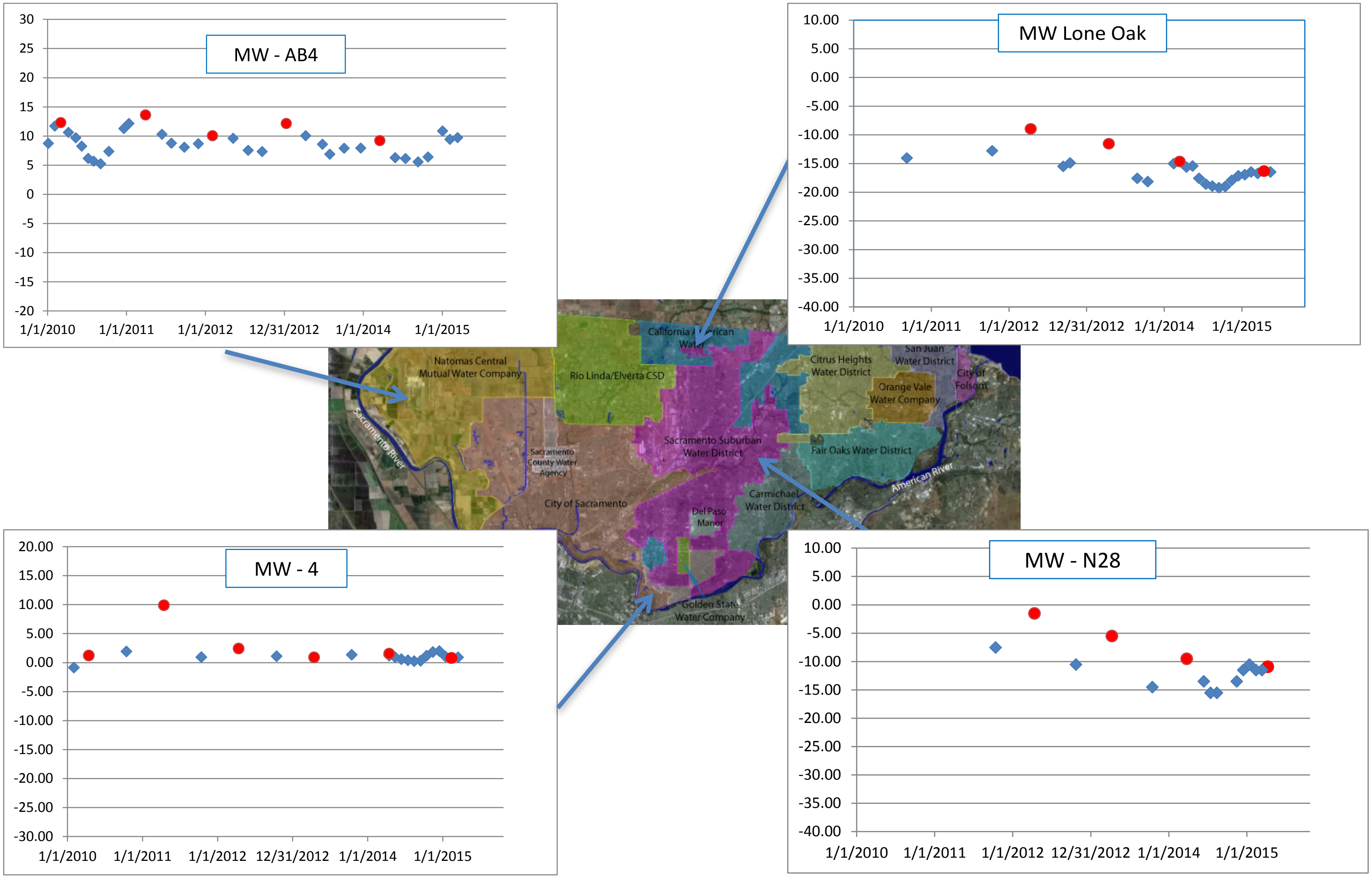

Figure 4-4. Monthly Levels for Select Wells

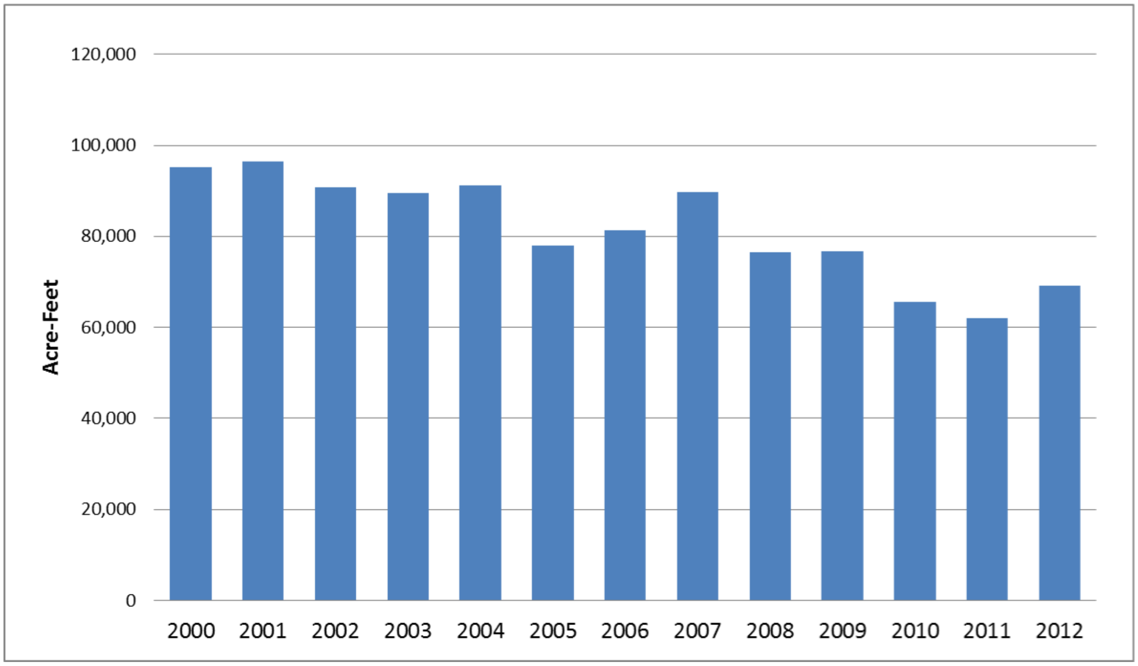

Figure 4-5. Groundwater Pumping in North Area Basis, 2000-2012 (Figure 7, SGA BMP Report, 2013)

4.3. Groundwater Usage

RLECWD utilizes its right to pump groundwater to supply its current customer base. There are no legal restrictions on the volume that RLECWD is allowed to pump. RLECWD has never experienced a decrease in groundwater availability due to single or multi-year dry periods. Past and projected groundwater usage is summarized in Table 4-1. It is likely that groundwater was pumped by private entities within the ESP area in the past. However, insufficient data is available to quantify, and therefore past pumping is conservatively assumed to be zero for this WSA.

Table 4-1. Past and Projected Groundwater Usage/Supply

	Past and Projected Groundwater Usage, acre-feet per year							
	2000	2005	2010	2017	2022	2027	2032	2037
Demands								
ESP excluding Northborough	0	0	0	600	1,344	1,749	2,788	3,486
Northborough				344	616	817	817	817
Existing RLECWD and projected non-ESP growth	3,335	3,209	2,719	3,229	2,668	3,002	3,037	3,071
Demand Total:	3,335	3,209	2,719	4,173	4,628	6,568	6,640	7,374
Groundwater Supply:	3,335	3,209	2,719	4,173	4,628	6,568	6,640	7,374

4.4. Proposed Groundwater Infrastructure

The ESP Phase 1 and Northborough supply program will serve all demands through groundwater wells, treatment (if required), storage and pumping, and a transmission loop system. The ESP distribution system will be designed and constructed by the ESP developers, but inspected and tested prior to acceptance by the District. The proposed wells, treatment facilities, tanks and booster pump facilities will be designed, constructed and inspected by the District. Table 4-2 summarizes the proposed water infrastructure requirements. Size and lengths are preliminary and will be finalized during detailed design.

A hydrological study was conducted to investigate potential groundwater quality and identify preferred locations for the new wells (Hydrologic Assessment Report, Wood Rodgers, December 2014). There are currently three potential well sites based on the assessment and discussions with the developers. A new well(s) will be located near the intersection of Elverta Road and 16th Street, near the center of the ESP area. An additional well be located within the Northborough project. New wells will be drilled down to approximately 500 feet. Each new well is expected to yield 1,500 gpm. New wells will be blocked at the shallow aquifer to minimize impacts to shallow aquifer levels and maximize water quality from the lower aquifers. Required treatment will be identified when a well is drilled and sampled. Based on the area groundwater hydrology, potential treatment requirements could include manganese, iron, arsenic, and Cr6.

Table 4-2. ESP Phase 1 and Northborough Proposed Supply Infrastructure.

Infrastructure	Size, Length
Groundwater Well (1)	1,500 gpm
Storage Tank	3 million gallons
Booster Pumping Station	4,530 gpm
Groundwater Treatment	3,000 gpm
Transmission Main	16-inch, 23,500 LF 24-inch, 13,500 LF

4.5. Surface Water Supply Reliability Project

The region's efforts over the last 20 years to improve groundwater sustainability have resulted in improved basin conditions as shown in the figures above. As explained above, the region is currently working to add additional conjunctive use capabilities through a new surface water treatment plant on the Sacramento River.

This supplemental surface water supply facility will provide additional surface water when available to the region in place of groundwater. This will allow the groundwater basin to "rest", building up in-lieu banked groundwater. During dry years when surface water is restricted, the region will recover the banked groundwater for supply delivery. This conjunctive use strategy is already incorporated into the region's supply on the American River. Adding a second supply source from the Sacramento River will further increase supply reliability and strengthen the groundwater basin sustainability management efforts.

This facility was envisioned by the region many years ago and has been included in the Water Forum and other long-term planning efforts. The RLECWD fully supports this program and is a leading member in the ongoing program development. The size and scale of the new facilities will likely change over time to accommodate revised partner needs or external criteria. In the 2014 Master Plan, RLECWD projected its own infrastructure capacity needs for a Sacramento River facility.

These infrastructure costs are currently included in the connection fee study as part of each new connection fee.

5. Facilities Cost and Financing

The proposed 20-year WSA supply is groundwater. The financing plan will be prepared by the District to provide groundwater supply and associated infrastructure and the supplemental water supply system. RLECWD will also including financial requirements for all new connections to fund the supplemental surface water supply and conjunctive use strategy.

5.1. Financing Plan

The District is conducting a financial study to determine connection fee and rate requirements for all new connections. Capital costs are assigned through two methodologies. The ESP distribution system will be designed and constructed by the ESP developers, but inspected and tested prior to acceptance by the District. The proposed well(s), treatment facilities, tanks, and booster pumping facilities will be designed and constructed by the District. Funding for the system may come from a number of sources, including development impact fees.

Supplemental water infrastructure costs for all new connections will be collected through development impact fees (connection fees) from all new development within RLECWD, including the ESP area. RLECWD will collect connection fees as new connections are paid, and place the connection fees in a specific fund used solely for planning, designing, and constructing the supplement water system.

6. Regulatory Approvals and Permits

The environmental impacts of the ESP project were previously addressed in the CEQA process led by Sacramento County Department of Community Development. RLECWD will be responsible for permits and approvals required for construction and operation of the groundwater supply system. Depending on final planning efforts, the following the following approvals and permits may be required:

- Sacramento County (land use and encroachment permits)
- California Division of Drinking Water (amended water supply permit)
- Drilling permit from Sacramento County
- Sacramento Metropolitan Air Quality Management District permit
- CEQA – project level for construction of infrastructure
- PG&E gas service application
- Sacramento Municipal Utility District (SMUD)
- US Bureau of Reclamation
- US Army Corps of Engineers (USACE)
- US Fish and Wildlife Service (USFWS)
- California State Water Resources Control Board
- Central Valley Regional Water Quality Control Board
- California Department of Fish and Wildlife
- AT&T
- Comcast

7. Sufficiency Analysis

This section compares the 20-year supplies to the projected demands over a range of hydrologic years to determine the supply sufficiency. As state earlier, this WSA is based on groundwater supply as the main supply. Once the region began implementing conjunctive use strategies and SGA began managing the North Area Basin proactively, the basin levels have stabilized with an increased reliability in groundwater supply. Table 7-1 projects sufficient supply availability for normal, and multiple dry-year types. Table 7-2 projects sufficient supply availability for single dry-year types. The tables include the demands from the ESP area (Phase 1 and remainder phase(s)), from Northborough, as well as from the existing RLECWD customers and infill demand projections to compare the total RLECWD projected demands to supplies. This WSA concludes there is sufficient supply for the ESP (including the proposed Northborough land use changes) over the next 20 years.

Table 7-1. Projected Supply Sufficiency – Normal Year and Multiple Dry-Years

	2017 AFY	2022 AFY	2027 AFY	2032 AFY	2037 AFY
Demands					
ESP Excluding Northborough	600	1,344	1,749	2,788	3,486
Northborough	344	616	817	817	817
Existing RLECWD and projected non-ESP growth	3,229	2,668	3,002	3,037	3,071
Total Demand:	4,173	4,628	6,568	6,640	7,374
Supply					
Groundwater	4,173	4,628	6,568	6,640	7,374
Demand to Supply Difference	0	0	0	0	0

Table 7-2. Projected Supply Sufficiency – Single Dry-Year

	2017 AFY	2022 AFY	2027 AFY	2032 AFY	2037 AFY
Demands					
ESP Excluding Northborough	630	1,411	1,836	2,927	3,661
Northborough	361	647	858	858	858
Existing RLECWD and projected non-ESP growth	3,390	2,801	3,152	3,189	3,224
Total Demand:	4,382	4,859	5,846	6,974	7,743
Supply					
Groundwater	4,382	4,859	5,846	6,974	7,743
Demand to Supply Difference	0	0	0	0	0

Appendix WS-2b

Northborough Water Supply Assessment Technical Review Memo

AECOM

AECOM
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Sacramento, CA 95811
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916.414.5800 tel
916.414.5850 fax

Memorandum

To:	Julie Newton, Sacramento County
From:	Jeff Goldman
Subject:	Elverta Specific Plan Water Supply Strategy and Water Supply Assessment Review
Date:	April 25, 2016

Water Supply Strategy Review and Comments

AECOM performed peer review of the Final Elverta Specific Plan Water Supply Strategy (WSS) prepared for the Rio Linda/Elverta Community Water District (RLECWD) prepared by Affinity Engineering and dated January 2016. The document text, tables, and figures were reviewed. In addition, AECOM also checked the referenced information in the documents used to prepare the WSS. AECOM did not review these documents in their entirety and did not evaluate the accuracy or completeness of the referenced documents. Our review was limited to checking for consistency between the WSS and referenced documents.

AECOM has identified the following comments.

General Comments

- The report was written at a high level, such that it was difficult to link up the data presented. It appears that the report may be missing some necessary data to help tie everything together. There were also some inconsistencies across tables.

- Specific information utilized in the WSS that was borrowed from outside documents was spot checked and, in general, the information stated in the WSS appears to be consistent with the outside reports.

- The RLECWD 2014 Master Plan references a State mandated moratorium on new service connections until supply issues are rectified. Is this still in effect?

- The phasing of the buildout of this plan lacks specifics. We realize that a certain degree of generalization may be desirable to keep flexibility down the road, but the plan would benefit from having more detail if possible.

- Overall, some of the numerical data presented in the report was not verifiable, or there appeared to be insufficient information shown to verify the data. For example, for the average daily demands, maximum daily demands, and peak hour demands shown in Tables 2.2 and 2.3, we can’t determine what numbers / methodologies were used to arrive at the level of demand shown.

- It is difficult to ascertain whether the planned infrastructure would be sufficient for this development. There appears to be no documentation or analysis that shows infrastructure sufficiency.

- Typically potable water distribution systems are designed to handle at the maximum day demand with a simultaneous fire flow, while maintaining at least 20 psi under with firm capacity (largest pump or well offline). This report does not show that the proposed infrastructure can meet this requirement.

Specific Comments

- Page 3 – Table 2.1 – Unit demand: There is no reference to methodology used to determine the unit demand.

- Page 3 – Table 2.1 – Residential Density bonus: The bonus calculation appears to be 10% of the number of residential dwelling units. Should we assume this is the required density bonus per County approval of the project?

- Page 3 – Table 2.1 – Water Demands: The totals shown at the bottom of the table seem to be off. Not by much, but our calculations yields slightly different numbers, could be a rounding issue.

- Page 3 – The report rounds the total buildout demand to 5,000 AFY. This is allegedly due to potential above average demands. Is rounding from 4,303 AFY to 5,000 AFY enough to account for these above average situations? Is there information to support the decision to round up?

- Page 4 – Tables 2.2 and 2.3: What are the “monthly factors”? Where is the engineer applying them and how is the engineer applying them?

- Page 4 – Tables 2.2 and 2.3: How are the average day, max day, and peak hour demands being calculated? We could not determine how these numbers were derived using the information in Tables 2.2 and 2.3.

- Page 4 – First paragraph – “For planning purposes, it is assumed the initial development demands will total 2,500 acre-feet per year.” Is there a justification for this number? Table 2.2 does not explain the calculation.

- Page 5 – Table 2.4 – Unit column: Certain line items are expressed as DU and others in as EDU? Is this intentional? What is the difference?

- Page 5 – Table 2.4 – We were unable to arrive at the number stated for peak hour demand (1.08 gpm/EDU). Is this value correct? As noted previously, the parameter column specifies a value in terms of a DU while the units column specifies a different metric. These should be the same.

- Section 3 – Pages 7 -10 - Which supply strategy is the Elverta development using? The plan is not clear. It appears that the “ESP Supply Strategy” is the preferred option based on the text in Section 3.2.3, but other sections indicate otherwise.

- Page 12 – Table 4.1 – Booster pump station is sized at a pumping capacity of 4,530 gpm, which the report stated should be sufficient for Phase 1 peak hour demand. What is the peak hour demand of phase 1? The WSS does not explain this demand. Table 2.4 states the peak hour demand as 1.08 gpm/EDU. How many EDUs are in phase 1? Is the stated booster pump station pumping capacity of 4,530 gpm a firm number or total capacity? Firm capacity is needed for water distribution systems.

- Page 12 – The table at bottom of page lists build-out infrastructure needs (this table needs a number and title). Same comment as above comment for Table 4.1 – Are the facilities listed adequately sized for the development? It isn't clear. As noted previously, it is not clear whether stated the booster pump station capacity is a firm capacity or total capacity measure. Should be firm capacity.

- Figure 4.2 – It seems that the wells shown would be too close and they would interfere with each other. The figure does state that distance between wells will be dictated by hydro-geologic recommendations. However, wells are typically spaced at least 1,000 -1,300 feet apart. It could be problematic if both wells are tapping same aquifer and operating at same time.

- Page 20 – Table 5.1 – The stated groundwater treatment capacity is not consistent with what is shown in Table 4.1. Also, is the booster pump capacity a firm or total capacity?

- Page 21 – Table 5.2 – The stated transmission pipe quantity of 10,000 linear feet is not consistent with quantity stated in table at bottom of page 12 (this table does not have a name or associated number).

- Page 21 – In Table 5.2, the 12-inch, 16-inch, and 24-inch pipes quantities/costs appear to be already accounted for in the initial phase costs (Table 5.1). This appears to be double counting, with the exception of approximately 7,500 linear feet of 12-inch pipe that is new to buildout phase. Figure 4.1 and Figure 4.3 would lead us to believe that there is only a relatively small quantity of new 12-inch pipe planned for construction in the buildout.

- Page 21 – Table 5.3 – This table shows a cost associated with "Full District Buildout", which totals approximately $351,000,000. There is no substantiation for this cost. Is this related to the "Supplemental Supply Infrastructure" detailed in Table 4.2?

Conclusion

Based on our review of the WSS, it is difficult to connect the data presented to a finding of adequacy of water availability to serve the project along with other future users within the Specific Plan area, and with the adequacy of infrastructure to deliver water to future users of the proposed project. We could not verify some of the data, as noted above, and information on phasing of buildout lacks specificity to determine the adequacy of water supply throughout all phases of the project.

Further, we could not determine if the proposed water supply infrastructure would be sufficient to convey water to the project. We recommend that additional analysis be performed to verify the sufficiency of the proposed infrastructure. One way to demonstrate sufficiency is to perform a hydraulic analysis on the system under a worst case scenario, such as with the largest water source offline. An analysis should be performed to show that the proposed system is able to provide the required fire flow and pressure under this scenario.

Water Supply Assessment Review and Comments

AECOM performed a peer review of the Final Elverta Specific Plan Water Supply Assessment (WSA) prepared for the Rio Linda/Elverta Community Water District (RLECWD) by Affinity Engineering in January 2016. The document text, tables, and figures were reviewed for consistency and completeness. The following memorandum presents AECOM's general and specific comments on the WSA.

<u>General Comments</u>

- Specific information utilized in the WSA from the RLECWD Urban Water Management Plan (UWMP) was not verifiable because no references were provided in the text.

- The terminology used throughout the WSA is inconsistent and confusing. The text and tables refer to an ESP Phase 1, Northborough, and ESP Remainder; or ESP excluding Northborough and Northborough; or ESP including Northborough and Northborough. These inconsistencies result in difficulties linking data between tables.

Specific Comments

- Page 1: Identify examples of Title 24 energy efficiencies that allow for the density bonus.
- Page 3: The ESP total number of dwellingunits represents the total capacity with density bonus allowances, as provided, understate law for any project that meets specific energy conservation requirements. What specific energy conservation requirements are incorporated into the project?
- Figure 2-1: This figure should identify the Northborough area boundary.
- Page 8: Water demand projections are based on unit demand factors for different types of dwelling units, and non-residential land use types, and should identify a reference.
- Table 3-4 shows the 5-year water demands for ESP Phase 1 and Table 3-5 shows the 5-year water demands for Northborough. There is no corresponding table showing the 5-year water demands for the ESP Remainder?
- Table 3-6 identifies water demands for the ESP Remainder, yet there is no table or explanation for these calculations.
- Page 13: Does the project incorporate specific water conservation measures? Have those been accounted for in the water demand projections?
- Page 14: It is assumed there is no increase from the average projected demands during multiple dry-year scenarios. The reasoning for this assumption should be explained.
- Table 3.7 shows only the total average, single-, and multiple-dry year water demands for the ESP, including Northborough, where previous tables show water demand by project component (i.e., ESP Phase 1, Northborough, and ESP Remainder). Provide average, single-dry year and multiple-dry year water demands by project component.
- Page 14: How long with the connection moratorium be in effect? How will the moratorium potentially affect development of the project?
- Table 3-9: Explain how the RLECWD (non-ESP growth) water demands were derived. Are these water demands supposed to correspond to those in Table 3-8?
- Table 3-9: Why are ESP Phase 1 and ESP Remainder not shown separately?
- Page 15: Explain the relationship between the RLECWD Master Plan and RLECWD UWMP.
- Page 16: Identify the source of the surface water supply.
- Page 16: Paragraph 2 appears out of context.
- Table 4-1: Why are ESP Phase 1 and ESP Remainder not shown separately?
- Page 25: Are all three wells required to serve the project? How will it be determined how many wells are installed? Provide a figure showing the location of the proposed well sites.
- Table 4-2: Does the ESP Remainder not require additional infrastructure? Please clarify.

- Page 25, Section 4.5: Expand this section to provide specific details of the surface water reliability project, including timing of the new surface water treatment plant, how much total surface water will be available, and RLECWD's entitlement.
- Page 28: Separate sufficiency tables for normal years and multiple-dry years.

Conclusion

As noted above, the Water Supply Assessment should provide a number of clarifications and reference information drawn from the RLECWD Urban Water Management Plan. According to the CEQA Guidelines, Appendix G, a proposed project would result in a significant impact if there are insufficient demonstrated water supplies available to serve the project from existing or permitted entitlements and resources, or require new or expanded entitlements. The WSA demonstrated that there would be sufficient groundwater supplies to meet the project-related demands over a 20-year period in all water year types, including normal, single-dry, and multiple-dry years. Therefore, AECOM concludes that, with incorporations of the revisions described in the comments above, the WSA would be adequate under CEQA.

Appendix WS-2c

Northborough Water Supply Assessment
Technical Review Memo
RLECWD Response to Comments

TECHNICAL MEMORANDUM

To:	Julie Newton, Sacramento County Planning Department
Cc:	Mary Henrici, Rio Linda / Elverta Community Water District Ralph Felix, Rio Linda / Elverta Community Water District James Crowley, J Crowley Group
From:	James D. Carson, P.E., Affinity Engineering Inc.
Subject:	ESP Water Supply Strategy and Water Supply Assessment Response to AECOM's Comments
Date:	April 18, 2016

The Technical Memorandum provides a response to the comments provided from AECOM's peer review dated April 6, 2015 of Rio Linda/Elverta Community Water District's (District) Elverta Specific Plan's (ESP) Water Supply Strategy (WSS) and Water Supply Assessment (WSA). AECOMs comments are shown first in bold with the District response shown afterwards. AECOMs comments were only provided as bullets, Affinity Engineering re-labeled the bullets for easier referencing.

Section A - WSS Review and Comments

General Comments

AGC1 - Overall the document was confusing and somewhat hard to follow and understand. The report was written at what I felt was such a high level that it was difficult to link up the data presented. It appears that the report may be missing some necessary data to help tie everything together. We also noticed some inconsistencies across tables.

It appears that AECOM may have lost sight of what was the purpose of the WSS. On Page 1 of the WSS, it states "The water supply strategy update addresses the Sacramento County PF-8 water supply requirements".

It is the intent of this WSS to be a high level planning document and not a pre-design report. Specific facility locations, design, and capacity will be determined as part of the infrastructure required for the "Will Serve" documents which will be based on the development's phasing. The District has also responded below to all specific comments related to AECOM's misunderstandings of the tables that they may have had during their review.

AGC2 - Specific information utilized in the WSS that was borrowed from outside documents was spot checked and, in general, the information stated in the WSS appears to be consistent with the outside reports.

No response necessary.

AGC3 - The RLECWD 2014 Master Plan references a State mandated moratorium on new service connections until supply issues are rectified. Is this still in effect?

The moratorium was removed by DDW in 2015.

AGC4 - The phasing of the buildout of this plan lacks specifics. We realize that a certain degree of generalization may be desirable to keep flexibility down the road, but the plan would benefit from having more detail if possible.

See response to AGC1.

AGC5 - Overall, some of the numerical data presented in the report was not verifiable, or there appeared to be insufficient information shown to verify the data. For example, for the average daily demands, maximum daily demands, and peak hour demands shown in Tables 2.2 and 2.3, we can't determine what numbers / methodologies were used to arrive at the level of demand shown.

See response to AGC1 and ASC5.

AGC6 - It is difficult to ascertain whether the planned infrastructure would be sufficient for this development. There appears to be no documentation or analysis that shows infrastructure sufficiency.

See response to AGC1.

AGC7 - Typically potable water distribution systems are designed to handle at the maximum day demand with a simultaneous fire flow, while maintaining at least 20 psi under with firm capacity (largest pump or well offline). This report does not show that the proposed infrastructure can meet this requirement.

See response to AGC1.

Specific Comments

ASC1 - Page 3 – Table 2.1 – Unit demand: there is no reference to methodology used to determine the unit demand.

The basis for the unit demands come from industry experience and are consistent with unit demands used by other local water purveyors in their planning documents. Please clarify by providing which unit demands are an issue with an explanation as to why.

ASC2 - Page 3 – Table 2.1 – Residential Density bonus: the bonus calculation appears to be 10% of the number of residential dwelling units. Should we assume this is the require density bonus per County approval of the project?

The density bonus was provided by the Northborough developers.

ASC3 - Page 3 – Table 2.1 – Water Demands: the totals shown at the bottom of the table seem to be off. Not by much, but our calculations yields slightly different numbers, could be a rounding issue.

Yes, the demand was rounded up to 5,000 AFY (significant digits) as a conservative measure as to account for future variances in the demand as well other unknowns.

ASC4 - Page 3 – The report rounds the total buildout demand to 5,000 AFY. This is allegedly due to potential above average demands. Is rounding from 4,303 AFY to 5,000 AFY enough to account for these above average situations? Is there information to support the decision to round up?

Yes, the demand was rounded up to 5,000 AFY to be conservative and to account for other water demand unknowns that could occur by the time the development happens.

ASC5 - Page 4 – Tables 2.2 and 2.3: What are the "monthly factors"? Where is the engineer applying them and how is the engineer applying them?

Based on the most recent District demand study that was completed in 2012 and submitted by the District to the Division of Drinking Water (DDW).

ASC6 - Page 4 – Tables 2.2 and 2.3: How are the average day, max day, and peak hour demands being calculated? We could not determine how these numbers were derived using the information in Tables 2.2 and 2.3.

See response to ASC5.

ASC7 - Page 4 – First paragraph – "For planning purposes, it is assumed the initial development demands will total 2,500 acre-feet per year." Is

there a justification for this number? Table 2.2. Does not explain the calculation.

ESP Phase 1 = 2566 AFY that is approximately 2,500 AFY. Rounded based on significant digits.

ASC8 - Page 5 – Table 2.4 – Unit column: Certain line items are expressed as DU and others in as EDU? Is this intentional? What is the difference?

DU was used to create baseline demand. Once this was established, EDU was then used to reference this basis.

ASC9 - Page 5 – Table 2.4 – We were unable to arrive at the number stated for peak hour demand (1.08 gpm/EDU). Is this value correct? As noted previously, the parameter column specifies a value in terms of a DU while the units column specifies a different metric. These should be the same.

See response to ASC5.

ASC10 - Section 3 – Pages 7 -10 - Which supply strategy is the Elverta development using? The plan is not clear. It appears that the "ESP Supply Strategy" is the preferred option based on the text in Section 3.2.3, but other sections indicate otherwise.

Supply for ESP is groundwater. The District has completed a connection fee analysis that a portion of the fee will pay for infrastructure intended to bring in surface water to the District. Once surface water is available, the District will utilize a conjunctive supply strategy that is consistent to the approach that other local water purveyors are doing in the region.

ASC11 - Page 12 – Table 4.1 – Booster pump station is sized at a pumping capacity of 4,530 gpm, which the report stated should be sufficient for Phase 1 peak hour demand. What is the peak hour demand of phase 1? The WSS does not explain this demand. Table 2.4 states the peak hour demand as 1.08 gpm/EDU. How many EDUs are in phase 1? Is the stated booster pump station pumping capacity of 4,530 gpm a firm number or total capacity? Firm capacity is needed for water distribution systems.

See response to AGC1.

ASC12 - Page 12 – The table at bottom of page lists build-out infrastructure needs (this table needs a number and title). Same comment as above comment for Table 4.1 – Are the facilities listed adequately sized for the development? It isn't clear. As noted previously, it is not clear

whether stated the booster pump station capacity is a firm capacity or total capacity measure. Should be firm capacity.

See response from AGC1.

ASC13 - Figure 4.2 – It seems that the wells shown would be too close and they would interfere with each other. The figure does state that distance between wells will be dictated by hydro-geologic recommendations. However, wells are typically spaced at least 1,000 -1,300 feet apart. It could be problematic if both wells are tapping same aquifer and operating at same time.

See response to AGC1. Additionally, please see the note on the referenced Figure 4.2 that states "Exact spacing to be determined by a hydrogeologist".

ASC14 - Page 20 – Table 5.1 – The stated groundwater treatment capacity is not consistent with what is shown in Table 4.1. Also, is the booster pump capacity a firm or total capacity?

See response from AGC1.

ASC15 - Page 21 – Table 5.2 – The stated transmission pipe quantity of 10,000 linear feet is not consistent with quantity stated in table at bottom of page 12 (this table does not have a name or associated number).

Correction noted, the 10,000 linear feet was from a previous version of the document and should be removed. This correction does not impact any part of the analysis or plans presented in the WSS.

ASC16 - Page 21 – In Table 5.2, the 12-inch, 16-inch, and 24-inch pipes quantities/costs appear to be already accounted for in the initial phase costs (Table 5.1). Seems to be double counting, with the exception of approximately 7,500 linear feet of 12-inch pipe that is new to buildout phase. Figure 4.1 and Figure 4.3 would lead us to believe that there is only a relatively small quantity of new 12-inch pipe planned for construction in the buildout.

These two tables were never intended to be additive. All new infrastructure related to growth within the District has been rolled into the District's connection fee.

ASC17 - Page 21 – Table 5.3 – This table shows a cost associated with "Full District Buildout", which totals approximately $351,000,000. There is no substantiation for this cost. Is this related to the "Supplemental Supply Infrastructure" detailed in Table 4.2?

Yes, this cost is part of the total infrastructure planned for the District wide buildout.

Section B - WSA Review and Comments

General Comments

BGC1 - Specific information utilized in the WSA from the RLECWD Urban Water Management Plan (UWMP) was not verifiable because no references were provided in the text.

The District's Masterplan (Masterplan) and Urban Water Management Plan (UWMP) were referenced in the document. The Masterplan, UWMP, and other relevant documents/reports are available on the District's website rlecwd.com.

BGC2 - The terminology used throughout the WSA is inconsistent and confusing. The text and tables refer to an ESP Phase 1, Northborough, and ESP Remainder; or ESP excluding Northborough and Northborough; or ESP including Northborough and Northborough. These inconsistencies result in difficulties linking data between tables.

The tables were split at the request of the ESP and Northborough Developers.

BGC3 - Overall, the WSA would benefit from proofreading for punctuation and grammar.

This is an unnecessary comment and provides no benefit to the County or the District.

Specific Comments

BSC1 - Page 1: Identify examples of Title 24 energy efficiencies that allow for the density bonus.

The reference is required as part of the WSA requirements. Sacramento County (County) is responsible for the requirement and enforcement of energy efficiencies by the Developers. This comment should be directed to County Planning for a response.

BSC2 - Page 3: The ESP total number of dwelling units represents the total capacity with density bonus allowances, as provide under state law for any project that meets specific energy conservation

requirements. What specific energy conservation requirements are incorporated into the project?

See response from BSC1.

BSC3 - Figure 2-1: This figure should identify the Northborough area boundary.

Figure 2-2 identifies the Northborough development area.

BSC4 - Page 8: Water demand projections are based on unit demand factors for different types of dwelling units and non-residential land use types and should identify a reference.

The unit water demands were taken from the WSS.

BSC5 - Table 3-4 shows the 5-year water demands for ESP Phase 1 and Table 3-5 shows the 5-year water demands for Northborough. There is no corresponding table showing the 5-year water demands for the ESP Remainder?

ESP remainder is shown in Table 3-4 as ESP Phase 1 and remainder excluding Northborough.

BSC6 - Table 3-6 identifies water demands for the ESP Remainder, yet there is no table or explanation for these calculations.

The water demands were taken from Table 3-4.

BSC7 - Page 13: Does the project incorporate specific water conservation measures? Have those been accounted for in the water demand projections?

Yes, as described on page 8 of the WSA.

BSC8 - Page 14: It is assumed there is no increase from the average projected demands during multiple dry-year scenarios. The reasoning for this assumption should be explained.

Because there is sufficient supply from groundwater during multiple dry years. It was assumed that there was no reduction in demand. The only exception would be if the state mandated a reduction in demand, which was not considered as a part of this WSA.

BSC9 - Table 3.7 shows only the total average, single-, and multiple-dry year water demands for the ESP including Northborough where previous tables show water demand by project component (i.e., ESP Phase 1, Northborough, and ESP Remainder). Provide average,

single-dry year and multiple-dry year water demands by project component.

The WSA covers supply for the entire ESP area. Demands were shown in project parts at the request of the developers because some of the land owners are moving forward with different strategies.

BSC10 - Page 14: How long with the connection moratorium be in effect? How will the moratorium potentially affect development of the project?

See response to AGC3.

BSC11 - Table 3-9: Explain how the RLECWD (non-ESP growth) water demands were derived. Are these water demands supposed to correspond to those in Table 3-8?

The demands from the UWMP and the Masterplan are not supposed to match because the UWMP was completed in 2012 and the Masterplan was completed in 2014 using updated assumptions. The UWMP is currently being updated.

BSC12 - Table 3-9: Why are ESP Phase 1 and ESP Remainder not shown separately?

Table 3-9 is intended to show demand associated with all of ESP including the rezoned Northborough development. Because of this rezoning, the Northborough Development is currently completing a supplemental CEQA document.

BSC13 - Page 15: Explain the relationship between the RLECWD Master Plan and RLECWD UWMP.

See response to BSC11.

BSC14 - Page 16: Identify the source of the surface water supply.

The specific surface water supply is not a part of this Water Supply Assessment. For the District as a whole, the surface water supply is being planned for as part of the regional water supply efforts.

BSC15 - Page 16: Paragraph 2 appears out of context.

Connections fees are a major part of the District water supply planning.

BSC16 - Table 4-1: Why are ESP Phase 1 and ESP Remainder not shown separately?

See response to BSC12.

BSC17 - Page 25: Are all three wells required to serve the project? How will it be determined how many wells are installed? Provide a figure showing the location of the proposed well sites.

See response to AGC1. Additionally, based on the results from a hydrogeological assessment that was recently completed by the District, the new wells will be located within ESP.

BSC18 - Table 4-2: Does the ESP Remainder not require additional infrastructure? Please clarify.

Yes. Additional infrastructure will be provided when these areas are developed as part of the specific Development's "Will Serve".

BSC19 - Page 25, Section 4.5: Expand this section to provide specific details of the surface water reliability project, including timing of the new surface water treatment plant, and how much total surface water will be available, and RLECWD's entitlement.

See response to BSC14. Additionally, the ESP Development is being supplied by groundwater and expansion of this section is not required. This section was provided for informational purposes only as all new developments within the District will be contributing to future infrastructure that will be suited to supply the District with supplemental surface water.

BSC20 - Page 28: Separate sufficiency tables for normal years and multiple-dry years.

Normal and dry years were combined because they are the same numbers.

Appendix WS-3

Rio Linda/Elverta Community Water District
Hydrogeologic Assessment Repot

WOOD RODGERS

RIO LINDA/ELVERTA COMMUNITY WATER DISTRICT

HYDROGEOLOGIC ASSESSMENT REPORT

DECEMBER 17, 2014

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FIGURES

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EXECUTIVE SUMMARY

This Hydrogeologic Assessment Report was prepared to support future expansion of the Rio Linda/Elverta Community Water District (District) municipal water supply system. The objectives of this report were to identify locations to drill new municipal supply wells while avoiding water quality treatment and to assess potential impacts to existing wells from these recommended well locations.

The District provides municipal water to the communities of Rio Linda and Elverta, located north of the City of Sacramento in the northern portion of Sacramento County, as shown in Figure 1. Water demands are met from 11 active groundwater wells, of which six wells produce water with concentrations of hexavalent chromium above the new State of California maximum contaminant level. Hydrogeologic cross-sections depicting the geologic formations (aquifers) and the associated water quality underlying the District were prepared with the purpose of defining the extent of contamination within the aquifers supplying municipal water supply to the District. From these cross-sections, the aquifers that would have the highest likelihood of meeting capacity and the best water quality (without the need for treatment) for the District were identified.

This report identifies potential new well locations in the Elverta Specific Plan (ESP) area that will have the best chance of meeting current water quality requirements and capacity while minimizing impacts to existing wells. New wells will need to target specific depth intervals in order to avoid water quality treatment. Alternatively, new wells could be completed in aquifers known to have poor water quality, but would need to be equipped with well head treatment or blended with other wells to produce water of acceptable quality.

New well locations recommended in this report were assessed for proximity to existing water wells to address pumping impacts. Where possible, the new well sites will not be drilled within 1,000 feet of active existing wells. This will help minimize impacts as a result from declining water levels during pumping cycles.

DISTRICT BACKGROUND

The Rio Linda/Elverta Community Water District (District) provides municipal water supply to approximately 4,700 customers in the communities of Rio Linda and Elverta, in northwestern Sacramento County (County). The District's water demand is provided from 11 active municipal supply wells, as shown in Figure 1. There is an emergency intertie between the District and Sacramento Suburban Water District (SSWD) for emergency water supply, in addition to two water storage reservoirs to meet peak hour demands. Currently, the District is under a moratorium that restricts new service connections due to a water supply deficiency. The District is completing the construction of the new L Street Reservoir and Pump Station (L Street Plant). When completed and in service, the District will file a request with the California Department of Public Health (CDPH) to remove the service connection moratorium.

The District's water supply currently only requires wellhead treatment (chlorination) at each well prior to discharging directly into the distribution system. The groundwater pumped from the active wells meet all of the California State Water Resources Control Board - Division of

Drinking Water's (DDW), formerly the California Department of Public Health, primary and secondary water quality standards, with the exception of hexavalent chromium (Cr 6). Following the adoption of the lowered maximum contaminant level (MCL) of 10 micrograms per liter (µg/L) for arsenic in 2008, Well 5 was required to be removed from service. The recently adopted (July 2014) MCL of 10 µg/L for Cr 6 will require six of the District's wells to be placed in standby classification, treated for Cr 6, or to be removed from service. The six wells produce groundwater with concentrations of Cr 6 in excess of the MCL and represent 58% of the District's total water supply.

In April of 2014, an updated Water Master Plan for the District was prepared describing the water system infrastructure and included a system-wide evaluation that identified improvements to increase the supply and reliability of its system. The District's policy is to minimize Operations and Maintenance (O&M) costs by drilling new wells that do not require treatment, rather than equipping existing wells with treatment plants. The District was successful in avoiding arsenic and manganese treatment with its Well 15.

DISTRICT WELLS

The District's 11 active municipal wells supply approximately 3,000 acre-feet of water per year to customers within the District. Two of the District's wells (Well 5 and Well 14) are currently not in service because of elevated arsenic over the MCL. District wells range in total depth from approximately 270 to 590 feet, targeting the aquifer zones between depths of 170 to 585 feet across the District. Well construction data (e.g. well depth, screen intervals) and current operating condition (e.g. water levels, flow rate, water quality concerns) for each well is shown in Table 1 (attached).

Of the District's wells, three wells have been in operation for over 40 years (Wells 3, 4, and 7), with an average age for the well field of 32 years. Below is a brief summary of the status of each well:

- **Well 2A** produced acceptable water quality until concentrations of Cr 6 recently increased to the MCL. The site has adequate room for a replacement well.
- **Well 3** is required to run constantly to produce water with arsenic concentrations below the MCL.
- **Well 4** produces water over the MCL for Cr 6. The District will likely destroy this well, with no plans for replacement due to water quality issues.
- **Well 5** is not connected to the system and has been converted into a monitoring well. It may be used in the future to supply irrigation water to an adjacent future park.
- **Well 6** produces water with acceptable water quality.
- **Well 7** produces water with acceptable water quality.
- **Well 8A** currently produces water over the MCL for Cr 6. There is open land adjacent to the site (if available) to add treatment which would be required to be purchased. Access

to the site would need to be improved due to its location off a major road. Most likely, this well will be destroyed.

- **Well 9** produces water with acceptable water quality.
- **Well 10** produces water over the MCL for Cr 6. There is adequate room at the existing well site for treatment.
- **Well 11** produces water over the MCL for Cr 6. There is open land adjacent to the site (if available) for treatment which would be required to be purchased. Most likely, this well will be destroyed.
- **Well 12** has acceptable water quality, but has the lowest specific capacity in the District's well field. Well 12 requires a sand separator prior to discharging to the distribution system, and will discharge directly to the new L Street Reservoir (once it is completed). It has been identified for possible replacement.
- **Well 14** has never been equipped with a pumping station due to high concentrations of arsenic and manganese. There is room to add treatment for arsenic. This well will be evaluated to determine if treatment should be added.
- **Well 15** was designed to target the aquifers to avoid manganese and arsenic treatment; however, it produces water which now exceeds the new Cr 6 MCL. The District is currently conducting a study to determine if this well can be modified to improve water quality or if a well adjacent to Well 15 could be constructed in the deeper aquifer to provide blending. Additional property would be required if a reservoir is needed to blend the water from both wells prior to the distribution system.

SURFACE WATER

As shown in Figure 1, Dry Creek and several small tributaries of the Sacramento River run through and near the District; however, the District does not have access to surface water for municipal supply. Dry Creek is the primary surface water feature within the District, which flows from the northeast to the southwest into the Natomas East Main Drainage Canal before flowing into the Sacramento River. Magpie Creek flows in the same general direction, and is located immediately south of the District.

HYDROGEOLOGY

The North American Subbasin (NAS) is a 548-square mile groundwater basin between the Bear River to the north and the American River to the south, the crystalline basement rock of the Sierra Nevada to the east and the Feather River and Sacramento River to the west, as shown in Figure 2. The crystalline basement rock is the eastern edge of the alluvial groundwater basin. The NAS is comprised of a sequence of sedimentary rocks originating from the east, deposited under alluvial and fluvial conditions. As defined and modified from the California Department of Water Resources (DWR) Bulletin 118, the freshwater bearing geologic formations underlying the District consist of, from youngest to oldest: Quaternary alluvial sediments, the Riverbank Formation, the Turlock Lake Formation, the Laguna Formation, and the Mehrten Formation. As shown in Figure 2, the surface geology within the District consists of Quaternary alluvial deposits (not shown) and the Riverbank Formation.

The Quaternary alluvial deposits consist of stream channel and flood plain deposits, which are comprised of sand, silt, and clay, primarily located within and in close proximity to Dry Creek.

The Riverbank Formation consists of sand, gravel, silt and clay. These deposits outcrop at the ground surface within the District's well field and are generally less than 50 feet thick. Because of their shallow depth, the quaternary alluvial deposits and Riverbank Formation are not practical sources for municipal groundwater development.

The Turlock Lake Formation consists of interbedded layers of sand, gravel, silt, and clay. The sediments that comprise the Turlock Lake Formation are generally brown or reddish-brown, with tan or white clays. Although other deposits, some of which are relatively impermeable, overlie the Turlock Lake Formation, it is generally considered an unconfined aquifer because of a lack of continuity in overlying fine-grained sediments over large areas. Nonetheless, near the District's well field, any clay layers in the overlying deposits would attenuate the downward migration of surface contamination. The Turlock Lake Formation outcrops at the ground surface approximately two miles east of the District's well field. The Turlock Lake Formation extends to a depth of approximately 200 feet.

The Laguna Formation consists of Sierra sourced sediments, containing consolidated alluvial gravel, sand, and silts comprised of granitic, metamorphic, and volcanic material. The Laguna Formation extends from approximately 250 to 500 feet underlying the District. The Laguna Formation is characterized as being moderately consolidated and poorly to moderately cemented.

The Mehrten Formation underlies the Laguna Formation and consists of two groups of materials. The first group contains distinctive black sands interbedded with gravel and blue or brown clay, and represents the primary water-bearing portion of the Mehrten Formation. The second group is cemented tan or gray tuff-breccia, which can have significant secondary porosity and water-bearing capability.

GROUNDWATER ELEVATIONS

Groundwater elevation data have been recorded on a regular basis in Sacramento County since the late 1940's to present, and data are available on the DWR Water Data Library[1]. In addition, the Sacramento County Water Agency (SCWA) prepared bi-annual (Fall and Spring) groundwater elevation contour maps from 1979 through 2007. The Sacramento Groundwater Authority (SGA) provided spring 2012 groundwater elevation contours (the most recent data available), prepared by HDR, for the northern portion of Sacramento County (north of the American River) for this report. As shown on Figure 3, hydrographs developed from the data of select DWR monitored wells along with the spring 2012 groundwater elevation contours depict regional groundwater elevation conditions.

The groundwater gradient underlying the District is relatively flat, with the direction of groundwater flow southeast towards a groundwater depression located along the Interstate-80 corridor and under the former McClellan Air Force Base (AFB). According to the SCWA

[1] http://www.water.ca.gov/waterdatalibrary/

groundwater elevation contour maps, this pumping depression has existed for the period of record (1979 through 2007). Under pumping conditions, District wells likely induce a cone of depression, which would cause a localized reversal of the direction of groundwater flow towards the District.

Groundwater elevations have generally declined over the last 60 years, with the largest declines located in the vicinity of the former McClellan AFB. The hydrographs show that groundwater levels in the vicinity of the District decreased from the late 1940s through the late 1980s to early 1990s. From the early 1990s to present, groundwater elevations have relatively stabilized west and southwest of the District, with slight recovery observed northwest and to the east of the District. Currently, groundwater levels within District wells range from 70 to 130 feet below ground surface, with shallower groundwater levels occurring along the western portion of the District. They hydrographs of Figure 3 illustrate that groundwater levels within the District declined (from groundwater overdraft) from the late 1940s through the mid-1990s. Since the mid-1990s, groundwater levels have become stable and are showing signs of recovery. This period of recovery follows the drought of the early 1990s and the increased use of surface water (which allows groundwater levels to rebound) by the City of Sacramento and Sacramento Suburban Water District.

GROUNDWATER CONTAMINATION

Groundwater contamination can be naturally occurring or anthropogenic (originating from human activities), including both point source contamination and regional contamination. Within the District, naturally occurring contaminants of concern include both manganese and arsenic. Point source contamination is identified as single source plumes originating from a responsible party and can include fuel and solvent releases, which have been known to originate from gas stations or dry cleaners. Regional sources of contamination include applied fertilizers, salts, and leaky septic systems (nitrates and salt loading). According to the California State Water Resources Control Board GeoTracker website[2], several leaking underground storage tank (LUST) sites within the District have been mitigated, with only one open and active LUST site (900 Elkhorn Boulevard) identified within the District boundary. The GeoTracker website indicates multiple active remediation sites immediately to the south east of the District, within the former McClellan AFB property.

As mentioned above, the District is pumping groundwater with elevated concentrations of Cr 6, above the DDW MCL, from six wells along the southern and eastern portion of the District. A review of historic land use in the area of the District indicated that past industrial activities at the former McClellan AFB resulted in the release of hazardous substances that contaminated the underlying soil and groundwater at various locations. The release cumulatively contributes to an overall groundwater contamination plume containing volatile organic compounds (VOCs) and has been referred to as the McClellan AFB contaminate plume.

Chrome plating shops, among other industrial activities, were present on the former McClellan AFB, and have been documented to have contaminated underlying soil and groundwater with very high concentrations of Cr 6, nickel, and other constituents. As part of closure activities,

[2] http://geotracker.waterboards.ca.gov/

cleanup actions to remove hazardous substances from both the soil and groundwater were implemented to address identified contaminants of concern including trichloroethene (TCE), 1,4-dioxane, perchlorate, and total chromium. The McClellan AFB groundwater remediation projects discharged treated effluent water to Magpie Creek, west of the AFB. The McClellan Five-Year Review Report states that concentrations of Cr 6 exceeded the discharge standard of 10 µg/L occasionally and rose to 64 µg/L in 1999. Again, in 2001, concentrations exceeded the discharge standard resulting in a temporary shutdown of the groundwater treatment plant. Because of the McClellan AFB contaminate plume, the City of Sacramento established a “Well Exclusion Zone” immediately southeast of the District which prohibits the construction of new wells, as shown in Figure 4.

WATER QUALITY SAMPLING

In 2014, Wood Rodgers collected surface water samples from five sites, as shown in Figure 4. A sample was collected from an intermittent stream near the northern boundary of the former McClellan AFB (Site 1) that discharges into Dry Creek several miles downstream. Site 2a is a pond located near the McClellan AFB treated groundwater discharge location, and Site 2b is a stream that contains discharge from McClellan AFB and is a tributary into Magpie Creek. A surface water sample was collected from Magpie Creek at Site 3, and a surface water sample was collected from Dry Creek at Site 4. The samples were analyzed at California Laboratory Services (CLS), a California state-accredited laboratory, to determine current concentrations of Cr 6, arsenic, manganese, and nickel (constituents of concern identified to have been discharged from remediation activities on the former McClellan AFB).

All of the surface water samples had non-detectable concentrations of Cr 6, except for the sample collected in Magpie Creek adjacent to Lang Avenue (Site 3 Water Tower), where the concentration was reported to be 7.3 µg/L.

In 2014, Wood Rodgers collected groundwater samples from the District’s 16th Street single-completion monitoring well, the District’s Well 15 triple-completion monitoring well, River West Investments triple-completion monitoring well (RWI MW), and one private agricultural well located at Gibson Ranch County Park (Gibson South Well). The groundwater samples were delivered to CLS and analyzed for concentrations of Cr 6, arsenic, manganese, nickel, and perchlorate. The shallow monitoring well completions of the RWI monitoring well and the Well 15 monitoring well were also analyzed for 1,4-Dioxane.

The concentration of Cr 6 in the Well 15 shallow monitoring well (depth of 350 feet) was reported to be 9.8 µg/L, and was 7.8 µg/L in the shallow RWI monitoring well (depth of 373 feet). The data suggest that concentrations of Cr 6 are present in the shallow aquifer, but decrease with depth and increasing distance from the former McClellan AFB. Cr 6 was not detected at a depth of 580 feet in the northern portion of the District, near the ESP Area. A complete summary of water quality results is included in Table 2 below.

Table 2
Water Quality Sampling

	Site Name	Cr 6 µg/L	Arsenic µg/L	Manganese µg/L	Nickel µg/L	Perchlorate µg/L	1,4-Dioxane µg/L
Surface Water	Site 1 – 26I	ND	6.6	NA	ND	---	---
	Site 2a – Pond	ND	3.6	NA	14	---	---
	Site 2b – Stream	ND	8.4	NA	32	---	---
	Site 3 – Water Tower	7.3	4.4	NA	11	---	---
	Site 4 – Del Paso	ND	3.6	NA	ND	---	---
Groundwater	16th Street MW	ND	ND	ND	ND	ND	---
	RWI MW-373	7.8	4.8	ND	ND	ND	ND
	RWI MW-470	3.9	3.5	ND	ND	ND	---
	RWI MW-582	ND	2.8	ND	ND	ND	---
	Well 15 MW-350	9.8	3.2	ND	ND	ND	ND
	Well 15 MW-440	7.4	2.9	ND	ND	ND	---
	Well 15 MW-695	ND	2.5	18	ND	ND	---
	Gibson South Well	ND	ND	ND	ND	ND	---

ND - Not Detected above detection limit
--- Not Sampled

GROUNDWATER QUALITY

Groundwater quality data from the District, the DDW water quality database (formerly the California Department of Public Health), data from Wood Rodgers 2014 water quality sampling, City of Sacramento, Sacramento County, California American Water Company (CalAm), and SSWD were analyzed to evaluate trends in manganese, arsenic, and Cr 6.

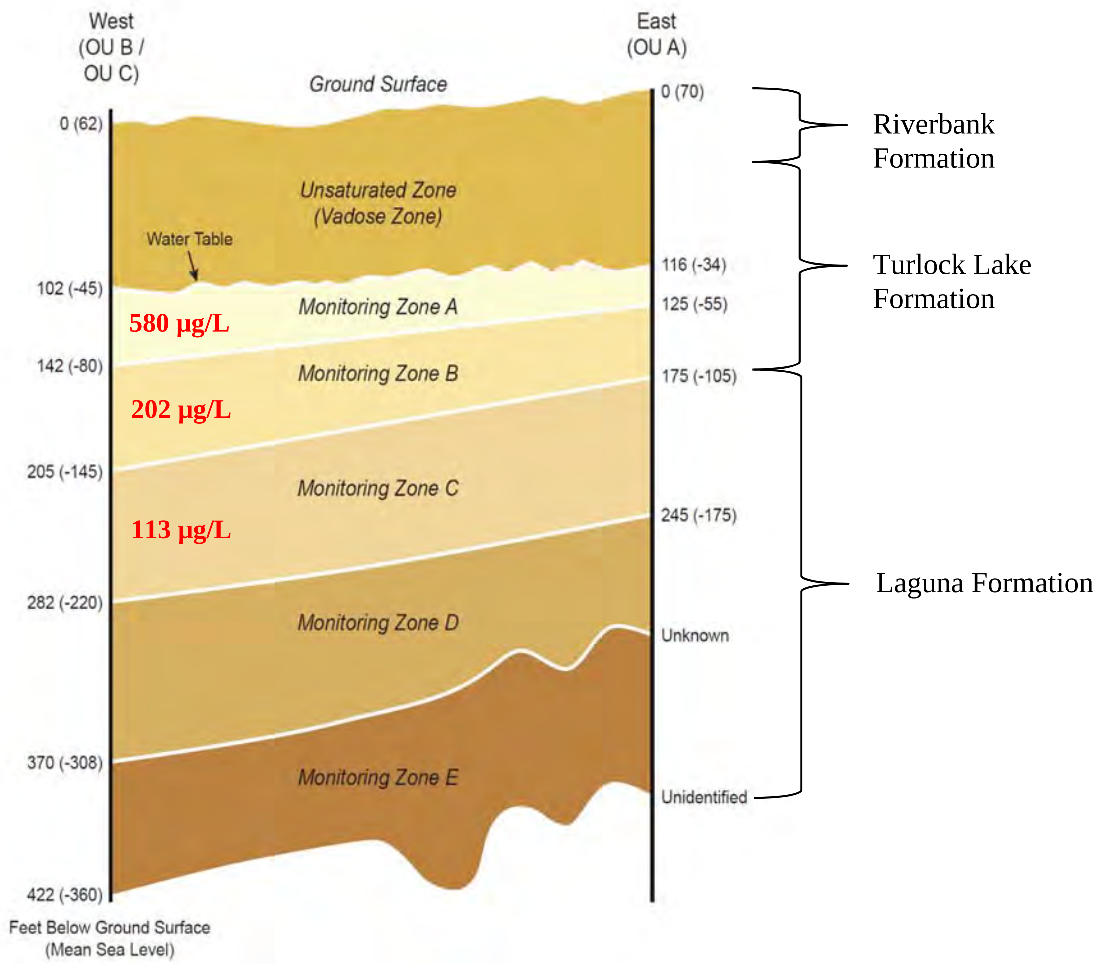
As shown in Figure 4, concentrations of Cr 6 have exceeded the MCL of 10 µg/L in six of the District's wells. When plotted geographically, it is apparent that the impacted wells are located near the southern and eastern edge of the District.

To understand the distribution of elevated concentrations of Cr 6, data from District wells, surrounding water purveyors, and the former McClellan AFB were plotted spatially. Figure 5 depicts the maximum concentrations of Cr 6 with contours of equal concentration. All wells within the 10 µg/L contour have maximum reported concentrations of Cr 6 that exceed the MCL. Additionally, wells located between the 8 µg/L and 10 µg/L contours are likely within the action level for water treatment. The highest concentrations of Cr 6 were reported in on-site monitoring wells at the former McClellan AFB, with values as high as 580 µg/L. Figure 5 illustrates that concentrations of Cr 6 decrease with increasing distance from the former McClellan AFB, with lower concentrations likely representative of background Cr 6 levels. This suggests that a likely source of elevated Cr 6 in District wells could be related to past activities at the former McClellan AFB. The geometry of the 10 µg/L contour suggests that Cr 6 has migrated laterally in a northeast-southwest pattern, likely a result of the high permeability of the underlying geologic formations in that area.

Due to the District being located in an area that has a number of sensitive groundwater quality concerns, hydrogeologic cross-sections depicting the underlying geologic formations and associated water quality trends were developed to illustrate the spatial and vertical extent of groundwater contamination in the subsurface. As shown in Figure 6, cross-section A-A' depicts the geologic formations from west to east through the central portion of the District. Cross-section B-B' was chosen to depict the geologic formations from south to north through the eastern half of the District (including the ESP area). Well depth, screen interval(s), and associated water quality data used to prepare the cross-sections are depicted graphically on each cross-section. As shown on Figures 7A through 9B, the concentrations of the selected water quality constituents (Cr 6, arsenic, and manganese) are plotted next to the corresponding screen sections of each well. The concentrations are graphically depicted by color, where solid colors represent constituents that exceed its respective MCL, and gradational to no color where each constituent is below its respective MCL.

HEXAVALENT CHROMIUM (CR 6)

The six District wells that have had reported concentrations of Cr 6 above the MCL of 10 µg/L are north and north west of the former McClellan AFB. As shown in Figures 7A and 7B, the highest concentrations of Cr 6 are in the vicinity of the former AFB. Concentrations of Cr 6 have been measured as high as 580 µg/L (CH2M Hill, 2007) in Monitoring Zone A (as shown below), decreasing in concentration with depth. Concentrations above the MCL of 10 µg/L have been measured in the Riverbank, Turlock Lake, and Laguna Formations within the District. The only aquifer where elevated concentrations of Cr 6 have not been reported is the Mehrten Formation.



Modified is exhibit from CH2MHill, 2007(Cr 6 concentration in red).

As shown in Figure 7A, concentrations of Cr 6 attenuate to the west and become acceptable, but remain close to the MCL immediately west of the District boundary. Elevated Cr 6 concentrations extend past the eastern extent of the A-A' cross-section (as shown on Figure 5). Figure 7B indicates elevated concentrations of Cr 6 in the vicinity of the former McClellan AFB in all of the aquifers above the Mehrten Formation, attenuating to the north and south, and are below the MCL north of Elverta Road and south of Interstate 80, respectively.

ARSENIC

As shown in Figure 8A, arsenic concentrations generally increase from east to west in the Riverbank, Turlock Lake, and Mehrten Formations. Concentrations of arsenic in the Laguna Formation are below 5 µg/L throughout most of the District, but exceed the MCL of 10 µg/L west of the District boundary. As shown in Figure 8B, concentrations of arsenic are generally acceptable with regard to the MCL, but are slightly elevated (approximately 5 µg/L) in the northern portion of the District.

MANGANESE

As shown in Figures 9A and 9B, manganese concentrations exceed the MCL of 50 µg/L in the Mehrten Formation throughout the District below a depth of approximately 500 feet. Manganese concentrations in the Laguna Formation are acceptable (below 10 µg/L) throughout the District; however, manganese concentrations increase above the MCL in the Natomas area to the west, as shown in Figure 9A. In the Riverbank and Laguna Formations, manganese concentrations above the MCL become problematic along the western extent of the District.

METHANE

Methane data is sparse through the District. CalAm Water Company has a well east of the District that is completed into the Mehrten Formation that has unacceptable concentrations of methane. Methane may be problematic for wells constructed in the Mehrten; however, the Well 15 monitoring well deep completion (695 feet) was below the reporting limit of 0.010 milligrams per liter (mg/L).

OTHER WATER USERS

In addition to the District's groundwater use, groundwater is pumped for residential (domestic) use, agricultural, and industrial uses. Wood Rodgers obtained from DWR, and reviewed for construction details and location, 717 Well Completion Reports within the District boundary. DWR requires Well Completion Reports for all wells constructed, modified, or destroyed. Well Completion Reports are not always filed with DWR, even though they are required by law, so the number of reports likely under-represent the actual total number of wells within the District. The well types were categorized below using Well Completion Reports that have been filed:

- 505 domestic wells
- 60 irrigation wells
- 71 have unknown or other uses
- 50 monitoring wells
- 2 stock-watering wells
- 1 fire or frost protection well
- 2 industrial wells
- 26 other wells

The total groundwater use from existing wells is unknown. As shown on Figure 6, the locations of the existing domestic and agricultural wells have been plotted (where location information was available) to identify areas that may experience reduced impacts from new municipal well sites. In addition to siting new municipal wells for the District, existing contamination may impact private groundwater users. There are many domestic wells identified in the areas where Cr 6 values exceed the MCL. However, private well users are not required to test groundwater for compliance with DDW primary and secondary drinking water standards.

NEW MUNICIPAL WELL SITES

In response to changes in water quality regulations and future growth in the District and within the ESP area, new municipal wells will be required to supply additional/replacement demand until imported surface water becomes available to the District. The ESP is located along the northeast portion of the District, adjacent to the county line. Currently, the ESP area consists of rural property and agriculture land. Agricultural wells and domestic wells provide irrigation water and potable water to houses. Existing groundwater contamination within the District has restricted areas where new wells can be constructed without the need for treatment. As discussed above, elevated concentrations of Cr 6, arsenic, manganese are the main constituents restricting the location of new wells. It is the District's desire to construct new wells that do not require treatment within growth areas (i.e. ESP) to supply future demand.

The objective for future production wells is to construct wells that produce water that is not only acceptable by current regulations, but also for potential stricter regulations in the future. The most desirable well is one that does not require wellhead treatment. Prior to municipal well construction, site-specific and depth-specific water quality data should be collected through the construction of monitoring wells to verify if DDW regulatory drinking water standards can be met without the need for treatment. Additionally, new wells should be constructed with sufficient annular seals to isolate shallow aquifers from potential surface contamination as well as to minimize impact to existing private wells.

PUMPING IMPACTS ON PRIVATE EXISTING WELLS

Operations of new municipal supply wells have the potential to affect water levels in existing private wells. Approximate locations of existing wells are shown on Figure 9, including domestic, agricultural, and monitoring wells in the vicinity of the three potential municipal well sites. DWR Well Completion Reports were unavailable for this area because it was not within the District's DWR record request; however, domestic wells constructed within the study area are normally 250 feet to 400 feet deep. Our analysis suggests that wells beyond a distance of 1,000 feet from the potential new wells should not encounter more than five feet of decline as a result of pumping interference. Impacts of five feet or less from the operation of the new wells are generally deemed less than significant because it should not affect the normal operation of a well pump. New wells constructed within a distance of 1,000 feet from existing domestic wells may have the potential to induce pumping impacts greater than five feet, which may then require mitigation measures. To minimize impacts to existing wells, new wells should be constructed with deeper annular seals to seal off the shallower formations, as well as maintain a minimum of 1,000-foot distance from existing wells where possible.

Within the ESP area, Wood Rodgers selected three locations that have the potential to be developed as municipal well sites. A preliminary site visit to each of the selected sites was conducted to identify key features, which require regulatory offsets. The sites identified as the Northborough Tank Site, Sports Park Site, and School Site, are shown in Figure 9. The North Borough site has one agricultural well that is not supplied with power (and is not currently being used) within 1,000 feet. The Sports Park well site does not have wells within 1,000 feet. The School site has two domestic wells within 1,000 feet. The operation of a new well at the School site has the potential to induce minor impacts to neighboring domestic wells. These impacts have the potential to affect the use and/or operation of these wells. Impacts associated with deeper groundwater levels include increased electrical costs due to increased pumping depths, lowering the pump settings, and the possible loss of useful life of the domestic well. These wells may require mitigation if impacts are experienced. Mitigation activities required if the neighboring wells are affected may include compensation for increased energy cost as a result of longer pumping cycles, lowering of pumping equipment (if feasible), or well replacement. It may be warranted in this case to select a location further away from these existing wells to avoid any potential issues related to pumping interference.

REPLACEMENT WELLS

In addition to the new well site locations, several existing District well sites have adequate room to accommodate replacement wells. At the Well 15 site, a new well could be constructed in the Mehrten Formation with provisions to treat arsenic, manganese and possibly methane to acceptable levels, with the plan to blend with the existing well water to reduce Cr 6 concentrations. Additional land would be needed for a reservoir that would be used for the two wells to discharge into for blending. Regulatory offset requirements would need to be evaluated for the second well. At the Well 2A site, there is sufficient room to construct a new well, but would require additional assessment to determine regulatory offset compliance. Well 10 has adequate room for a new well; however, Cr 6 and elevated concentrations of both arsenic and manganese would make this option not feasible.

Well 12 could be replaced and currently has acceptable water quality. A new well at the Well 12 site may have a higher capacity than the existing well; however, a higher capacity well may mobilize Cr 6 towards the new well.

CONCLUSIONS

1. Contamination from the former McClellan AFB appears to be responsible for elevated concentrations of Cr 6 throughout the District.

2. Wells in the very distal portion of the District may currently not require treatment; however, Cr 6 may still be mobilizing away from the McClellan AFB and may impact these wells in the future.

3. Arsenic concentrations increase to the west within the District and there are portions of the shallow aquifer with high concentrations of arsenic.

4. Manganese concentrations increase to the west and with depth across the District within the Mehrten Formation.

5. Methane is often associated with manganese production in this area within the Mehrten Formation.

RECOMMENDATIONS

1. Construct new District wells in the northern portion of the District (ESP Area), as shown in Figure 9.

2. Consider drilling and completing new District wells in both the intermediate (Laguna Formation) and the deep (Mehrten Formation) aquifers to allow for blending, increased capacity, and to reduce impacts to existing wells. New wells may require manganese treatment.

3. Assess District wells that are near or over the MCL for Cr 6 to determine if they can be modified to improve water quality (except for Wells 8A and 11 which will likely be destroyed).

ACKNOWLEDGEMENTS

Wood Rodgers, Inc. wishes to acknowledge and thank the following organizations for providing information and data that was used to prepare this report:

California American Water Company

City of Sacramento

Sacramento County Water Agency

Sacramento Groundwater Authority

Sacramento Suburban Water District

River West Investments

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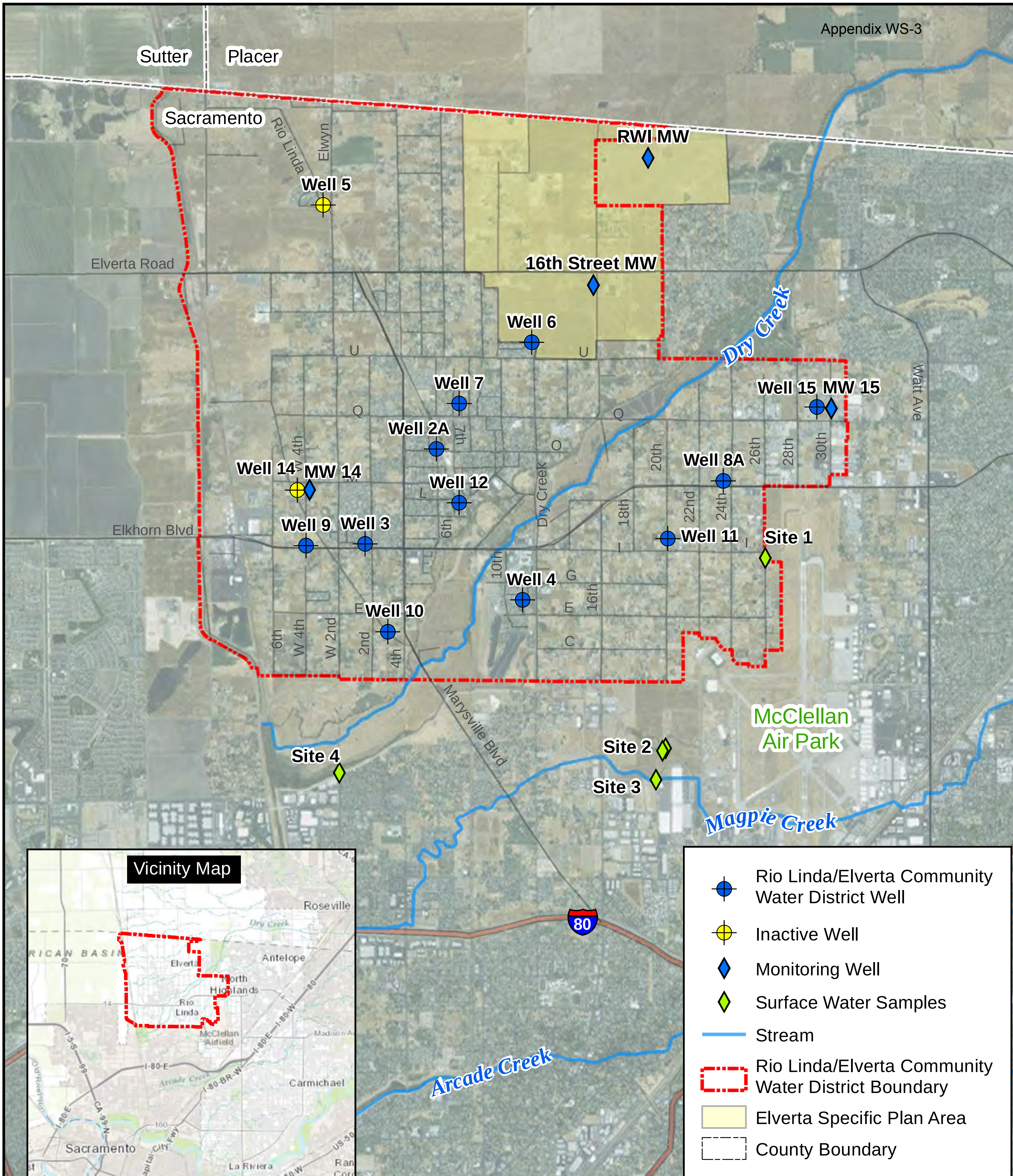
Sacramento County Water Agency, 1969 - 2007, Groundwater Elevation Contour Maps

Sacramento County Water Agency, 2014, Striker Well Sampling

Wood Rodgers, 2010, *City of Sacramento Water Master Plan – Hydrogeologic Report*, Prepared for the City of Sacramento



WELL LOCATION MAP

RIO LINDA/ELVERTA COMMUNITY
WATER DISTRICT
RIO LINDA, CALIFORNIA
DECEMBER, 2014

NORTH

0 0.5 1
MILES

WOOD RODGERS

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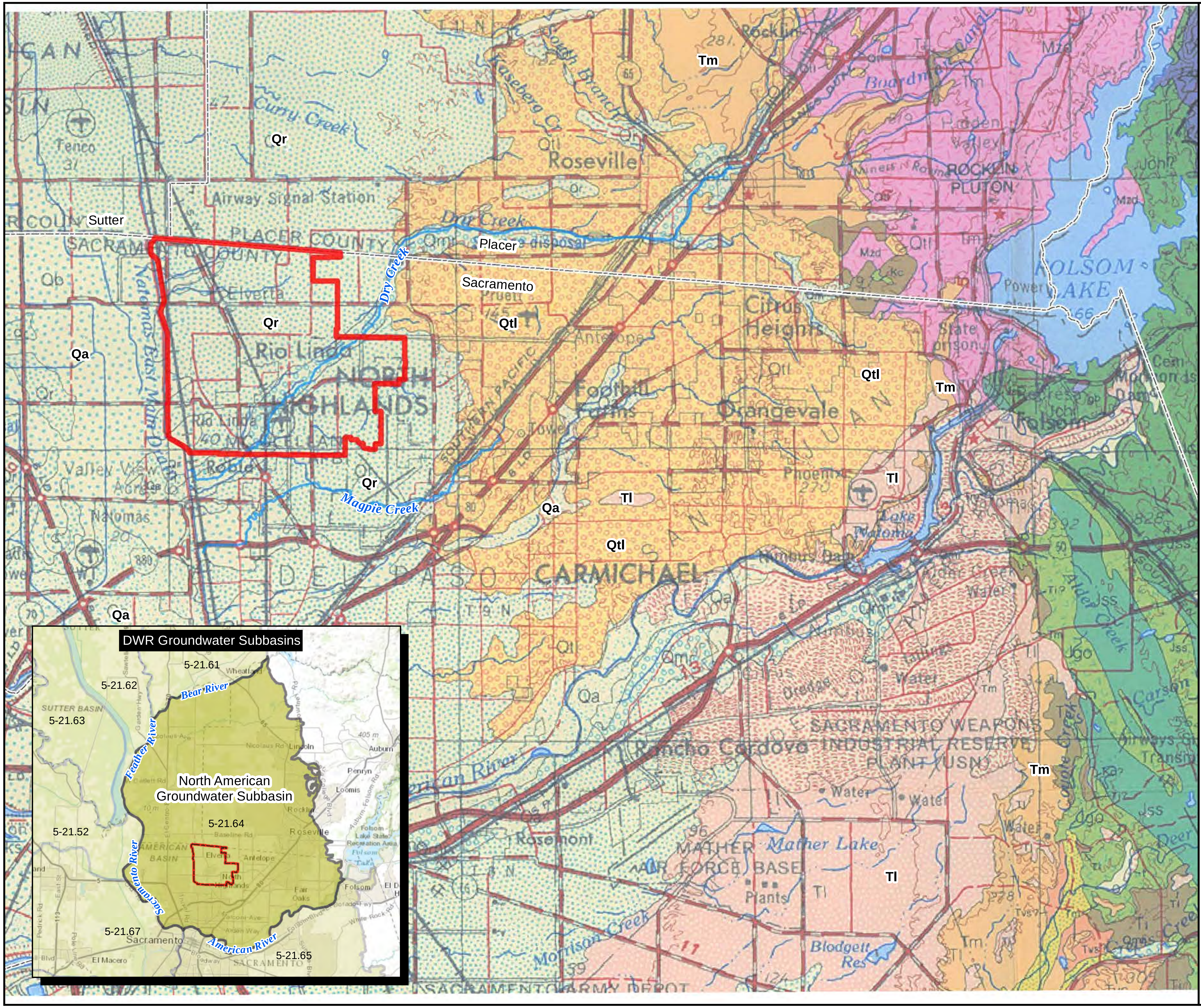
FIGURE 1

Appendix WS-3

GEOLOGIC MAP WITH GROUNDWATER BASINS

RIO LINDA/ELVERTA COMMUNITY WATER DISTRICT
RIO LINDA, CALIFORNIA
DECEMBER, 2014



NORTH

0 1 2
MILES

Rio Linda/Elverta Community Water District Boundary
County Boundary
DWR Groundwater Subbasin

Geologic Units

QUATERNARY

Qa	Quaternary Alluvium
Qr	Riverbank Formation
Qtl	Turlock Lake Formation

TERTIARY

Tl	Laguna Formation
Tm	Tm - Mehrten Formation

SOURCES:

D. L. Wagner, C.W. Jennings, T.L. Bedrossian, and E.J. Bortugno, 1981, Geologic Map of the Sacramento Quadrangle, California, 1:250,000, California Division of Mines and Geology, Regional Geologic Map 1A, original scale 1:250,000.

WOOD RODGERS

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FIGURE 2

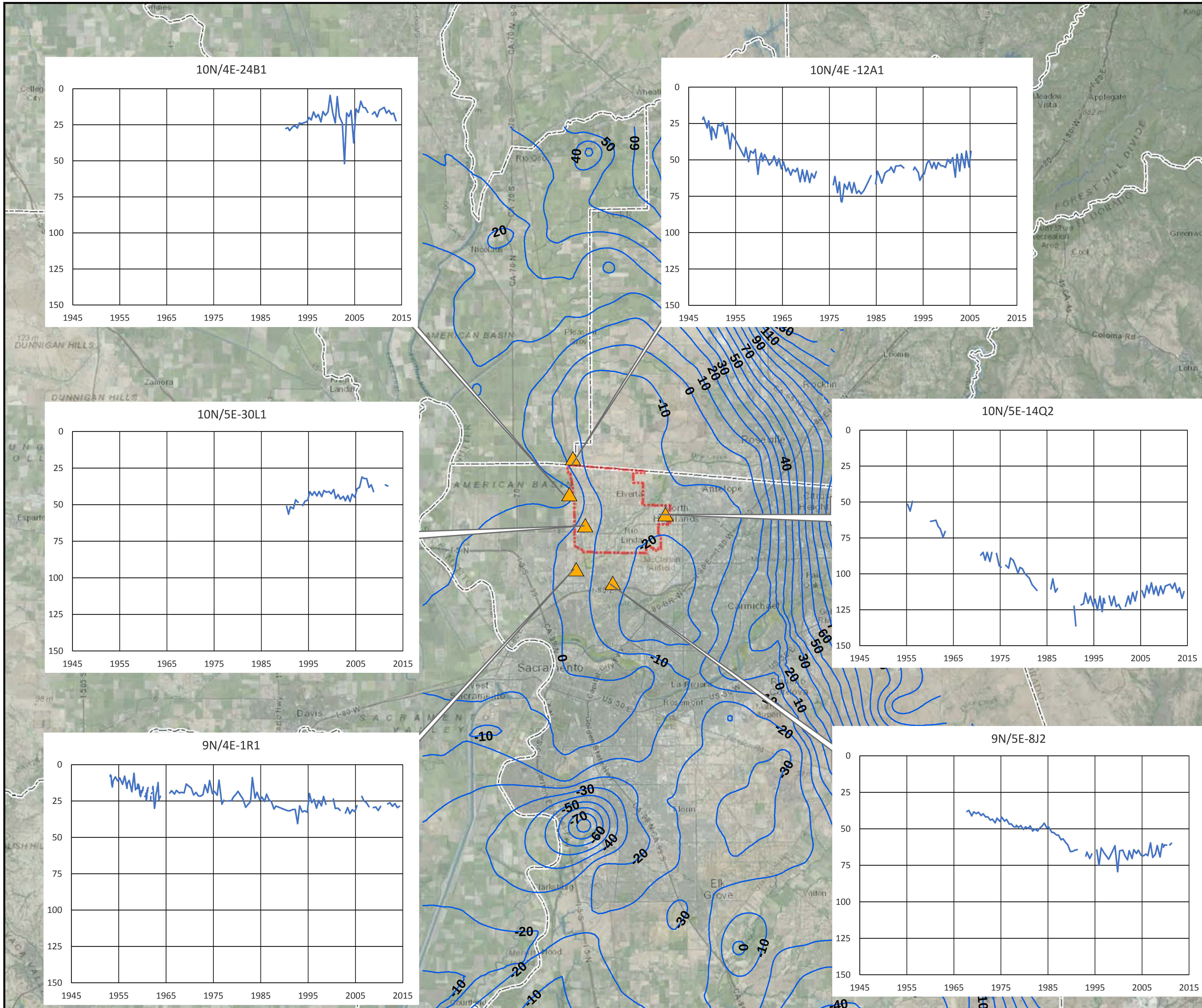
Appendix WS-3

DEPARTMENT OF WATER RESOURCES MONITORED WELL HYDROGRAPH MAP

RIO LINDA/ELVERTA COMMUNITY WATER DISTRICT

RIO LINDA, CALIFORNIA

DECEMBER, 2014



NORTH

0 2.5 5

MILES

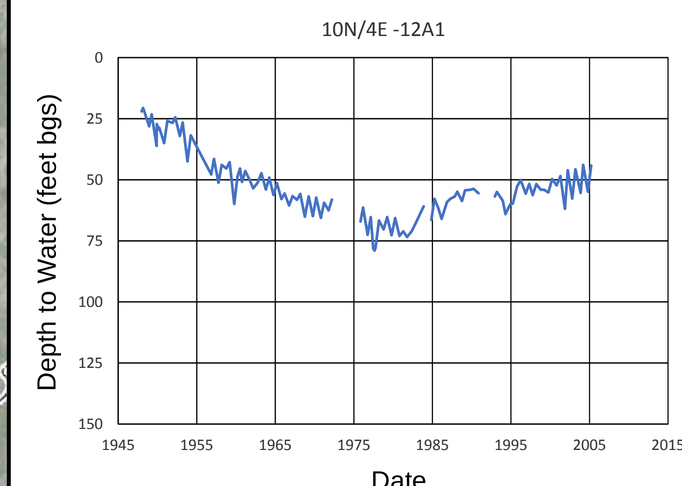
Department of Water Resources Monitored Well

Spring 2012 Water Surface Elevation Contour (Feet, MSL)

Rio Linda/Elverta Community Water District Boundary

County Boundary

State Well Number



Notes: Groundwater Surface Elevation Contours prepared by HDR for SGA as sourced from DWR CASGEM website data.

WOOD RODGERS

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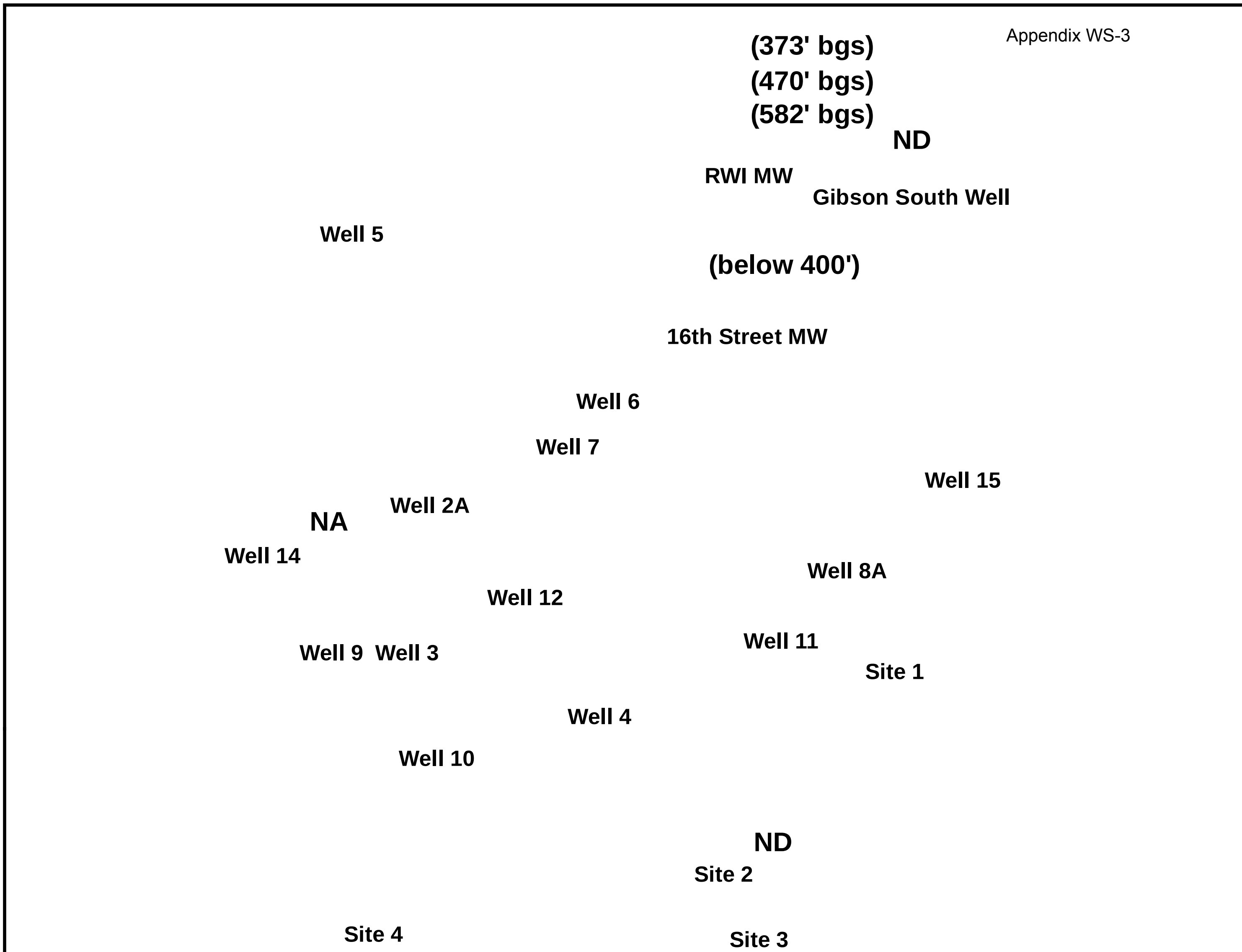
FIGURE 3

Appendix WS-3



District Well w/ Hexavalent Chromium Concentration (µg/L) (Red Color Denotes Exceedance of MCL)

Monitoring Well

Agricultural Well

Surface Water Samples

Stream

Rio Linda/Elverta Community Water District Boundary

Elverta Specific Plan Area

County Boundary

City of Sacramento Well Exclusion Zone

ND - Non Detect
NA - Not Analyzed

WELLS AND SURFACE WATER
WITH HEXAVALENT CHROMIUM
CONCENTRATIONS

RIO LINDA/ELVERTA COMMUNITY
WATER DISTRICT
RIO LINDA, CALIFORNIA
DECEMBER, 2014

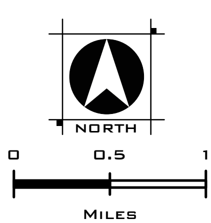


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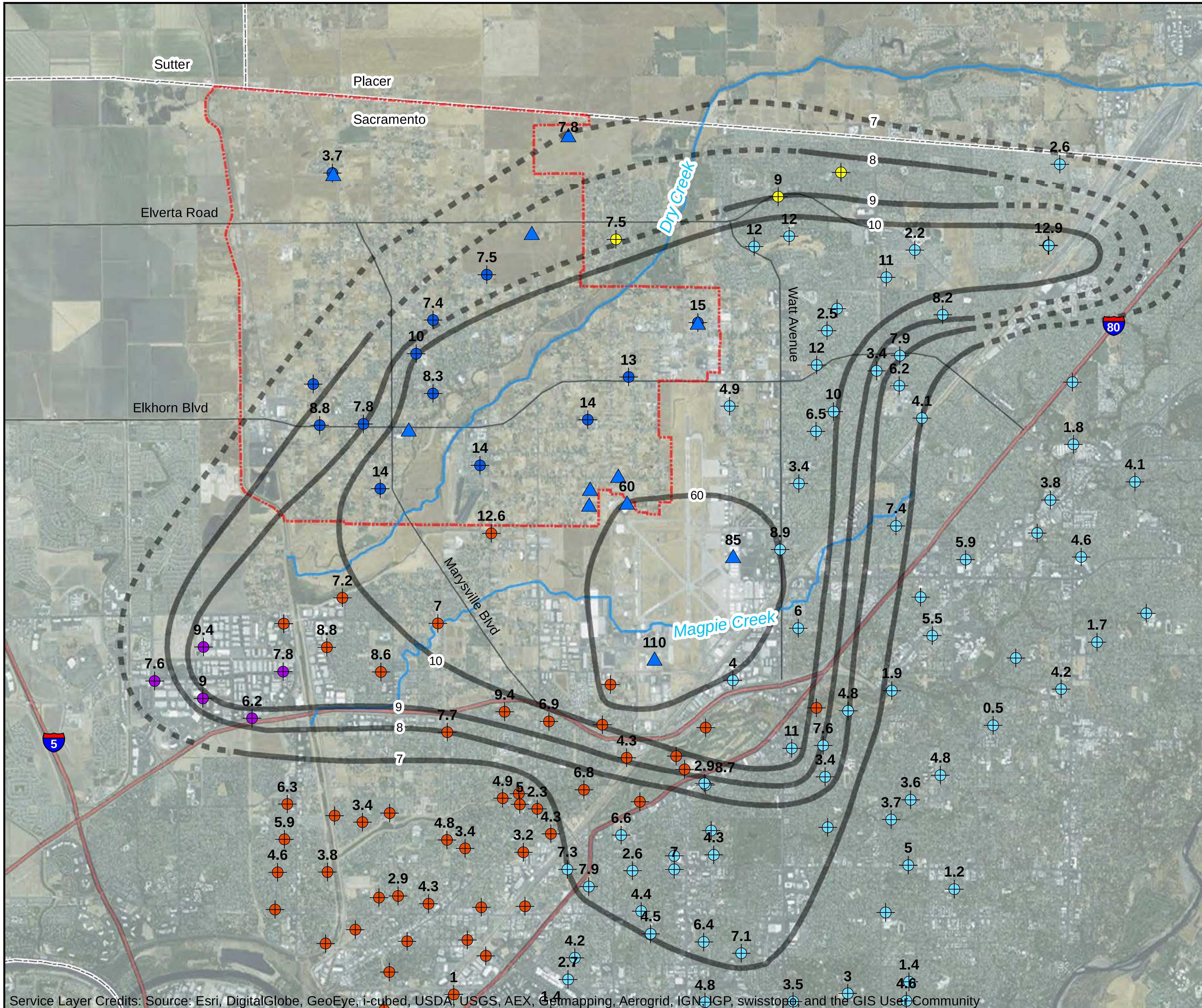
FIGURE 4

HEXAVALENT CHROMIUM CONTOUR MAP

RIO LINDA/ELVERTA COMMUNITY WATER DISTRICT

RIO LINDA, CALIFORNIA

DECEMBER, 2014



- Rio Linda/Elverta Community Water District Boundary
- Rio Linda/Elverta Community Water District - Production Well
- Sacramento Suburban Water District - Production Well
- California American Water Company - Production Well
- Sacramento County Water Agency - Production Well
- City of Sacramento - Production Well
- Dedicated Monitoring Well
- Contour Depicting Approximate Concentrations of Hexavalent Chromium (µg/L)
- Contour Inferred Where Dashed
- County Boundary
- 13 Hexavalent Chromium Concentration (µg/L)

Note: Hexavalent Chromium data obtained from CDPH Water Quality Database, SSWD, and SWRCB.

WOOD RODGERS

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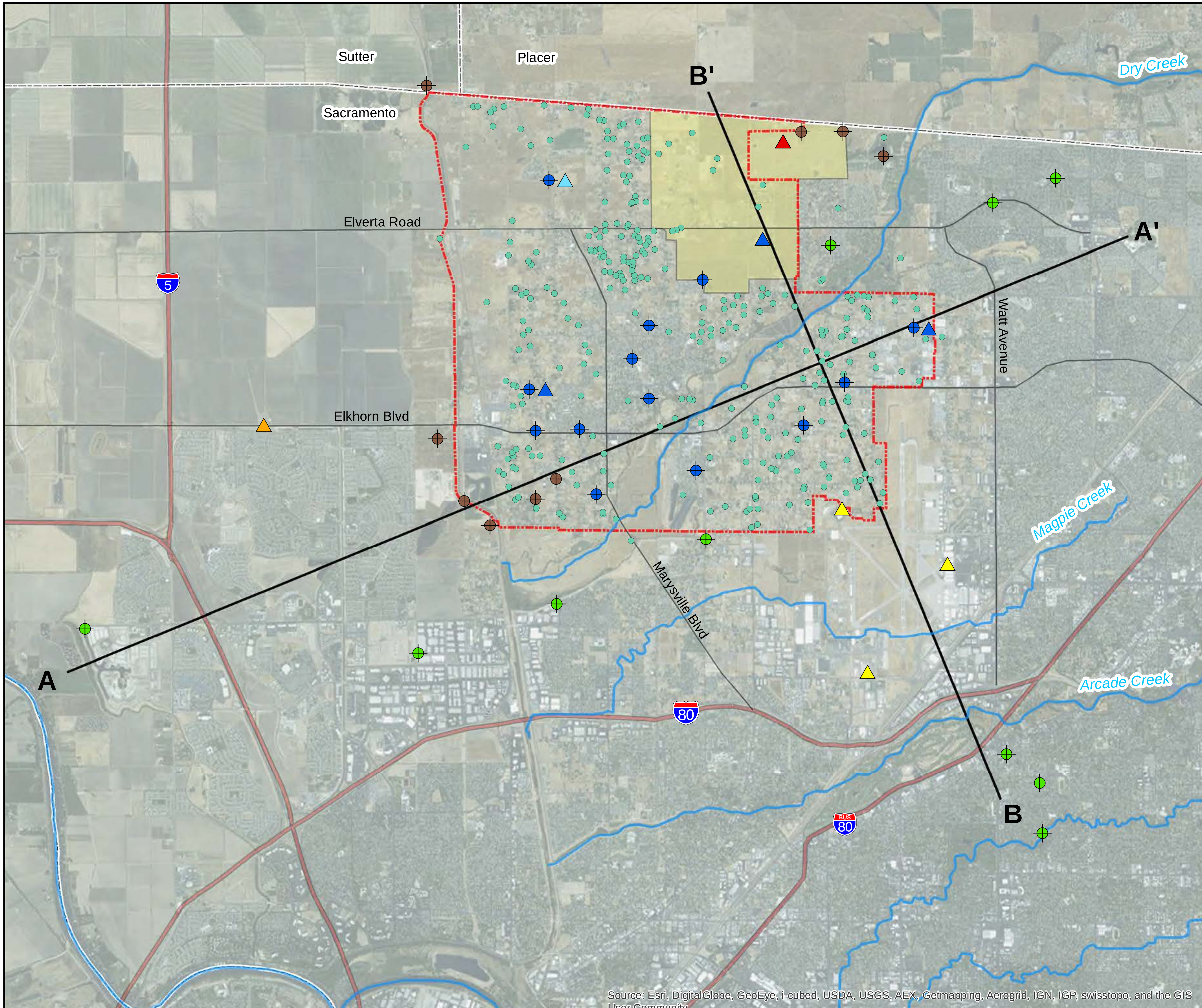
FIGURE 5

CROSS SECTION LOCATION MAP

RIO LINDA/ELVERTA COMMUNITY WATER DISTRICT
RIO LINDA, CALIFORNIA
DECEMBER, 2014



NORTH

0 0.5 1
MILES

- Rio Linda/Elverta Community Water District Boundary
- Elverta Specific Plan Area
- Cross Section Line

Production Wells

- Rio Linda/Elverta Community Water District
- Other Agency Wells

Monitoring Wells

- Rio Linda/Elverta Community Water District
- Sacramento Groundwater Authority
- River West Investments
- McClellan Air Force Base
- Department of Water Resources

Other Wells

- Irrigation Well
- Domestic Well

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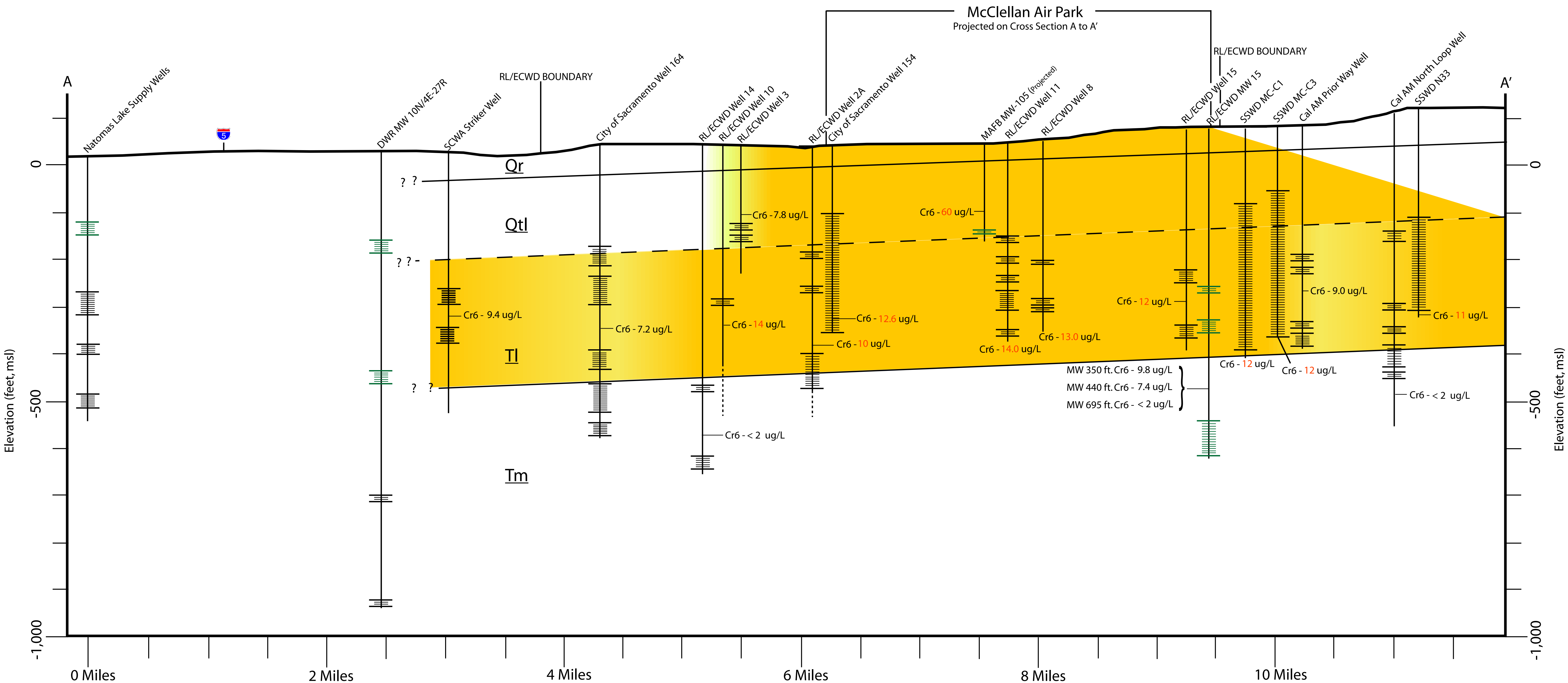
Rio Linda/Elverta Community Water District
Geologic Cross-Section with Hexavalent Chromium Distribution
A to A'



Map Units

Qr - Riverbank Formation
Qtl - Turlock Lake Formation
Tl - Laguna Formation
Tm - Mehrten Formation
Hexavalent Chromium Concentrations < 5 ug/L
Hexavalent Chromium Concentrations 5 - 10 ug/L
Hexavalent Chromium Concentrations > 10 ug/L

Map Legend

Well Screens - Composite Well Data
Well Screen - Depth Specific Well Data
Open Borehole
? Area with Insufficient Data

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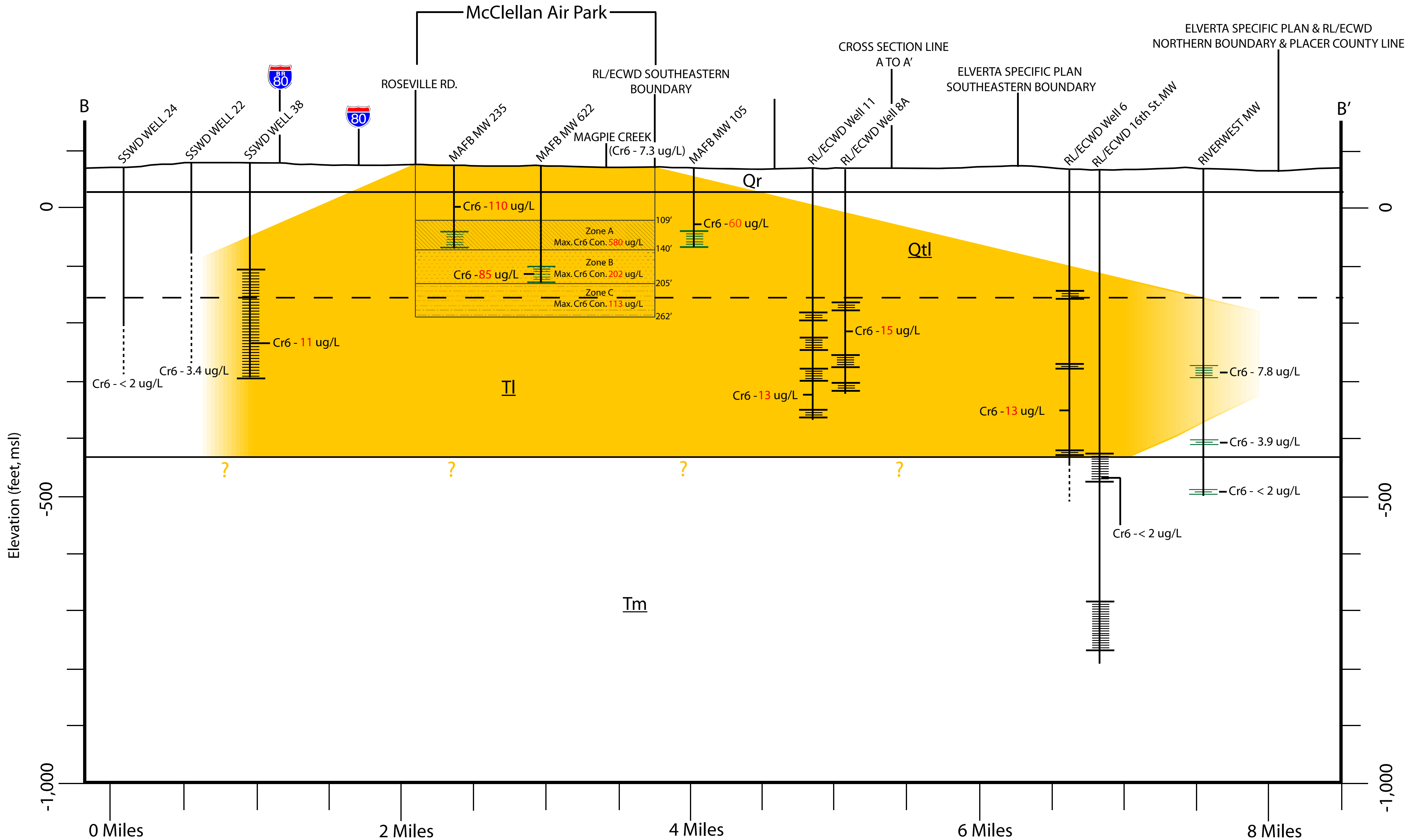
FIGURE 7A

Rio Linda/Elverta Community Water District
Geologic Cross-Section with Hexavalent Chromium Distribution
B to B′



McClellan Air Park Monitoring Zones

- McClellan Air Park Monitoring Zone A
- McClellan Air Park Monitoring Zone B
- McClellan Air Park Monitoring Zone C

Map Units

- Qr - Riverbank Formation
- Qtl - Turlock Lake Formation
- Tl - Laguna Formation
- Tm - Mehrten Formation
- Hexavalent Chromium Concentrations < 5 ug/L
- Hexavalent Chromium Concentrations 5 - 10 ug/L
- Hexavalent Chromium Concentrations > 10 ug/L

Map Legend

- Well Screens - Composite Well Data
- Well Screen - Depth Specific Well Data
- Open Borehole
- ? Area with Insufficient Data

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FIGURE 7B

Rio Linda/Elverta Community Water District
Geologic Cross-Section with Arsenic Distribution
A to A’

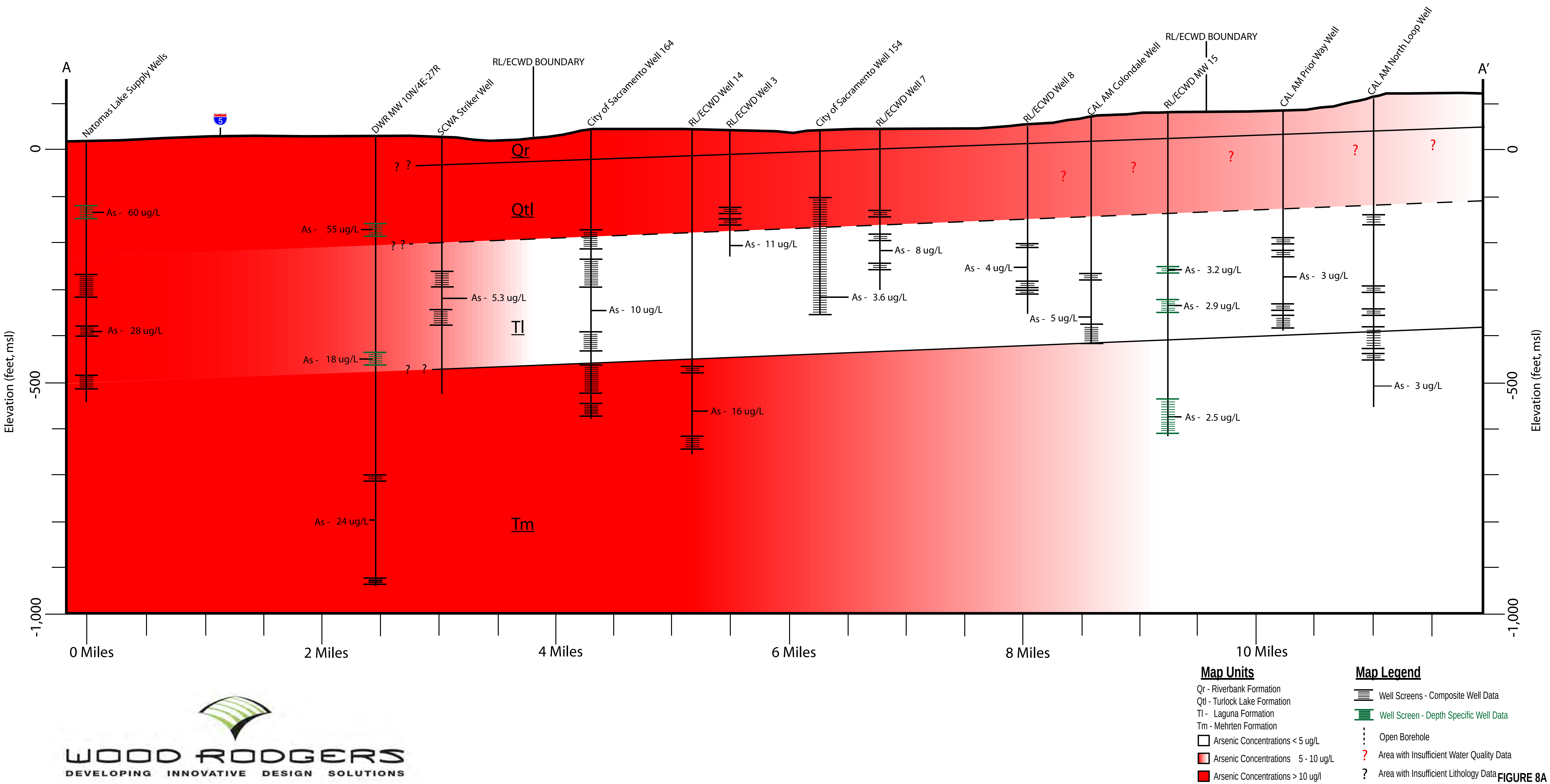

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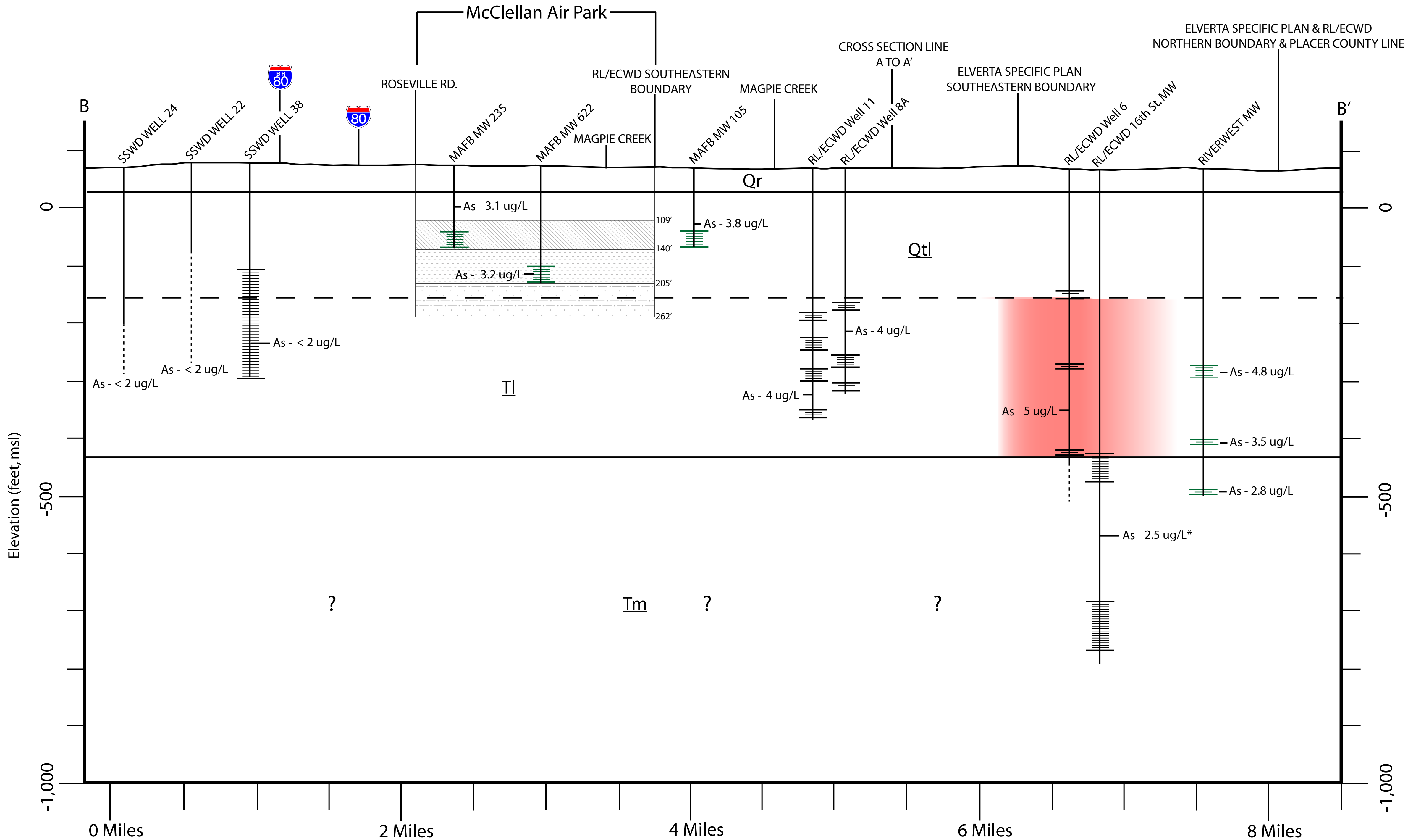
FIGURE 8A

Rio Linda/Elverta Community Water District
Geologic Cross-Section with Arsenic Distribution
B to B’



McClellan Air Park Monitoring Zones

- McClellan Air Park Monitoring Zone A
- McClellan Air Park Monitoring Zone B
- McClellan Air Park Monitoring Zone C

Map Units

Qr - Riverbank Formation
Qtl - Turlock Lake Formation
Tl - Laguna Formation
Tm - Mehrten Formation

- Arsenic Concentrations < 5 ug/L
- Arsenic Concentrations 5 - 10 ug/L
- Arsenic Concentrations > 10 ug/L

Map Legend

- Well Screens - Composite Well Data
- Well Screen - Depth Specific Well Data
- Open Borehole
- ? Area with Insufficient Data
- * Questionable Data

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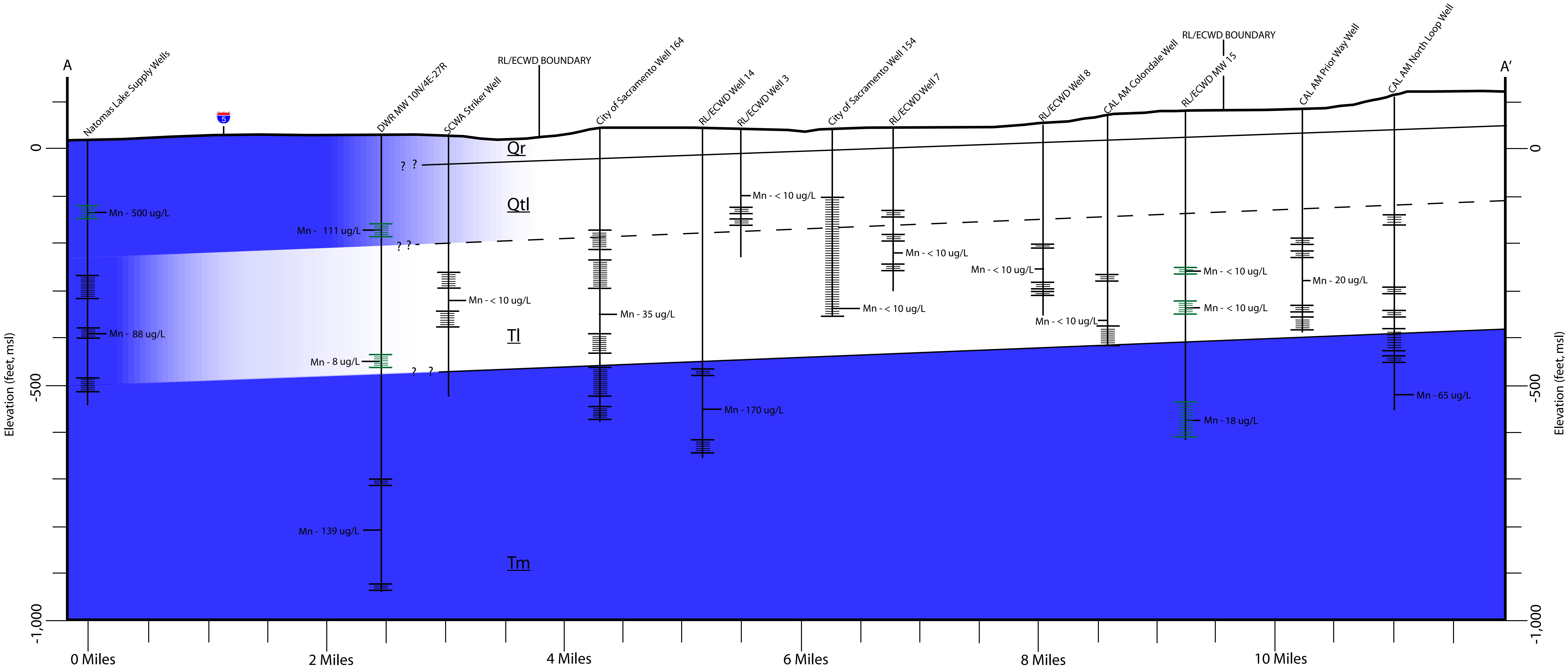
FIGURE 8B

Rio Linda/Elverta Community Water District
Geologic Cross-Section with Manganese Distribution
A to A'



Map Units

Qr - Riverbank Formation
Qtl - Turlock Lake Formation
Tl - Laguna Formation
Tm - Mehrten Formation
Manganese Concentrations < 10 ug/L
Manganese Concentrations 10 - 50 ug/L
Manganese Concentrations > 50 ug/L

Map Legend

Well Screens - Composite Well Data
Well Screen - Depth Specific Well Data
Open Borehole
? Area with Insufficient Data

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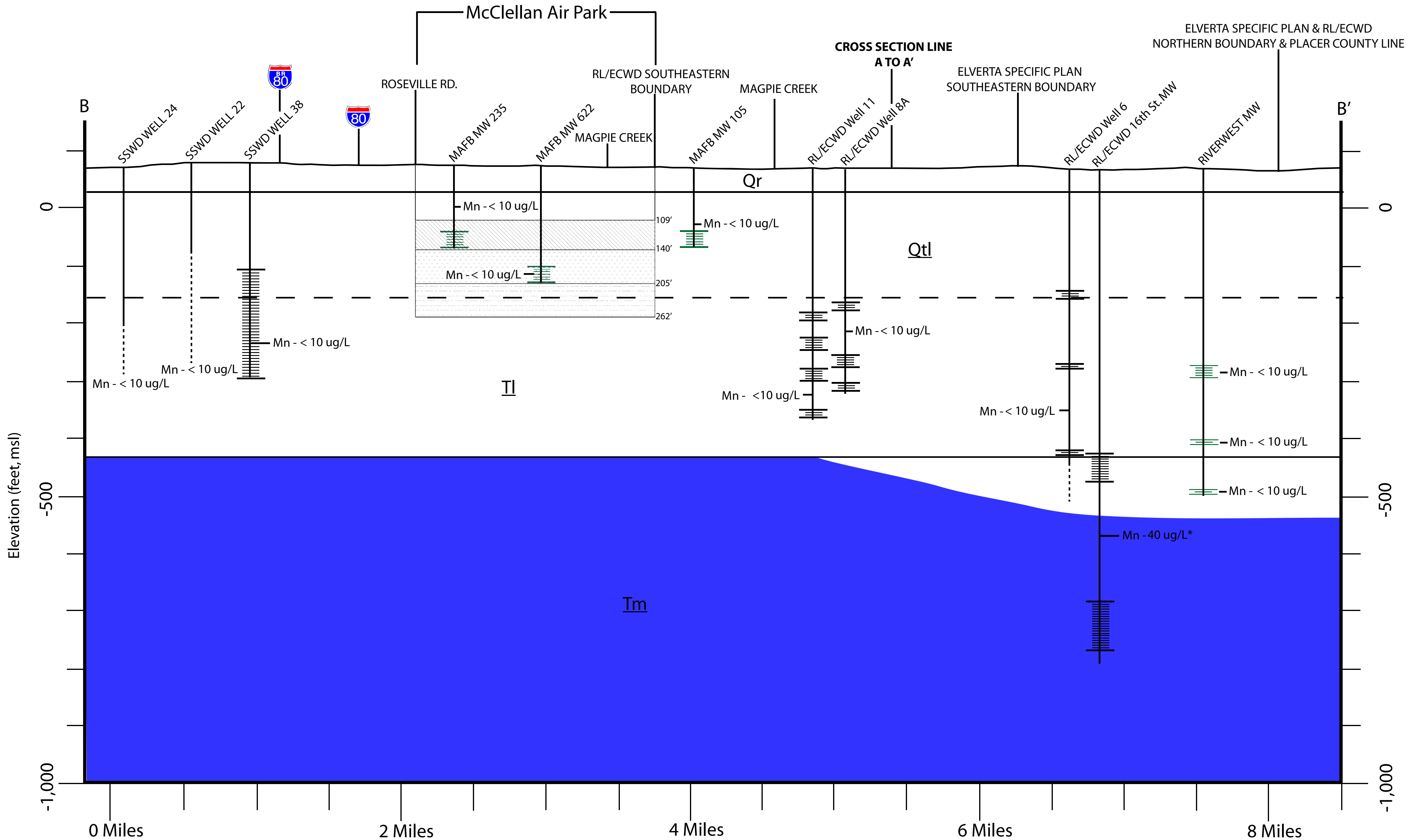
FIGURE 9A

Rio Linda/Elverta Community Water District
Geologic Cross-Section with Manganese Distribution
B to B'



McClellan Air Park Monitoring Zones

- McClellan Air Park Monitoring Zone A
- McClellan Air Park Monitoring Zone B
- McClellan Air Park Monitoring Zone C

Map Units

- Qr - Riverbank Formation
- Qtl - Turlock Lake Formation
- Tl - Laguna Formation
- Tm - Mehrten Formation
- Manganese Concentrations < 10 ug/L
- Manganese Concentrations 10 - 50 ug/L
- Manganese Concentrations > 50 ug/L

Map Legend

- Well Screens - Composite Well Data
- Well Screen - Depth Specific Well Data
- Open Borehole
- ? Area with Insufficient Data
- * Questionable Data

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FIGURE 9B

Appendix WS-3

POTENTIAL MUNICIPAL WELL SITES
RIO LINDA/ELVERTA COMMUNITY WATER DISTRICT
RIO LINDA, CALIFORNIA
DECEMBER, 2014

NORTH

0 500 1,000
FEET

- Potential Municipal Well Site
- Agricultural Well
- Domestic Well
- Domestic Production Well
- Monitoring Well
- Elverta Specific Plan
- Rio Linda/Elverta Community Water District Boundary
- County Boundary
- 1000-Foot Offset from Well Site

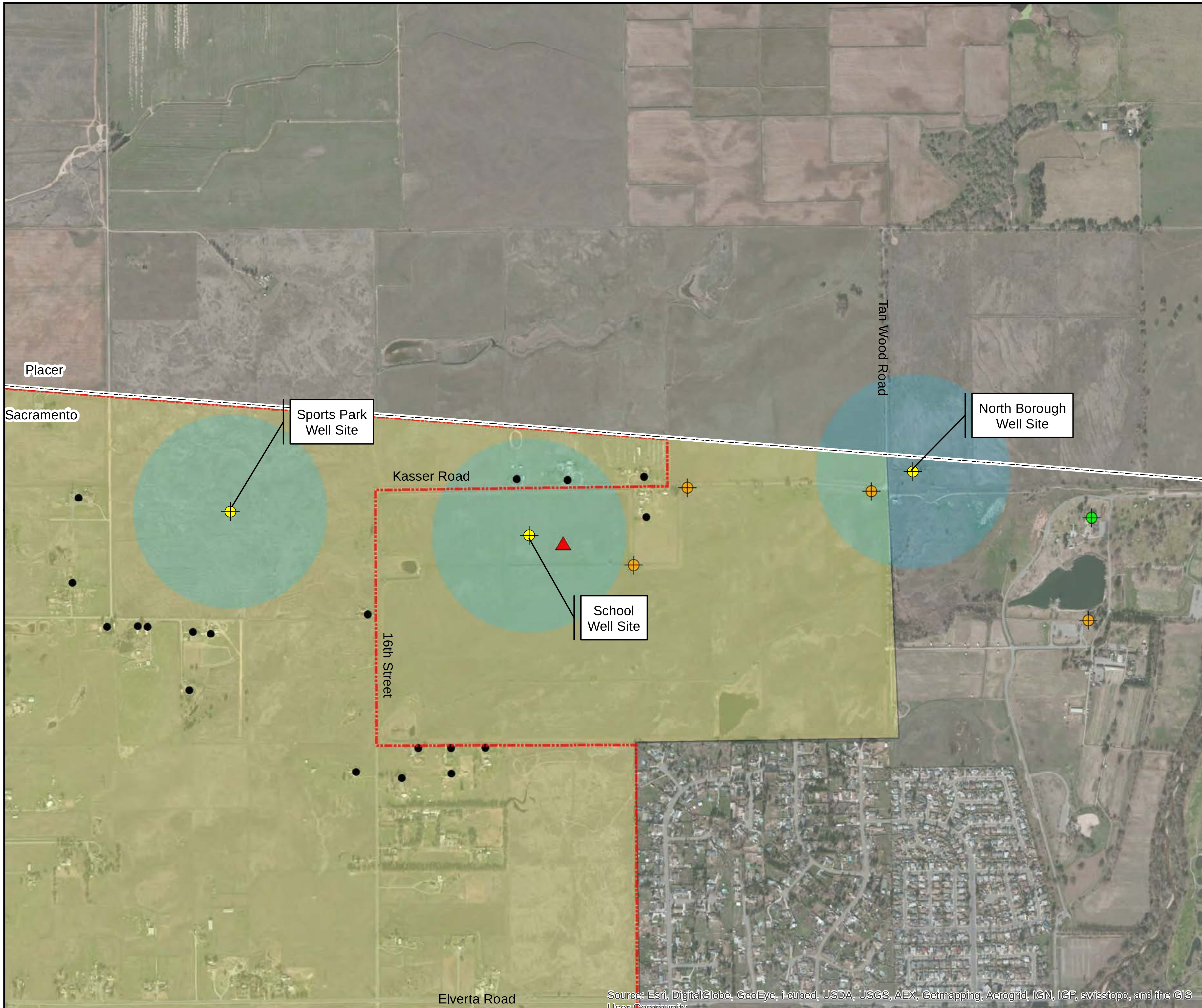

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FIGURE 10

TABLE 1
Rio Linda/Elverta Community Water District
Active Production Well Information Table

		Well Construction Information						Operating Conditions						
Well Name	**Well Status**	**DWR Well Completion Report Number**	**Well Construction Date**	**Age of Well**	**Construction Method**	**Well Depth (Feet)**	**Well Screen Intervals (Feet)**	**Testing Date**	**Static Water Level (Feet)**	**Pumping Water Level (Feet)**	**Flow Rate (gpm)**	**Specific Capacity (gpm/foot)**	**Water Quality Concerns**	**Well Site Infrastructure**
2A	Active	464248	1993	21	Cable Tool	570	235 to 245 295 to 310 424 to 510 Open Borehole 520 to 570	2014	105.5	114	698	82	Recent spike in Cr6 to MCL	Chlorine Injection; Right-angle Gas Driven Back-up Engine; Room for replacement well.
3	Active	46573	1957	57	Cable Tool	267	173 to 181 189 to 197 Open Borehole 205 to 267	2014	78	96	402	22	Runs 24-Hours/Day to keep arsenic below MCL; Previous Coliform Positive	Chlorine injection; small lot; VFD; SCADA
4	Active	NA	> 1960	54	Cable Tool	492	Unknown	2014	81	96	561	37	Cr6 over MCL	Chlorine injection; Small lot/land locked.
6	Active	NA	NA	NA	Cable Tool	570	206 to 215 339 to 342 492 to 498 Open Borehole 519 to 570	2014	106.8	116.5	535	55	Cr6 within 20% of MCL	Chlornie injection; Small lot, no room for replacment well.
7	Active	94522	1974	40	Cable Tool	356	180 to 190 235 to 243 297 to 301 Open Borehole 317 to 335	1974/2003	70 (1974)	130.5 (1974)	652 (2003)	34 (2003)	Cr6 within 20% of MCL	Chlorine injection; Small lot/adjacent to large field
8A	Active	208057	1987	27	Cable Tool	393	243 to 255 320 to 356 373 to 385	2014	129.5	134	471	105	Cr6 over MCL	Chlorine injection
9	Active	62170	1978	36	Cable Tool	526	435 to 439 455 to 459 Open Borehole 475 to 526	2014	88.5	113	670	27	Cr6 within 12% of MCL	Chlorine injection; SCADA; VFD
10	Active	61700	1979	35	Cable Tool	585	340 to 349 Open Borehole 470 to 585	2014	71	92	785	37	Cr6 over MCL	Chlorine Injection; Right-angle Gas Driven Back-up Engine
11	Active	208023	1987	27	Reverse Rotary	417	202 to 212 242 to 252 272 to 292 322 to 362 392 to 412	2014	NA	NA	581	NA	Cr6 over MCL	No access for water level measurements
12	Active	208024	1987	27	Reverse Rotary	590	210 to 300 420 to 450 500 to 580	2001	NA	NA	425	4.2	Best Water Quality; Cr6 within 20% of MCL	Sand seperator; pumps directly into L Street Reservoir; Room for replacement well
15	Active	NA	2013	1	Reverse Rotary	460	300 to 350 410 to 440	2014	125.5	147.5	1,235	56	Cr6 over MCL	Chlorine Injection; Natural gas back-up generator

TABLE 2
Rio Linda/Elverta Community Water District
Active Production Well Information Table

		Well Construction Information						Operating Conditions							
Well Name	**Well Status**	**DWR Well Completion Report Number**	**Well Construction Date**	**Age of Well**	**Construction Method**	**Well Depth (Feet)**	**Well Screen Intervals (Feet)**	**Testing Date**	**Static Water Level (Feet)**	**Pumping Water Level (Feet)**	**Flow Rate (gpm)**	**Specific Capacity (gpm/foot)**	**Water Quality Concerns**	**Well Site Infrastructure**
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10	Active	61700	1979	35	Cable Tool	585	340 to 349 Open Borehole 470 to 585	2014	71	92	785	37	Cr6 over MCL	Chlorine Injection; Right-angle Gas Driven Back-up Engine
11	Active	208023	1987	27	Reverse Rotary	417	202 to 212 242 to 252 272 to 292 322 to 362 392 to 412	2014	NA	NA	581	NA	Cr6 over MCL	No access for water level measurements
12	Active	208024	1987	27	Reverse Rotary	590	210 to 300 420 to 450 500 to 580	2001	NA	NA	425	4.2	Best Water Quality; Cr6 within 20% of MCL	Sand seperator; pumps directly into L Street Reservoir; Room for replacement well
15	Active	NA	2013	1	Reverse Rotary	460	300 to 350 410 to 440	2014	125.5	147.5	1,235	56	Cr6 over MCL	Chlorine Injection; Natural gas back-up generator

Appendix WS-4

Sacramento Groundwater Authority PF-8 Consistency Letter

Sacramento Groundwater Authority
Managing Groundwater Resources in Northern Sacramento County

5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

Tel: (916) 967-7692
Fax: (916) 967-7322
www.sgah2o.org

August 11, 2016

RECEIVED
AUG 15 2016
County Of Sacramento
Department of Community Development
Planning and Environmental Review Division

Julie Newton
Department of Community Development
Planning and Environmental Review
827 7th Street, Room 225
Sacramento, CA 95814

Dear Ms. Newton,

At the request of staff of the Sacramento County Planning Department, the Sacramento Groundwater Authority (SGA) evaluated the *Elverta Specific Plan Water Supply Strategy (Final)* dated January 2016 to determine whether it is subject to and consistent with SGA's groundwater management program.

After review, SGA believes that groundwater use within the North Area Basin under the *Strategy* would be subject to SGA's groundwater management program. In addition, such groundwater use, along with the development of a surface water supply as proposed to enhance conjunctive use within the Basin would be consistent with the SGA groundwater management program.

We appreciate the opportunity to work with County staff. Please contact me if there are any questions regarding these findings.

Sincerely,

John Woodling
Executive Director