4.8 WATER SERVICE

1. SUMMARY

The proposed Vista Canyon project would generate a total water demand of approximately 497 acre-feet per year (afy),[1] *303 afy of potable water demand, and 194 afy of non-potable demand. With implementation of the residential overlay option, the proposed project would generate a total water demand of about 529 afy. Potable water demand (303 afy) would be met by the Santa Clarita Water Division of the Castaic Lake Water Agency (SCWD), through the use of its groundwater wells in the Alluvial aquifer, Saugus Formation, and State Water Project (SWP) water delivered by the Castaic Lake Water Agency (CLWA). The non-potable water demand of the project (194 afy) would be met through the use of recycled water from the project's water reclamation plant, or water factory. The project applicant proposes to use recycled water for landscape irrigation purposes and other allowable uses, such as public restroom facilities for office and commercial uses. As proposed, the water factory would treat up to approximately 395,411 gallons per day (gpd) and would be owned and operated by the City of Santa Clarita (City). The water factory would treat the wastewater generated by the project uses along with a portion of non-project flows from a City of Santa Clarita sewer line crossing the project site. All solids would be sent to the Santa Clarita Valley Sanitation District's Valencia water reclamation plants for final processing. Recycled water from the water factory would then be delivered to CLWA as the wholesale water agency for the Santa Clarita Valley. This water would be distributed by CLWA through its reclaimed water distribution system both within and outside of the project boundary.*

Accordingly, the proposed project's water demand would be met by relying on three primary sources of water supply, namely, groundwater from the Alluvial aquifer, SWP water, and recycled water from the proposed project's water factory. In comparing the proposed treatment plant capacity (approximately 443 afy) and the project's recycled water demand of approximately 194 afy, there is anticipated to be an excess of recycled water from the plant of approximately 311 afy on average. This excess (311 afy) is greater than the project's total potable water demand of approximately 303 afy. Based on the information presented in this EIR, an adequate supply of water is available to serve the Vista Canyon project, and the project would not create, or contribute to, any significant project-specific or cumulative water supply impacts in the Santa Clarita Valley.

Of substantial benefit is the proposed project's resultant excess supply of approximately 311 afy of recycled water, which would be produced by the project's water factory. This water would be made available for use in other areas of the eastern Santa Clarita Valley served with recycled water by CLWA.

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1 An acre-foot represents 43,560 cubic feet, or 325,850 gallons, of water. An acre-foot of water has been generally defined as "an irrigation-based measurement equaling the quantity of water required to cover an acre of land to a depth of one foot." See, *Brydon v. East Bay Mun. Utility Dist.* (1994) 24 Cal.App.4th 178, 182, fn. 1.

2. EXISTING CONDITIONS

Water supply and demand in the Santa Clarita Valley is affected by existing conditions, including local climatic conditions, demographics in the region, existing topography and regional area geology and hydrology, surface water flows, effects of drought cycles both locally and regionally, and effects of urbanization in the Valley. These existing conditions are thoroughly addressed in several documents listed below. This list also identifies the documents that were used or relied upon in the preparation of this section.

The documents, some of which are referenced appendices, are incorporated by reference and available for public inspection and review upon request at CLWA (wholesale water agency) 27234 Bouquet Canyon Road, Santa Clarita, California 91350. The documents referred to throughout this section were used in formulating an independent determination of the sufficiency of the identified water supplies to meet the proposed demands of the proposed project and other related cumulative development.

- *2005 Urban Water Management Plan*, prepared for Castaic Lake Water Agency, CLWA Santa Clarita Water Division, Newhall County Water District, Valencia Water Company, Los Angeles County Waterworks District No. 36, prepared by Black & Veatch, Nancy Clemm, Kennedy Jenks Consultants, Jeff Lambert, Luhdorff & Scalmanini, Richard Slade and Associates, November 2005 (2005 UWMP).

- *Data Document, Proposed 2008 Facility Capacity Fees*, Castaic Lake Water Agency, November 12, 2008 (2008 Data Document).

- *Analysis of Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin, Los Angeles County, California*, prepared by CH2M HILL, in cooperation with Luhdorff & Scalmanini, in support of the August 2001 Memorandum of Understanding between the Upper Basin Water Purveyors and the United Water Conservation District August 2005 (2005 Basin Yield Report).

- *Analysis of Groundwater Supplies and Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin*, by Luhdorff & Scalmanini and GSI Water Solutions, Inc., August 2009 (2009 Basin Yield Update).

- *Santa Clarita Valley Water Report 2006*, prepared for CLWA, Los Angeles County Waterworks District No. 36, Santa Clarita Water Division, Newhall County Water District and Valencia Water Company by Luhdorff and Scalmanini, Consulting Engineers, May 2007 (SCVWR, 2007).

- *Santa Clarita Valley Water Report 2007*, prepared for CLWA, Los Angeles County Waterworks District No. 36, Santa Clarita Water Division, Newhall County Water District and Valencia Water Company by Luhdorff and Scalmanini, Consulting Engineers, April 2008 (SCVWR, 2008).

- *Santa Clarita Valley Water Report 2008*, prepared for CLWA, Los Angeles County Waterworks District No. 36, Santa Clarita Water Division, Newhall County Water District and Valencia Water Company by Luhdorff and Scalmanini, Consulting Engineers, May 2010 (SCVWR, 2009).

- *2009 Santa Clarita Valley Water Report*, prepared for CLWA, Los Angeles County Waterworks District No. 36, Santa Clarita Water Division, Newhall County Water District and Valencia Water Company by Luhdorff and Scalmanini, Consulting Engineers, May 2010. (SCVWR, 2010).

- *The Santa Clarita Valley 2007 Consumer Confidence Report*, prepared by CLWA, CLWA's Santa Clarita Water Division, Newhall County Water District, and Valencia Water Company, 2007.

- *The Santa Clarita Valley 2008 Water Quality Report*, prepared by CLWA, CLWA's Santa Clarita Water Division, Newhall County Water District, and Valencia Water Company, 2008.

- *The Santa Clarita Valley 2009 Water Quality Report*, prepared by CLWA, CLWA's Santa Clarita Water Division, Newhall County Water District, and Valencia Water Company, 2009.

- *The Santa Clarita Valley 2010 Water Quality Report*, prepared by CLWA, CLWA's Santa Clarita Water Division, Newhall County Water District, and Valencia Water Company, 2010.

- *2001 Update Report: Hydrogeologic Conditions in the Alluvial and Saugus Formation Aquifer Systems*, prepared for Santa Clarita Valley Water Purveyors by Richard C. Slade and Associates, LLC, July 2002 (Slade, 2002).

- *CLWA Capital Improvement Program* prepared by Kennedy/Jenks Consultants, 2003.

- *CLWA FY 2009/10 Budget, Capital Improvement Program, Fiscal Year 2009/10*, Castaic Lake Water Agency, adopted June 2008 and effective July 2009.

- *Water Supply Reliability Plan Draft Report* prepared for CLWA by Kennedy/Jenks Consultants, September 2003.

- *Memorandum of Understanding* between Castaic Lake Water Agency and Newhall County Water District, September 2005.

- *Memorandum of Understanding* between the Santa Clara River Valley Upper Basin Water Purveyors and United Water Conservation District, August 2001 (MOU, 2001).

- *Groundwater Management Plan – Santa Clara River Valley Groundwater Basin, East Subbasin*, prepared for CLWA by Luhdorff & Scalmanini Consulting Engineers, December 2003.

- *Regional Groundwater Flow Model for the Santa Clarita Valley: Model Development and Calibration*, prepared for Upper Basin Water Purveyors (CLWA, CLWA Santa Clarita Water Division, Newhall County Water District and Valencia Water Company) by CH2M HILL, April 2004.

- *Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property, Santa Clarita, California*, prepared for Upper Basin Water Purveyors in support of the Department of Health Services 97-005 Permit Application by CH2M HILL, December 2004.

- *Analysis of Near-Term Groundwater Capture Areas for Production Wells Located Near the Whittaker-Bermite Property (Santa Clarita, California)*, prepared for Upper Basin Water Purveyors in support of the amended 2000 UWMP by CH2M HILL, December 21, 2004.

- *Water Supply Contract Between the State of California Department of Water Resources and CLWA, 1963* (plus amendments, including the "Monterey Amendment," 1995, and Amendment No. 18, 1999, the transfer of 41,000 acre-feet of SWP supplies from Kern County Water Agency to CLWA).

- *2002 Semitropic Groundwater Storage Program and Point of Delivery Agreement* among the Department of Water Resources of the State of California, CLWA, and Kern County Water Agency.

- *2002 Draft Recycled Water Master Plan* prepared for CLWA by Kennedy/Jenks Consultants.

- *Draft Program Environmental Impact Report – Recycled Water Master Plan*, prepared for CLWA by Bon Terra Consulting, November 2006 (SCH No. 2005041138).

- *Final Program Environmental Impact Report – Recycled Water Master Plan*, prepared for CLWA by Bon Terra Consulting, March 2007 (SCH No. 2005041138).

- *Draft Environmental Impact Report – Supplemental Water Project Transfer of 41,000 acre-feet of State Water Project Table A Amount*, prepared for CLWA by Science Applications International Corporation, June 2004 (SCH No. 1998041127).

- *Final Environmental Impact Report – Supplemental Water Project Transfer of 41,000 acre-feet of State Water Project Table A Amount*, prepared for CLWA by Science Applications International Corporation, December 2004 (SCH No. 1998041127).

- *Draft Environmental Impact Report – Rosedale-Rio Bravo Water Storage District (RRBWSD) Water Banking and Exchange Program*, prepared for CLWA by Science Applications International Corporation, August 2005 (SCH No. 2005061157).

- *Final Environmental Impact Report – Rosedale-Rio Bravo Water Storage District (RRBWSD) Water Banking and Exchange Program*, prepared for CLWA by Science Applications International Corporation, October 2005 (SCH No. 2005061157).

- *Draft Environmental Impact Report – Castaic Lake Water Agency Water Acquisition from the Buena Vista Water Storage District and Rosedale-Rio Bravo Water Storage District Water Banking and Recovery Program*, prepared for CLWA by Science Applications International Corporation, June 2006 (SCH No. 2006021003).

- *Final Environmental Impact Report – Castaic Lake Water Agency Water Acquisition from the Buena Vista Water Storage District and Rosedale-Rio Bravo Water Storage District Water Banking and Recovery Program*, prepared for CLWA by Science Applications International Corporation, October 2006 (SCH No. 2006021003).

- California Environmental Protection Agency, State Water Resources Control Board, *Draft Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*, July 20, 2010.

- California Department of Water Resources, *California's Groundwater*, Bulletin 118, Santa Clara River Valley Groundwater Basin, Santa Clara River Valley East Subbasin, February, 2004.

- California Department of Water Resources, *Groundwater Basins in California*, Bulletin 118-80, January 1980. (DWR Bulletin 118-80, 1980).

- California Department of Water Resources, *The State Water Project Delivery Reliability Report, 2002*, May 2003. (2002 DWR Delivery Reliability Report, May 2003).

- California Department of Water Resources, *The State Water Project Delivery Reliability Report, 2005*, Final, April 2006. (2005 DWR Delivery Reliability Report, April 2006).

- California Department of Water Resources, *Bulletin 132-06*, Management of the California State Water Project (December 2007).

- California Department of Water Resources, *The State Water Project Delivery Reliability Report, 2007*, August 2008. (2007 DWR Delivery Reliability Report, August 2008).

- California Department of Water Resources, *The State Water Project Delivery Reliability Report 2009*, August 2010. (2009 DWR Delivery Reliability Report).

- California Department of Water Resources, *California's Drought* and associated publications, http://www.water.ca.gov/drought (accessed, December 8, 2008).

- California Department of Water Resources, *Using Future Climate Projections to Support Water Resources Decision Making in California,* http://www.energy.ca.gov/2009publications/CEC-500-2009-052/CEC-500-2009-052-D.PDF (accessed, January 27, 2009).

- 2008 *Water Master Plan, Draft*, (Santa Clarita Water Division of the Castaic Lake Water Agency), Civiltec Engineering, Inc., May 19, 2008.

- CLWA Letter to Los Angeles County Department of Regional Planning, February 2008.

- *Mitigated Negative Declaration – Groundwater Containment, Treatment and Restoration Project*, prepared by Kennedy/Jenks Consultants for Castaic Lake Water Agency, September 2005.

- *Interim Remedial Action Plan*, to facilitate and restore pumping of groundwater from two Saugus Formation production wells impacted by perchlorate, prepared by Kennedy/Jenks Consultants for Castaic Lake Water Agency and approved by the Department of Toxic Substances Control, December 2005.

- *Impact and Response to Perchlorate Contamination, Valencia Water Company Well Q2*, prepared by Luhdorff & Scalmanini Consulting Engineers, April 2005 (Q2 Report).

- *Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property, Santa Clarita, California*, prepared by CH2MHill for the Upper Basin Water Purveyors in Support of the Department of Health Services 97-005 Permit Application, December 2004 and UWMP.

- Nickel Water contract and environmental documentation (see, Newhall Ranch Revised Draft Additional Analysis, Volume I, prepared by Impact Sciences, Inc., for Los Angeles County, November 2002, Appendix 2.5(b), (c)).

- *Technical Memorandum: Potential Effects of Climate Change on Groundwater Supplies for the Newhall Ranch Specific Plan, Santa Clarita Valley, California*, prepared by GSI Water Solutions, Inc. (John Porcello), March 18, 2008.

- Summary Report to Department of Toxic Substances Control from AMEC Geomatrix regarding Former Whittaker-Bermite Facility, Santa Clarita, California, November 17, 2008.
- Statewide Drought Press Release and Executive Order S-06-08, June 4, 2008.
- State of Emergency – Water Shortage, Proclamation by the Governor or the State of California, February 27, 2009.
- Progress Letter Report from Hassan Amini, Ph.D., Project Coordinator for AMEC Geomatrix, to DTSC, dated September 15, 2009.
- Letter from Hassan Amini, Ph.D., Project Coordinator for AMEC Geomatrix, to DTSC, dated June 8, 2009.
- CLWA News Release, dated September 14, 2009.
- CLWA Memorandum from Brian J. Folsom to CLWA Board of Directors, dated October 1, 2009.
- 2008 Delta Smelt Biological Opinion (USFWS, December 15, 2008).
- 2009 Chinook Salmon/Sturgeon Biological Opinion (NMFS, June 4, 2009).
- *Water Supply Assessment for the Vista Canyon Specific Plan Project,* Santa Clarita Water Division of the Castaic Lake Water Agency, September 2010. (Vista Canyon WSA, or WSA).

Please refer to the above-referenced documents for pertinent water supply assessment information.

3. WATER AGENCIES OF THE SANTA CLARITA VALLEY

a. Castaic Lake Water Agency

CLWA, a wholesale public water agency, was formed in 1962 through passage of the "Castaic Lake Water Agency Law."[2] At that time, CLWA's purpose was contracting with State of California, through the Department of Water Resources (DWR), to acquire and distribute SWP water to its retail water purveyors. The retail purveyors are SCWD, Los Angeles County Waterworks District No. 36, the Newhall County Water District (NCWD), and Valencia Water Company (VWC).

Since 1962, subsequent legislation broadened CLWA's purpose, which now includes, but is not limited to, the following: (1) acquire water from the state, (2) distribute such water wholesale through a transmission system to be acquired or constructed by CLWA, (3) reclaim (recycle) water, (4) sell water at retail within certain boundaries, and (5) exercise other related powers.

2 California Water Code Appendix Section 103-1, 103-15.

The CLWA service area comprises approximately 195 square miles (124,800 acres) in Los Angeles and Ventura counties. CLWA serves the incorporated and unincorporated areas in, or adjacent to, the Santa Clarita Valley. Most of this area, including the incorporated cities, is within the geographic boundaries of Los Angeles County, but it also extends into a small portion of eastern Ventura County. The service area includes largely urban areas, such as the City of Santa Clarita, other smaller communities, and rural areas. The West Branch of the California Aqueduct terminates at Castaic Lake, in the northern portion of the service area. **Figure 4.8-1, Castaic Lake Water Agency Service Area**, depicts the CLWA service area.

Adequate planning for, and the procurement of, a reliable water supply is a fundamental function of the CLWA and the local retail purveyors. CLWA obtains its water supply for wholesale purposes principally from the SWP and has a water supply contract with DWR for 95,200 acre-feet of SWP Table A Amount. (As discussed below, CLWA maintains other non-SWP imported supplies, including water from Buena Vista-Rosedale [11,000 afy] and Yuba County Water Agency water transfer [850 acre-feet in critically dry years].)

"Table A" is a term used in SWP water supply contracts. The "Table A Amount" is the maximum amount of water to which a SWP Contractor has a contract right to request delivery each year of the highest priority available under the SWP Contractor's water supply contract, and is specified in Table A of the contract. The Table A Amount is not equivalent to actual deliveries of water in any given year, and the water actually available for delivery in any given year may be an amount *less* than the SWP Contractor's Table A Amount, depending upon hydrologic conditions, the amount of water in storage, the operational constraints, requirements imposed by regulatory agencies to meet environmental water needs, the amount of water requested by other SWP Contractors, climatic conditions, and other factors.

As stated, CLWA has an annual SWP Table A Amount of 95,000 acre-feet through its water supply contract with DWR. This Table A Amount is a maximum and does not reflect the actual amount of water available to CLWA from the SWP, which varies from year to year as described above.

As background, CLWA's original SWP water supply contract with DWR was amended in 1966 for a maximum annual Table A Amount of 41,500 acre-feet. In 1991, CLWA purchased an additional 12,700 acre-feet of annual Table A Amount from the Devil's Den Water District in Kern and Kings Counties. In March 1999, CLWA purchased another 41,000 acre-feet of annual Table A Amount from the

Wheeler Ridge–Maricopa Water Storage District by way of an amendment to its water supply contract. The amended water supply contract between CLWA and DWR is found in **Appendix 4.8**.[3]

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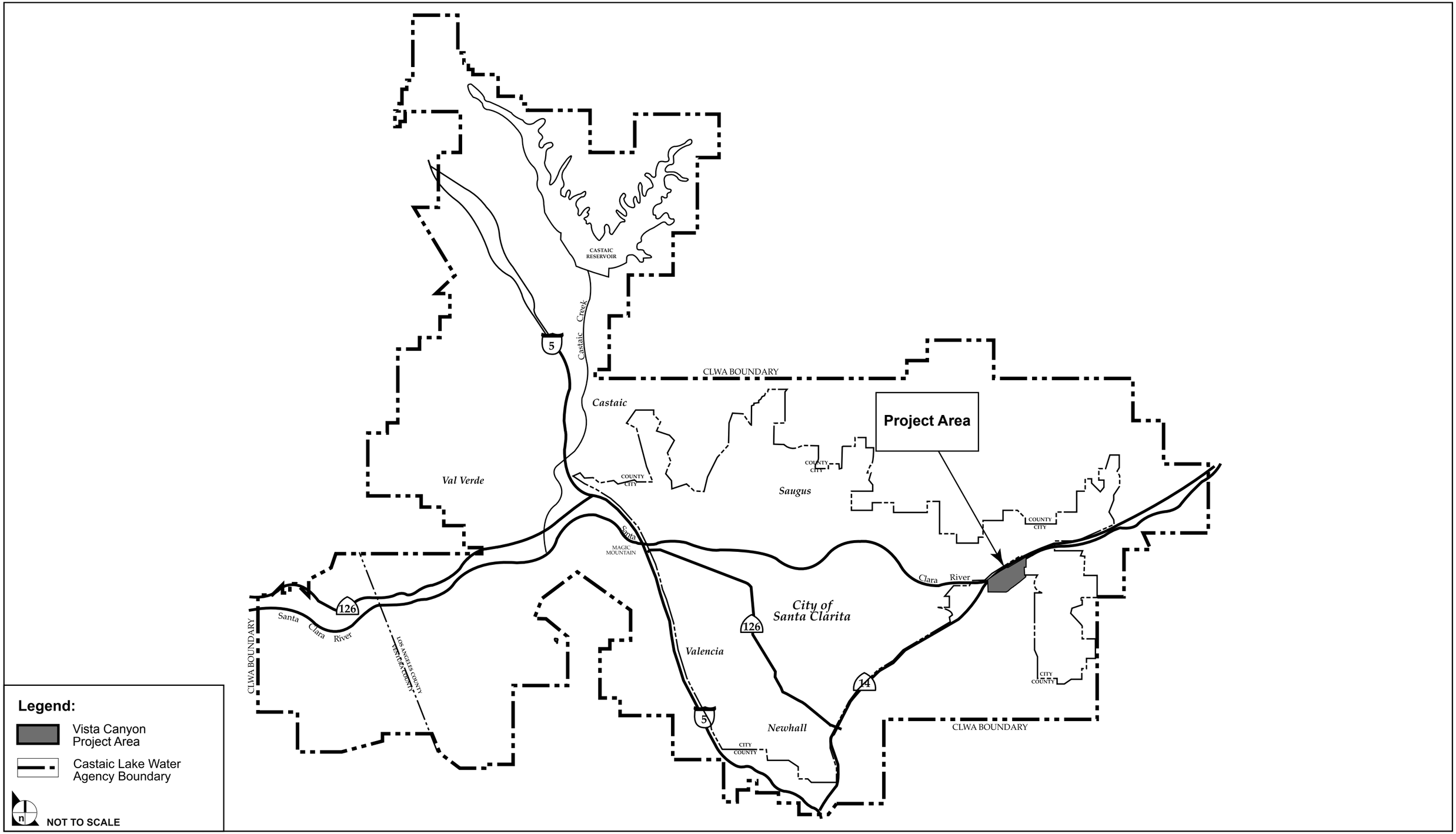
[3] CLWA prepared an EIR to address the environmental consequences of the 1999 41,000 af transfer. The EIR for the 41,000 af transfer was the subject of litigation in Los Angeles County Superior Court (*Friends of the Santa Clara River v. Castaic Lake Water Agency* (Los Angeles County Superior Court, Case No. BS056954). CLWA prevailed in the litigation at the trial court; however, the project opponent (Friends of the Santa Clara River) filed an appeal. In January 2002, the Court of Appeal issued a decision ordering the trial court to decertify the EIR for the 41,000 af transfer agreement on the grounds that it had tiered from another EIR that had been subsequently decertified in other litigation. In doing so, however, the Court of Appeal also examined all of the petitioner's other arguments, found them to be without merit, and held that, if the tiering problem had not arisen, it would have affirmed the earlier trial court judgment upholding the EIR. (See, **Appendix 4.8** [*Friends of the Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal.App.4th 1373, 1387.].)

The Court of Appeal did not invalidate any portion of the completed 41,000 af transfer agreement. Instead, the Court of Appeal directed the trial court to vacate certification of the EIR, and to retain jurisdiction until CLWA corrected the tiering technicality by preparing a new EIR. (See, **Appendix 4.8** [*Friends of the Santa Clara River*, 95 Cal.App.4th at p. 1388.].)

In October 2002, the Los Angeles County Superior Court refused to prohibit CLWA from using the 41,000 af of Table A water while a new EIR was being prepared. (See, **Appendix 4.8** [Judgment Granting Peremptory Writ of Mandate, *Friends of the Santa Clara River v. Castaic Lake Water Agency*, Case No. BS056954, filed October 25, 2002.].) The trial court decision on remand was appealed by Friends of the Santa Clara River in January 2003. On December 1, 2003, the appellate court denied any relief to Friends and affirmed the trial court's ruling. (See, **Appendix 4.8** [Appellate court decision, *Friends of the Santa Clara River v. Castaic Lake Water Agency*, Court of Appeal, Second Appellate District, Division Four, Appellate No. B164027.].)

CLWA's revised EIR was subsequently certified by the CLWA Board of Directors on December 23, 2004. On January 24, 2005, separate lawsuits challenging the EIR for this same project were filed by California Water Impact Network and Planning and Conservation League in the Ventura County Superior Court. These cases were consolidated and transferred to Los Angeles County Superior Court. On May 22, 2007, after a hearing, the trial court issued a final Statement of Decision, which included a determination that the 41,000 afy transfer is valid and cannot be terminated or unwound. The trial court, however, also found one defect in the 2004 EIR and ordered CLWA to correct the defect and report back to the court. The defect did not relate to the environmental conclusions reached in the 2004 EIR; rather, CLWA is required to better establish the basis for selecting three alternative scenarios covered in the 2004 EIR. As a result, the trial court entered Judgment against CLWA and another writ of mandate issued directing CLWA set aside its certification of the 2004 EIR. (See, **Appendix 4.8** [Statement of Decision, *California Water Network v. Castaic Lake Water Agency*, Los Angeles County Superior Court No. BS098724, filed April 2, 2007 ("Chalfant Decision."].) The writ, however, specifically stated that it did not call for CLWA to set aside the 41,000 afy transfer. In July 2007, the petitioners appealed the trial court's decision and judgment, and cross-appeals were filed by CLWA and other parties. This appeal was resolved in favor of CLWA on December 17, 2009. On that date, the Court of Appeal, Second District, reversed an earlier trial court decision, and determined CLWA's new EIR adequately analyzed all of the 41,000 afy water transfer's potential significant environmental impacts and that the document fully complied with the California Environmental Quality Act (CEQA). (*Planning and Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210, rehearing denied on January 14, 2010.) Therefore, the 41,000 afy water transfer is now supported by a certified Final EIR that has been upheld in a published appellate court decision. On January 26, 2010, PCL and CWIN filed a petition for review with the California Supreme Court. On March 10, 2010, the California Supreme Court (En Banc) denied the petitioners' petition for review and their request to depublish the Court of Appeal decision.



SOURCE: PSOMAS and Associates, January 1999, Impact Sciences, Inc. – June 2010

FIGURE **4.8-1**

Castaic Lake Water Agency Service Area

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In early 2007, CLWA finalized a Water Acquisition Agreement with the Buena Vista Water Storage District (Buena Vista) and the Rosedale-Rio Bravo Water Storage District (Rosedale-Rio Bravo) in Kern County. Under this Program, Buena Vista's high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within Rosedale-Rio Bravo's service area on an ongoing basis. CLWA will receive 11,000 acre-feet of these supplies annually, either through an exchange of Buena Vista's and Rosedale-Rio Bravo's SWP supplies or through direct delivery of water to the California Aqueduct via the Cross Valley Canal.[4]

Additional non-SWP imported water supply also is available to CLWA in critically dry years as a result of DWR entering into agreements with the Yuba County Water Agency (YCWA) and the Bureau of Reclamation (Reclamation) related to settlement of water rights issues on the Lower Yuba River (Yuba Accord). Additional supplies also could be available to CLWA in wetter years. The quantity of water would vary depending upon hydrology and the extent of participation by other SWP contractors. For purposes of analysis, however, and based on CLWA entering into a YCWA water transfer agreement with DWR, CLWA has projected that approximately 850 acre-feet of water would be available to CLWA under the Yuba Accord in a critically dry year. (For a summary of the existing and planned water supplies available for the CLWA service area, please refer to **Tables 4.8-11** and **4.8-14**, later in this section.)

CLWA and the local retail purveyors have evaluated the long-term water needs (water demand) within its service area based on applicable county and city plans and has compared these needs against existing and potential water supplies. In addition, the *2005 UWMP* was prepared by CLWA and the local retail purveyors to address water supply and demand forecasts for the CLWA service area (over a 25-year

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4 In November 2006, a petition for writ of mandate was filed by California Water Impact Network, seeking to set aside CLWA's certification of the EIR for the Water Acquisition Agreement Project with Buena Vista and Rosedale-Rio Bravo. (*California Water Impact Network, et al. v. Castaic Lake Water Agency, et al.*, Los Angeles County Superior Court No. BS106546.) The petition was later amended to add Friends of the Santa Clara River (Friends) as a petitioner. In November 2007, the trial court filed its Statement of Decision finding that in certifying the EIR and approving the project, CLWA proceeded in a manner required by law, and that its actions were supported by substantial evidence. Judgment was entered in favor of CLWA in December 2007. Petitioners filed a notice of appeal on January 31, 2008. On April 20, 2009, the appellate court ruled in CLWA's favor and this water purchase is now considered final and it remains appropriate to list the 11,000 afy as one of CLWA's permanent water supply sources. (Please refer to the Draft EIR, **Appendix 4.8**, for the recent appellate court decision in *California Water Impact Network, Inc. v. Castaic Lake Water Agency*, Second Appellate District, Division Five, Appellate Case No. B205622.)

horizon [2005-2030]).[5] CLWA estimated future water demands, retail district-by-retail district. These demand projections are presented in the report entitled, *Data Document, Proposed 2008 Facility Capacity Fees*, Castaic Lake Water Agency, November 12, 2008 (2008 Data Document). Although information in the *2005 UWMP* and the *2008 Data Document* was considered, this EIR does not rely solely on that information, and an independent analysis and determination of water-related impacts was carried out in this EIR for the proposed project.

b. Retail Water Purveyors

Four retail water purveyors provide water service to most residents of the Santa Clarita Valley. A description of the service areas of the local retail purveyors is provided below.

The Los Angeles County Waterworks District 36 service area encompasses approximately 7,635 acres and includes the Hasley Canyon area and the unincorporated community of Val Verde. The district obtains its water supply from CLWA and from local groundwater.

The Newhall County Water District (NCWD) service area includes portions of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Newhall, Canyon Country, Saugus, and Castaic. The district supplies water from local groundwater and CLWA imported water.

CLWA Santa Clarita Water Division (SCWD) service area includes portions of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Canyon Country, Newhall, and Saugus. SCWD supplies water from local groundwater and CLWA imported water. SCWD is owned by CLWA, and its service area includes the project site. As a result, SCWD is the retail water purveyor for

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5 On February 25, 2006, a lawsuit challenging the *2005 UWMP* was filed by California Water Impact Network and Friends of the Santa Clara River alleging that the plan violated the UWMP Act because it overstated availability of local groundwater and SWP supplies and it will allegedly facilitate unsustainable urban development resulting in harm to the Santa Clara River and its habitat (*California Water Impact Network, et al. v. Castaic Lake Water Agency, et al.*, Los Angeles County Superior Court No. BS103295). CLWA and other named parties opposed the litigation challenge. On August 3, 2007, after a hearing, the trial court rejected the litigation challenge to the 2005 UWMP. In that decision, the trial court concluded that substantial evidence supported the determination that the 41,000 afy transfer "remains a valid and reliable water source." Relying upon the evidence presented in the 2005 UWMP and record, the trial court identified the following evidence supporting the validity of the transfer: (a) it was completed in 1999 and DWR has allocated and annually delivered the water in accordance with the completed transfer; (b) the Court of Appeal held that the only defect in the 1999 CLWA EIR was that it tiered from the Monterey Agreement EIR, which was later decertified, and that defect was remedied by CLWA's preparation of the 2004 EIR that did not tier from the Monterey Agreement EIR; (c) the Monterey Settlement Agreement expressly authorizes operation of the SWP in accordance with the Monterey Amendments, which facilitated the 41,000 afy transfer; (d) Courts of Appeal have refused to enjoin the 41,000 afy transfer; and (e) the DWR/CLWA contract encompassing the transfer remains in full force and effect, and no court has ever questioned the validity of the contract, or enjoined the use of this portion of CLWA's SWP Table A supplies. The trial court decision was the subject of an appeal; however, the parties have settled and the appeal was dismissed in October 2008. Thus, the 2005 UWMP remains valid and is no longer subject to any litigation.

the project. **Figure 4.8-2, Santa Clarita Water Division Service Area**, illustrates the CLWA and Santa Clarita Water Division service area.

The Valencia Water Company service area includes a portion of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Castaic, Stevenson Ranch, and Valencia. Valencia Water Company supplies water from local groundwater; CLWA imported water, and recycled water.

As of 2008, the retail water purveyors served approximately 69,700 connections in the Santa Clarita Valley. The specific breakdown by purveyor is provided in **Table 4.8-1, Retail Water Service Connections**.

Table 4.8-1
Retail Water Service Connections

Retail Water Purveyor	Connections
CLWA Santa Clarita Water Division (SCWD)	28,700
Los Angeles County Waterworks District #36	1,400
Newhall County Water District (NCWD)	9,600
Valencia Water Company	30,000
Total	**69,700**

Source: 2009 Santa Clarita Valley Water Report, *May 2010 (see **Appendix 4.8**).*

4. SANTA CLARITA VALLEY WATER SUPPLIES – HISTORIC AND EXISTING USES

The Vista Canyon WSA (2010), the *2009 Water Report*, and *2005 UWMP* (see, **Appendix 4.8**) contain useful local and regional water demand, supply, and reliability planning information, particularly in the context of the perchlorate contamination detected in municipal-supply wells in the local Basin. In addition, the *2005 Basin Yield Report* and *2009 Basin Yield Update* confirm that the CLWA/purveyor groundwater-operating plan for the local groundwater basin in Santa Clarita Valley will not cause detrimental short or long-term effects to the groundwater and surface water resources in the valley and, therefore, the local groundwater basin is sustainable. The Vista Canyon WSA for the proposed project, in particular, provides updated information to the City of Santa Clarita for its consideration in making a determination on whether there are sufficient water supplies available to serve the project, in addition to existing and planned future uses in the Santa Clarita Valley (see Draft EIR **Appendix 4.8** [Vista Canyon WSA]). The SCWD prepared the Vista Canyon WSA for the proposed project, because it is the retail purveyor that will provide water service to the project site.

a. Description of Groundwater Supplies

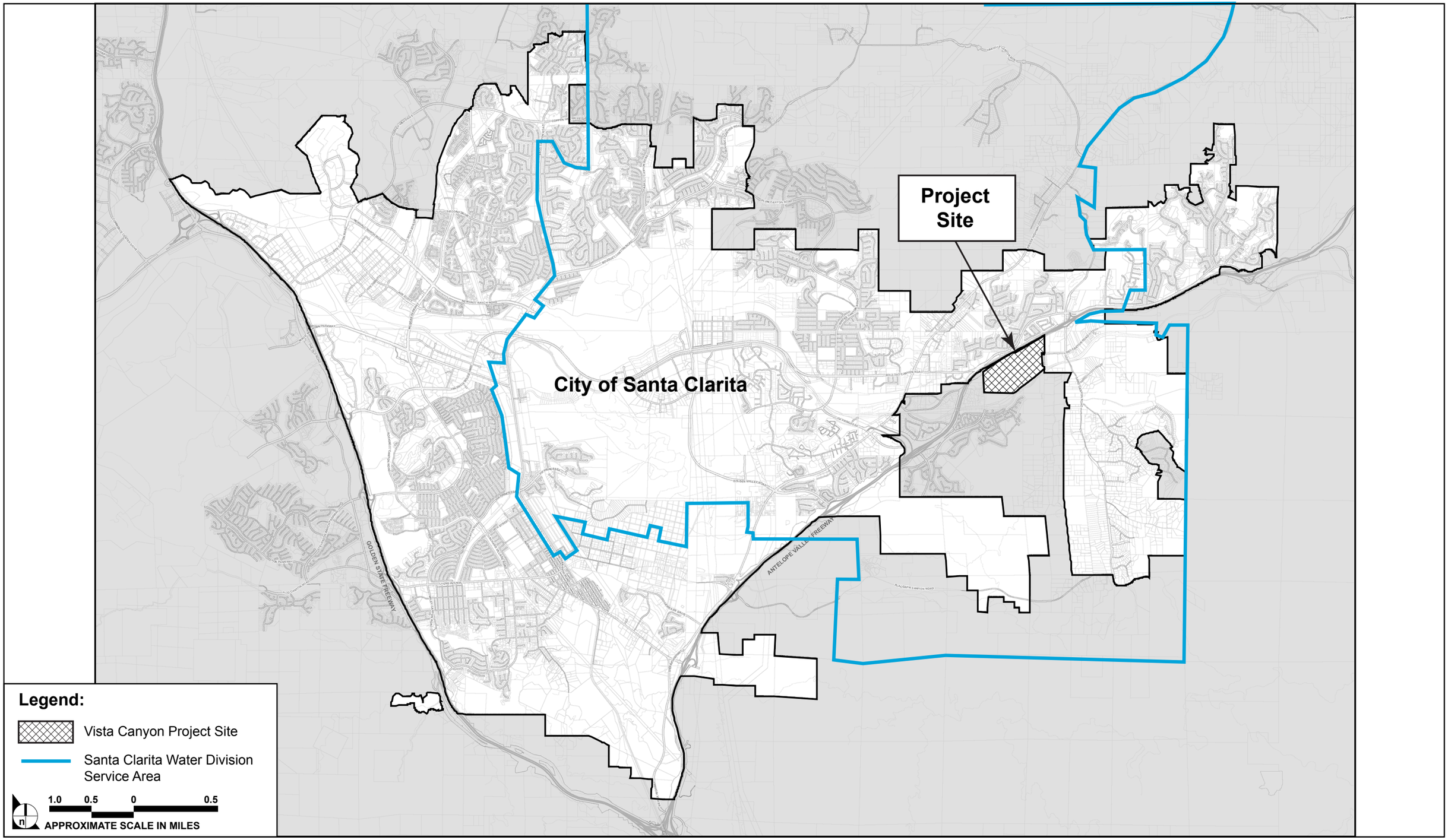
This section focuses on the available local groundwater supplies in the Santa Clarita Valley, including a summary of both the adopted Groundwater Management Plan for the local Basin and the *2009 Basin Yield Update*.

(1) The Upper Santa Clara River Hydrologic Area

The Upper Santa Clara River Hydrologic Area, as defined by DWR, is located almost entirely in northwestern Los Angeles County. The area, as shown in **Figure 4.8-2a**, **Santa Clara Valley East Groundwater Basin – East Subbasin**, encompasses about 654 square miles comprised of flat valley land (about 6 percent of the total area), and hills and mountains (about 94 percent of the total area) that border the Valley area. The mountains include the Santa Susana and San Gabriel Mountains to the south and the Sierra Pelona and Leibre-Sawmill Mountains to the north. Elevations range from about 800 feet on the Valley floor to about 6,500 feet in the San Gabriel Mountains. The headwaters of the Santa Clara River are at an elevation of about 3,200 feet at the divide separating this hydrologic area from the Mojave Desert.

The Santa Clara River and its tributaries flow intermittently from Lang Station westward about 35 miles to Blue Cut, just west of the Los Angeles County/Ventura County line, where the River is the outlet from the Upper Santa Clara River Hydrologic Area. The principal tributaries of the Santa Clara River in the Santa Clarita Valley are Castaic Creek, San Francisquito Creek, Bouquet Creek, and the South Fork of the Santa Clara River. In addition to tributary inflow, the Santa Clara River receives treated wastewater discharge from the existing Saugus and Valencia Water Reclamation Plants (WRPs), which are operated by the Santa Clarita Valley Sanitation District.

The Santa Clara River Valley East Groundwater Subbasin, beneath the Santa Clarita Valley in the Upper Santa Clara River Hydrologic Area (**Figure 4.8-3**), is the source of essentially all local groundwater used for water supply in the Santa Clarita Valley. Below Blue Cut, the Santa Clara River continues westward through Ventura County to its mouth near Oxnard. Along that route, the River traverses all or parts of six groundwater basins in Ventura County (Piru, Fillmore, Santa Paula, Oxnard Forebay, Oxnard Plain, and Mound).

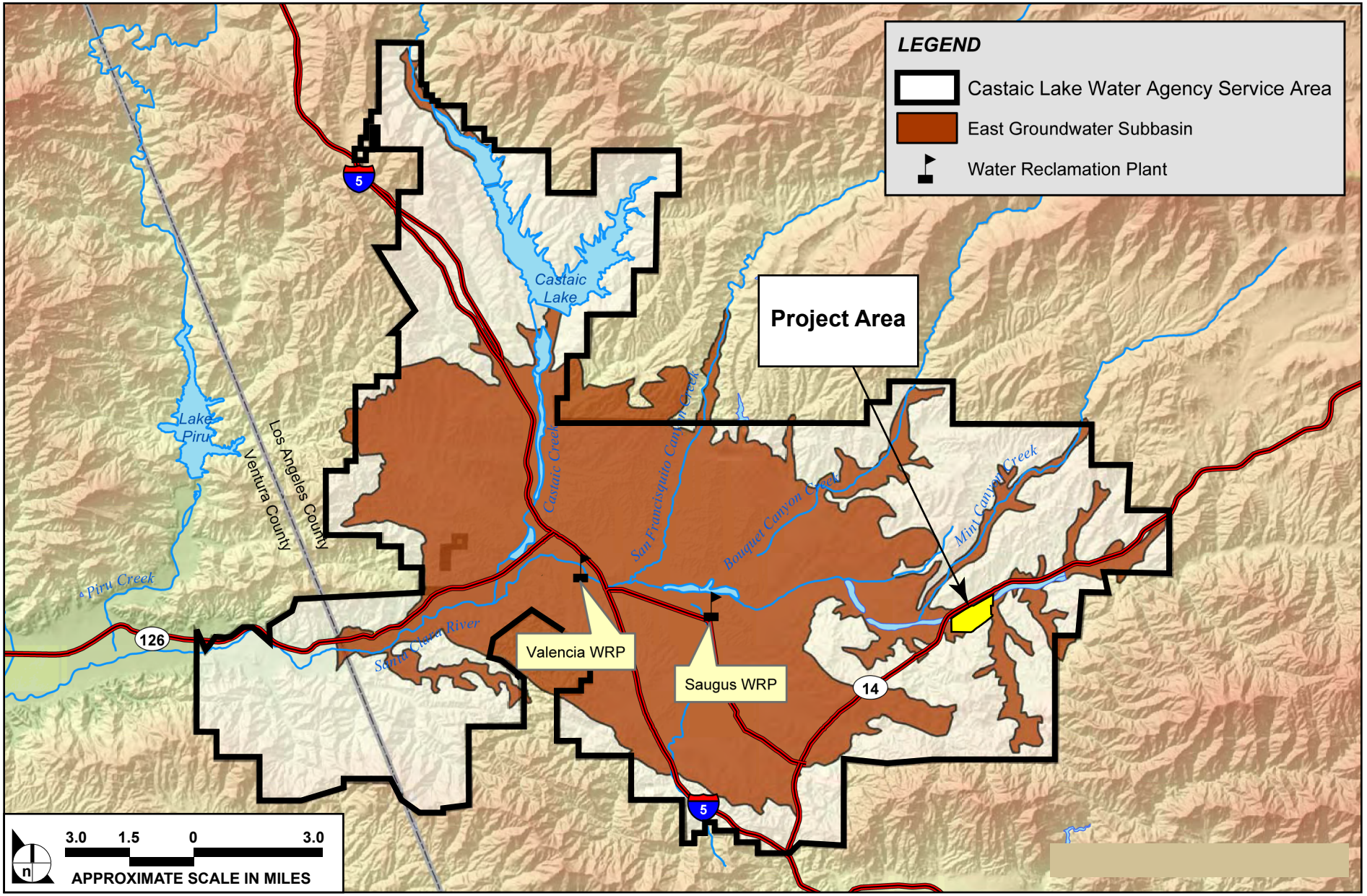


SOURCE: Impact Sciences, Inc. – June 2010

FIGURE **4.8-2**

Santa Clarita Water Division Service Area

112-024•06/10



SOURCE: Luhdorff & Scalmanini Consulting Engineers – January 2006

FIGURE **4.8-2a**

Santa Clara River Valley East Groundwater Basin – East Subbasin

112-024•06/10

SOURCE: PACE - 2008

FIGURE **4.8-3**

Upper Santa Clara River Hydrologic Area

112-024•06/10

There are two primary precipitation gauges in the Santa Clarita Valley, the Newhall-Soledad 32c gauge and the NCWD gauge. The National Climatic Data Center (NCDC) and Los Angeles County Department of Public Works (LACDPW) have maintained records for the Newhall-Soledad 32c gauge since 1931. The NCWD has maintained records for the NCWD gauge since 1979. The cumulative records from these two gauges correlate very closely, with the NCWD gauge recording approximately 25 percent more precipitation than the Newhall-Soledad 32c gauge. This is likely due to the location of the NCWD gauge, which is at the base of the mountains rimming the southern edge of the Santa Clarita Valley.

The Santa Clarita Valley is characterized as having an arid climate. Historically, intermittent periods of below-average precipitation have typically been followed by periods of above-average precipitation in a cyclical pattern, with each wetter or drier period typically lasting from one to five years. The longer-term precipitation records for the Newhall-Soledad 32c gauge are illustrated in 2009 Water Report Figure 1-3. Long-term average precipitation at that gauge is 17.9 inches (1931–2009). 2009 Water Report Figure 1-3 also shows the cumulative departure from mean annual precipitation. In general, periods of below-average precipitation have been longer and more moderate than 1-5 periods of above-average precipitation. Recently, the periods from 1971 to 1976, 1984 to 1991 and 1999 to 2003 have been drier than average; the periods from 1977 to 1983 and 1992 to 1996 have been wetter than average. More recently, wet conditions that began in late 2004, continued into early 2005, ultimately resulting in about 37 inches of measured precipitation, or slightly more than 200 percent of long-term average precipitation, in that year. Those significantly wet conditions contributed to substantial groundwater recharge and decreased water demand that year. Subsequently, total precipitation in 2006 and 2007 was slightly to significantly lower, 14 inches and 6 inches, respectively, but water requirements in both years were still close to those projected in the 2005 UWMP, and there were no dramatic changes in groundwater conditions. With the exception of the average annual rainfall total in 2008, the dry conditions that began in 2006 have persisted through 2009. With 11.6 inches of precipitation, 2009 was a below-average year. However, water demand in 2009 was below that projected for average conditions in the 2005 UWMP, and below the short-term projection in the 2009 Water Report. Early year precipitation in 2010 was approximately 13.4 inches through April or close to long-term average for that part of the year, but water use further decreased from last year for the same period. Combined with other water supply considerations, discussed in 2009 Water Report Chapter 4, those conditions are expected to result in 2010 water requirements being slightly lower than water use in 2009.

(2) Santa Clara River Valley Groundwater Basin – East Subbasin

As stated, the project area lies within the groundwater basin identified in DWR Bulletin 118 (2003 Update) as the Santa Clara River Valley Groundwater Basin, East Subbasin (Basin). The Basin is comprised of two aquifer systems, the Alluvium and the Saugus Formation. The Alluvium (also referred

to as the Alluvial aquifer) generally underlies the Santa Clara River and its several tributaries, and the Saugus Formation underlies practically the entire Upper Santa Clara River area. There are also some scattered outcrops of terrace deposits in the Basin that likely contain limited amounts of groundwater. Since these deposits are located in limited areas situated at elevations above the regional water table and are also of limited thickness, they are of no practical significance as aquifers and, consequently, have not been developed for any significant water supply. **Figure 4.8-2a, Santa Clara River Valley East Groundwater Basin – East Subbasin,** illustrates the mapped extent of the Santa Clara River Valley East Subbasin, which approximately coincides with the outer extent of the Alluvium and Saugus Formation. The CLWA service area and the location of the two existing water reclamation plants in the Valley also are shown on **Figure 4.8-3**.

(3) Adopted Groundwater Management Plan

In 2001, as part of legislation authorizing CLWA to provide retail water service to individual municipal customers, Assembly Bill (AB) 134 included a requirement that CLWA prepare a groundwater management plan in accordance with the provisions of Water Code Section 10753.

CLWA adopted the Groundwater Management Plan (GWMP) on December 10, 2003.[6] The GWMP contains four management objectives, or goals, for the Basin, including (1) development of an integrated surface water, groundwater and recycled water supply to meet existing and projected demands for municipal, agricultural and other water uses; (2) assessment of Basin conditions to determine a range of operational yield values that use local groundwater conjunctively with supplemental SWP supplies and recycled water to avoid groundwater overdraft; (3) preservation of groundwater quality, and active characterization and resolution of groundwater contamination problems, including perchlorate; and (4) preservation of interrelated surface water resources, which includes managing groundwater in a manner that does not adversely impact surface and groundwater discharges or quality to downstream basins.

Prior to preparation and adoption of the GWMP, a local Memorandum of Understanding (MOU) process among CLWA, the purveyors, and United Water Conservation District (UWCD) in neighboring Ventura County had produced the beginning of local groundwater management, now embodied in the GWMP. In 2001, those agencies prepared and executed the MOU (see Draft EIR **Appendix 4.8** [MOU]). The MOU is a collaborative and integrated approach to several of the aspects of water resource management included in the GWMP. UWCD manages surface water and groundwater resources in seven groundwater basins, all located in Ventura County, downstream of the Basin. As a result of the MOU, the cooperating agencies

6 CLWA's Groundwater Management Plan, adopted December 10, 2003, is found in **Appendix 4.8** of this EIR.

have undertaken the following measures: (1) Integrated their database management efforts; (2) Developed and utilized a numerical groundwater flow model for analysis of groundwater basin yield and containment of groundwater contamination; and (3) Continued to monitor and report on the status of Basin conditions, as well as on geologic and hydrologic aspects of the overall stream-aquifer system.

The adopted GWMP includes 14 elements intended to accomplish the Basin management objectives listed above. In summary, the plan elements include:

- monitoring of groundwater levels, quality, production and subsidence;
- monitoring and management of surface water flows and quality;
- determination of Basin yield and avoidance of overdraft;
- development of regular and dry-year emergency water supply;
- continuation of conjunctive use operations;
- long-term salinity management;
- integration of recycled water;
- identification and mitigation of soil and groundwater contamination, including involvement with other local agencies in investigation, cleanup, and closure;
- development and continuation of local, state and federal agency relationships;
- groundwater management reports;
- continuation of public education and water conservation programs;
- identification and management of recharge areas and wellhead protection areas;
- identification of well construction, abandonment, and destruction policies; and
- provisions to update the groundwater management plan.

Work on a number of the GWMP elements had been ongoing for some time prior to adoption of the GWMP. This work continues on an ongoing basis. An important aspect of this work was completion of the *2005 Basin Yield Report* and the *2009 Basin Yield Update* (see Draft EIR **Appendix 4.8** [*2005 Basin Yield Report* and *2009 Basin Yield Update*]). The primary determinations made in those reports are that (1) both the Alluvial aquifer and the Saugus Formation are sustainable sources at the operational plan yields stated in the *2005 UWMP* over the next 25 years; (2) the yields are not overstated and will not deplete or "dry up" the groundwater basin; and (3) there is no need to reduce the yields shown in the *2005 UWMP*. Additionally, the 2005 Basin Yield Report and the 2009 Basin Yield Update (described below) conclude

that neither the Alluvial aquifer nor the Saugus Formation is in an overdraft condition, or projected to become overdrafted.

(4) 2009 Basin Yield Update

In April 2009, the purveyors[7] in Santa Clarita Valley determined that an updated analysis was needed to further assess groundwater development potential and possible augmentation of the groundwater operating plan, partly in preparation for the next UWMP in 2010, and in part because of recent events that are expected to impact the future reliability of the principal supplemental water supply for Santa Clarita Valley (i.e., from the State Water Project). The document entitled, *Analysis of Groundwater Supplies and Groundwater Basin Yield Upper Santa Clara River Groundwater Basin, East Subbasin* was published in August 2009 (2009 Basin Yield Update) and is included in Draft EIR **Appendix 4.8** along with its appendix material and references. A summary of that report is provided below.

The primary objective of the updated analysis of groundwater basin yield in the Santa Clarita Valley was to evaluate the planned utilization of groundwater by the Santa Clarita Valley purveyors, while considering potential impacts on traditional supplemental water supplies from the State Water Project, and recognizing ongoing pumping by others for agricultural and other private water supply. This objective also included the sustainability of the groundwater resources and the physical ability to extract groundwater at desired rates. As previously used in this basin, and consistent with groundwater management in other settings, sustainability is defined in terms of renewability (recharge) of groundwater as reflected by the following indicators:

- lack of chronic, or sustained, depletion of groundwater storage, as indicated by projected groundwater levels, over a reasonable range of wet, normal, and dry hydrologic conditions; and
- maintenance of surface water flows in the western portion of the basin (which are partially maintained by groundwater discharge) and surface water outflow to downstream basins over the same range of hydrologic conditions.

Regarding maintenance of surface water flows, although the development and use of groundwater in a sustainable manner necessitates the inducement of recharge from surface water, sustainability in this case does not rely on inducing groundwater recharge by eliminating surface water flows. Rather, sustainability retains surface water outflows and may even increase them with the importation of SWP water when contrasted to pre-SWP conditions. Regarding both indicators of sustainability, the range of

7 The Santa Clarita Valley purveyors are comprised of Los Angeles County Waterworks District 36, Newhall County Water District, Santa Clarita Water Division of the Castaic Lake Water Agency (formerly Santa Clarita Water Company, acquired by CLWA in 1999), and Valencia Water Company.

analyzed hydrologic conditions is a long-term period that includes anticipated occurrences of the types of years and groups of year types that have historically occurred in the basin.

A second objective of the 2009 Basin Yield Update was to investigate and describe potential impacts of expected climate change on the groundwater basin and its yield. A third objective was to consider potential augmentation of basin yield via potential artificial groundwater recharge using storm water runoff in selected areas of the basin as planned by the Los Angeles County Flood Control District.

The 2009 Basin Yield Update analyzed, with the numerical groundwater flow model for the basin, two groundwater operating plans: (1) a 2008 Operating Plan to reflect currently envisioned pumping rates and distribution throughout the Valley, including fluctuations through wet/normal and dry years, to achieve a desired amount of water supply that, in combination with anticipated supplemental water supplies, can meet existing and projected water requirements in the Valley; (2) Potential Operating Plan that envisions potentially increased utilization of groundwater during both wet/normal and dry years. The 2008 Operating Plan is presented and addressed in this EIR because it is relied upon to determine the sustainability of the basin groundwater in meeting the future needs of the proposed project and other future land uses.[8]

Based on the 2009 Basin Yield Update, the 2008 Operating Plan will not cause detrimental short- or long-term effects to the groundwater and surface water resources in the Valley; and, therefore, is sustainable. Consistent with actual operating experience and empirical observations of historical basin response to groundwater pumping, the 2008 Operating Plan can be expected to have local difficulty, in the Alluvium at the eastern end of the basin during locally dry periods, with achievement of all the Alluvial pumping in the 2008 Operating Plan. This condition is particularly evident if several decades of predominantly below-normal rainfall years were to occur in the future such as occurred during much of the five decades from the mid-1920s through the mid-1970s. In other words, while the basin as a whole can sustain the pumping encompassed in the 2008 Operating Plan, local conditions in the Alluvium in the eastern end of the basin can be expected to repeat historical groundwater level declines during dry periods, necessitating a reduction in desired Alluvial aquifer pumping due to decreased well yield and associated actual pumping capacity. The modeling analysis conducted to date suggests that those reductions in pumping from the Alluvial aquifer can be made up by an equivalent amount of increased pumping in other parts of the basin without disrupting basinwide sustainability or local pumping

8 It should be noted that the Potential Operating Plan is not part of the water supply and demand analysis presented in this EIR because it is not relied upon to determine the sustainability of the basin groundwater in meeting the future needs of the proposed project and other future land uses.

capacity in those other areas. For the Saugus Formation, the modeling analysis indicates that this aquifer can sustain the pumping from this unit that is encompassed in the 2008 Operating Plan.

Simulation of the 2008 Operating Plan with pumping redistribution indicates that westerly redistribution of 1,600 afy of Alluvial pumping from the eastern end of the basin would help, but not eliminate, the lack of achievability. The residual unachievable pumping in the east end of the basin, about 4,500 afy, could be redistributed to other areas of the basin with minimal impact on groundwater levels. In this case, total Alluvial pumping in the basin could remain near the upper end of the 2008 Operating Plan range of 30,000 to 35,000 afy. Conversely, absent any additional efforts to redistribute pumping, the total Alluvial pumping capacity during extended dry periods would likely fall toward the lower end of the 2008 Operating Plan range (toward 30,000 afy).The 2009 Basin Yield Update also assessed the runoff conservation/groundwater recharge projects planned by the Los Angeles County Flood Control District, and determined that the projects are unlikely to provide any substantial recharge that does not already occur in the basin. Additionally, the 2009 Basin Yield Update concluded that these proposed projects are mostly located in areas of the basin where the Alluvial aquifer is of insufficient thickness and storage (and, thus is not developed for water supply), or where the Alluvial aquifer already fully recharges when stream flows are naturally present.

The 2009 Basin Yield Update also assessed potential impacts of climate change on the yield of the basin and the related groundwater supply from the basin. While future conditions cannot be projected with any degree of certainty, the results of simulating basin response to the 2008 Operating Plan, under a range of potential climate change trends give rise to two observations:

- For the broad range of climate change possibilities that was analyzed, the 2008 Operating Plan would appear to be both sustainable and, with the same physical constraints to full pumping in the eastern part of the basin as have otherwise been experienced, achievable through the shorter term horizon associated with UWMP planning.
- The range of potential climate change impacts extends from a possible wet trend to a possible dry trend over the long term. The trends that range from an approximate continuation of historical average precipitation, to something wetter than that, would appear to result in continued sustainability of the 2008 Operating Plan, again with intermittent constraints on full pumping in the eastern part of the basin. The potential long-term dry trend arising out of climate change would be expected to decrease local recharge to the point that lower and declining groundwater levels would render the 2008 Operating Plan unsustainable.

(5) Available Groundwater Supplies

Groundwater Operating Plan – Based on the 2009 Water Report (May 2010), the groundwater component of overall water supply in the Santa Clarita Valley derives from a groundwater operating plan developed by CLWA and the local retail purveyors over the past 20 years to meet water

requirements (municipal, agricultural, small domestic), while maintaining the Basin in a sustainable condition (i.e., no long-term depletion of groundwater or interrelated surface water). This operating plan also addresses groundwater contamination issues in the Basin, all consistent with both the GWMP and the MOU described above. This operating plan is based on the concept that pumping can vary from year-to-year to allow increased groundwater use in dry periods and increased recharge during wet periods, and to collectively assure that the Basin is adequately replenished through various wet/dry cycles. As described in the GWMP and the MOU, the operating yield concept has been quantified as ranges of annual pumping volumes.

The ongoing work of the MOU has produced two important reports. The first report, dated April 2004, documents the development and calibration of the groundwater flow model for the Santa Clarita Valley.[9] The second report, dated August 2005, presents the modeling analysis of the CLWA/retail water purveyor groundwater-operating plan for the valley, and concludes that the plan will not cause detrimental short or long-term effects to the groundwater and surface water resources in the valley and, therefore, the plan is a reliable, sustainable component of water supply for the valley.[10] The analysis of sustainability for groundwater and interrelated surface water is described further in Appendix C to the *2005 UWMP* (see, Draft EIR **Appendix 4.8)**.

The groundwater operating plan, summarized in **Table 4.8-2, Groundwater Operating Plan for the Santa Clarita Valley**, is further described below. The operating plan addresses both the Alluvium and Saugus Formation.

Table 4.8-2
Groundwater Operating Plan for the Santa Clarita Valley

Aquifer	Groundwater Production (af)			
	Normal Years	Dry Year 1	Dry Year 2	Dry Year 3
Alluvium	30,000 to 40,000	30,000 to 35,000	30,000 to 35,000	30,000 to 35,000
Saugus	7,500 to 15,000	15,000 to 25,000	21,000 to 25,000	21,000 to 35,000
Total	37,500 to 55,000	45,000 to 60,000	51,000 to 60,000	51,000 to 70,000

*Source: 2005 UWMP, 2009 Water Report (May 2010), and 2009 Basin Yield Update. See Draft EIR **Appendix 4.8** for copies of these reports.*

9 See, *Regional Groundwater Flow Model for the Santa Clarita Valley: Model Development and Calibration*, prepared for the Upper Basin Water Purveyors by CH2MHill, April 2004. This report was updated by CH2MHill in a report entitled, *Calibration Update of the Regional Groundwater Flow Model for the Santa Clarita Valley, Santa Clarita, California*, August 2005. Copies of these two reports are available for public review and inspection in **Appendix 4.8** of this EIR.

10 See, *Analysis of Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin, Los Angeles County, California*, prepared by CH2MHill in cooperation with Luhdorff & Scalmanini Consulting Engineers, August 2005. This report is available for public review and inspection in **Appendix 4.8** of this EIR.

Alluvium – A portion of the project's water demands would be met by using groundwater produced from the Alluvial aquifer in Los Angeles County, which would be delivered to the site by SCWD. The project's potable water demand is estimated to be 303 afy.

As stated in the 2005 UWMP, 2009 Water Report, the *2009 Basin Yield Update*, and the Vista Canyon WSA (2010), the operating plan for the Alluvial aquifer involves pumping from the Alluvial aquifer in a given year, based on local hydrologic conditions in the eastern Santa Clara River watershed. Pumping ranges between 30,000 and 40,000 afy during normal/average and above-normal rainfall years. However, due to hydrogeologic constraints in the eastern part of the Basin, pumping is reduced to between 30,000 and 35,000 afy following multiple locally dry years.

Saugus Formation – The Saugus Formation is not identified as a likely source of supply for the project. However, the operating plan for Saugus pumping is presented as additional information regarding the Basin.

As stated in the 2005 UWMP, 2009 Water Report, and the *2009 Basin Yield Update*, pumping from the Saugus Formation in a given year is tied directly to the availability of other water supplies, particularly from the SWP. During average year conditions within the SWP system, Saugus pumping ranges between 7,500 and 15,000 afy. Planned dry-year pumping from the Saugus Formation ranges between 15,000 and 25,000 afy during a drought year and can increase to between 21,000 and 25,000 afy if SWP deliveries are reduced for two consecutive years and between 21,000 and 35,000 afy if SWP deliveries are reduced for three consecutive years. Such pumping would be followed by periods of reduced (average-year) pumping, at rates between 7,500 and 15,000 afy, to further enhance the effectiveness of natural recharge processes that would cause groundwater levels and storage volumes to recover after the higher pumping during dry years. For reference to the groundwater operating plan historical and projected groundwater pumping by retail water purveyor, please refer to **Table 4.8-3, Historical Groundwater Production by the Retail Water Purveyors,** and **Table 4.8-4, Projected Groundwater Production (Normal Year)**.

Three factors affect the availability of groundwater supplies under the groundwater-operating plan. They are (1) sufficient source capacity (wells and pumps); (2) sustainability of the groundwater resource to meet pumping demand on a renewable basis; and (3) protection of groundwater sources (wells) from known contamination, or provisions for treatment in the event of contamination. All three factors are discussed below, and are addressed in further detail in Chapter 5 and Appendices C and D to the *2005 UWMP* (see Draft EIR **Appendix 4.8** [2005 UWMP]).

Table 4.8-3
Historical Groundwater Production by the Retail Water Purveyors

Basin Name	Groundwater Pumped (af)[1]							
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Santa Clara River Valley East Subbasin								
CLWA Santa Clarita Water Division								
- Alluvium	9,513	6,424	7,146	12,408	13,156	10,686	11,878	10,077
- Saugus Formation	0	0	0	0	0	0	0	0
LA County Waterworks District 36								
- Alluvium	0	0	380	343	0	0	0	0
- Saugus Formation	0	0	0	0	0	0	0	0
Newhall County Water District								
- Alluvium	981	1,266	1,582	1,389	2,149	1,806	1,717	1,860
- Saugus Formation	3,395	2,513	3,739	3,435	3,423	3,691	4,195	3,868
Valencia Water Company								
- Alluvium	11,603	11,707	9,862	12,228	11,884	13,140	14,324	12,459
- Saugus Formation	965	1,068	1,962	2,513	2,449	2,367	1,770	2,836
Total	***26,457***	***22,978***	***24,671***	***32,316***	***33,061***	***31,690***	***33,884***	***31,100***
- Alluvium	22,097	19,397	18,970	26,368	27,189	25,632	27,919	24,396
- Saugus Formation	4,360	3,581	5,701	5,948	5,872	6,058	5,965	6,704
% of Total Municipal Water Supply	**39%**	**34%**	**34%**	**46%**	**45%**	**35%**	**45%**	**44%**

Notes:

[1] *Pumping for municipal and industrial uses only. Does not include pumping for agricultural and miscellaneous uses.*

Source: 2009 Santa Clarita Valley Water Report, May 2010, Table 2-1 (see **Appendix 4.8**).

(a) Alluvial Aquifer

Based on a combination of historical operating experience and recent groundwater modeling analysis, the Alluvial aquifer can supply groundwater on a long-term sustainable basis in the overall range of 30,000 to 40,000 afy, with a probable reduction in dry years to a range of 30,000 to 35,000 afy. Both of those ranges include about 15,000 afy of Alluvial pumping for current agricultural water uses and an estimated pumping of up to about 500 afy by small private pumpers. The dry year reduction is a result of practical constraints in the eastern part of the Basin, where lowered groundwater levels in dry periods have the effect of reducing pumping capacities in that shallower portion of the aquifer.

Table 4.8-4
Projected Groundwater Production (Normal Year)

Basin Name	Range of Groundwater Pumping (af)[1,2,3]				
	2010	2015	2020	2025	2030
Santa Clara River Valley East Subbasin					
CLWA Santa Clarita Water Division					
– Alluvium	6,000–14,000	6,000–14,000	6,000–14,000	6,000–14,000	6,000–14,000
– Saugus Formation	3,000	3,000	3,000	3,000	3,000
LA County Waterworks District 36					
– Alluvium	0	0	0	0	0
– Saugus Formation	500–1,000	500–1,000	500–1,000	500–1,000	500–1,000
Newhall County Water District					
– Alluvium	1,500–3,000	1,500–3,000	1,500–3,000	1,500–3,000	1,500–3,000
– Saugus Formation	3,000–6,000	3,000–6,000	3,000–6,000	3,000–6,000	3,000–6,000
Valencia Water Company					
– Alluvium	12,000–20,000	12,000–20,000	12,000–20,000	12,000–20,000	12,000–20,000
– Saugus Formation	2,500–5,000	2,500–5,000	2,500–5,000	2,500–5,000	2,500–5,000

Notes:

[1] *The range of groundwater production capability for each purveyor varies based on a number of factors, including each purveyor's capacity to produce groundwater, the location of its wells within the Alluvium and Saugus Formation, local hydrology, availability of imported water supplies and water demands.*

[2] *To ensure sustainability, the purveyors have committed that the annual use of groundwater pumped collectively in any given year will not exceed the purveyors' operating plan as described in the 2005 Basin Yield Report and the 2009 Basin Yield Update, and reported annually in the Santa Clarita Valley Water Reports. As noted in the discussion of the purveyors' operating plan for groundwater in Table 3-6 of the 2005 UWMP, the "normal" year quantities of groundwater pumped from the Alluvium and Saugus Formation are 30,000 to 40,000 afy and 7,500 to 15,000 afy, respectively.*

[3] *Groundwater pumping shown for purveyor municipal and industrial uses only.*

*Source: 2005 UWMP (see Draft **Appendix 4.8**)*

Background. Total pumping from the Alluvium in 2009 was about 39,986 acre-feet, a decrease of 1,730 acre-feet from the preceding year. Total Alluvium pumping was at the upper end of the groundwater operating plan range. Of the total Alluvial pumping in 2009, about 24,396 acre-feet (61 percent) was for municipal water supply, and the balance, about 15,590 acre-feet (39 percent), was for agriculture and other smaller uses, including individual domestic uses. In a longer-term context, there has been a change in municipal/agricultural pumping distribution since SWP deliveries began in 1980, toward a higher fraction for municipal water supply (from about 50 percent to more than 65 percent of Alluvial pumpage), which reflects the general land use changes in the area. Ultimately, on a long-term average basis since the beginning of imported water deliveries from the SWP, total Alluvial pumping has been about 32,000 afy, which is at the lower end of the range of operational yield of the Alluvium. That average has been higher over the last decade, about 38,500 afy, which remains within the range of

operational yield of the Alluvium. The overall historic record of Alluvial pumping is illustrated in Figure 3-2 of the 2009 Water Report (May 2010).

Groundwater levels in various parts of the basin historically have exhibited different responses to both pumpage and climatic fluctuations. During the last 20 to 30 years, depending on location, Alluvial groundwater levels have remained nearly constant (generally toward the western end of the basin), or have fluctuated from near the ground surface when the basin is full, to as much as 100 feet lower during intermittent dry periods of reduced recharge (generally toward the eastern end of the basin). For illustration of the various groundwater level conditions in the basin, the Alluvial wells have been grouped into areas with similar groundwater level patterns, as shown in Figure 3-3 of the 2009 Water Report (May 2010). The groundwater level records have been organized into hydrograph form (groundwater elevation vs. time) as illustrated in 2009 Water Report (Figures 3-4 and 3-5). Also shown on these plots is an annual marker indicating whether the year had a below average amount of rainfall. The wells shown on these plots are representative of the respective areas, showing the range of values (highest to lowest elevation) through each area, and containing a sufficiently long-term record to illustrate trends over time.

Situated along the eastern upstream end of the Santa Clara River channel, the "Mint Canyon" area, located at the far eastern end of the groundwater basin, and the nearby "Above Saugus WRP" ares generally exhibit similar groundwater level responses to hydrologic and pumping conditions. (See 2009 Water Report [Figure 3-4].) As shown in 2009 Water Report Figure 3-6, the purveyors decreased total Alluvial pumping from the "Mint Canyon" area steadily from 2000 through 2003, and correspondingly increased pumping in the "Below Saugus WRP," and "Below Valencia WRP" areas. In spite of a continued period of below-average precipitation from 1999 to 2003, that progressive decrease in pumping resulted in a cessation of groundwater level decline in the "Mint Canyon Area." Subsequent wet conditions in late 2004, continuing into 2005, resulted in full recovery of groundwater storage. With such high groundwater levels, pumping in the "Mint Canyon" area was increased in 2005 and 2006, with no significant change in groundwater levels in 2005 and a slight decrease in 2006. Over the last four years, precipitation has been average to below-average. Accordingly, water levels have shown some decline, but this decline has been slowed by the reduction in pumpage in this easternmost part of the basin. Water levels remain within the historic range of levels over similar wet/dry periods. Just below the 'Mint Canyon' area, the 'Above Saugus WRP' has shown a similar decline, despite the steady rate of pumping over the last four years. Here the water levels also remain within the range of historical levels, as expected following a multi-year period without a significant wet year. These parts of the Valley have historically experienced a number of alternating wet and dry hydrologic conditions (2009 Water Report Figure 3-4) during which groundwater level declines have been followed by returns to high or mid-range

historic levels. This trend has continued over the last four years where below-average hydrologic conditions in 2009 followed three average to below-average years, and groundwater levels remain within mid-range levels.

In the 'Bouquet Canyon' area, pumping has remained relatively constant for the last 10 years, and water levels have fluctuated with consecutive wet or dry years. During and since the most recent wet conditions of 2004 and 2005, water levels returned to within historic mid-range levels. During 2009, groundwater level trends either leveled off or showed some increase with the onset of precipitation at the end of the year. This groundwater level response to wet/dry years and pumping is typical for this area of the basin and, for 2009, levels have remained within the range of historical levels. When water levels are low, well yields and pumping capacities in this and other eastern areas can be impacted. The affected purveyors typically respond by increasing use of Saugus Formation and imported (SWP) supplies, as shown in 2009 Water Report Table 2-3. The purveyors also shift a fraction of the Alluvial pumping that would normally be supplied by the eastern areas to areas further west, where well yields and pumping capacities remain fairly constant because of smaller groundwater level fluctuations.

In the western parts and lower elevations of the Alluvium, groundwater levels respond to pumping and precipitation in a similar manner, but to an attenuated or limited extent compared to those situated in the eastern, higher elevation areas. As shown in the western group of hydrographs in 2009 Water Report Figure 3-5, groundwater level fluctuations become more subtle moving westward and lower in the Valley. The "Below Saugus WRP" area, along the Santa Clara River immediately downstream of the Saugus Water Reclamation Plant, and the "San Francisquito Canyon" area generally exhibit similar groundwater level trends. In this middle part of the basin, historical groundwater levels were lower in the 1950s and 60s than current levels. Groundwater levels in this area notably recovered as pumping declined through the 1960s and 1970s. They have subsequently sustained generally high levels for much of the last 30 years, with three dry-period exceptions: mid-1970s, late 1980s to early 1990s, and the late 1990s to early 2000s. Recoveries to previous high groundwater levels followed both of the short dry-period declines in the 1970s and 1990s. More recently, groundwater levels recovered significantly in both areas, to historic highs, following a wetter-than-average year in 2004 and a significantly wet year in 2005. Since 2005, pumping has been increasing in the "Below Saugus WRP" area, while "San Francisquito Canyon" area pumping approximately doubled in 2005, and has since gradually declined and leveled off over the last three years. Despite the current multi-year period of average to below-average precipitation, groundwater levels in these two areas remain in mid-range to high historical range.

The "Castaic Valley" area is located along Castaic Creek below Castaic Lake. Below that and along the Santa Clara River, downstream of the existing Valencia Water Reclamation Plant, is the "Below Valencia WRP" area, where discharges of treated effluent from the Valencia WRP to the Santa Clara River

contribute to groundwater recharge. In the "Castaic Valley" area, groundwater levels continue to remain fairly constant, with slight responses to climatic and other fluctuations, since the 1950s (2009 Water Report Figure 3-5). Small changes in groundwater levels over the last four years are consistent with other short-term historical fluctuations. The long-term, generally constant trend remained through 2009. The "Below Valencia WRP" area groundwater levels exhibit slight, if any, response to climatic fluctuations, and have remained fairly constant since the 1950s despite a notable increase in pumping through the 1990s that has since remained relatively steady over the last seven years, through 2009 (2009 Water Report Figure 3-5 and 3-6).

In summary, depending on the period of available data, the history of groundwater levels in the Alluvium shows the same general picture: recent (last 30 years) groundwater levels have exhibited historic highs; in some locations, there are intermittent dry-period declines (resulting from use of some groundwater from storage) followed by wet-period recoveries (and associated refilling of storage space). On a long-term basis, whether over the last 29 years since importation of supplemental SWP water, or over the last 40 to 50 years (since the 1950s and 1960s), the Alluvium shows no chronic trend toward decreasing water levels and storage, and thus shows no symptoms of water level-related overdraft. Consequently, pumping from the Alluvium has been and continues to be sustainable, well within the operational yield of that aquifer on a long-term average basis, and within the operating yield in almost every individual year.

Table 4.8-5
Pumping Rates Simulated for Individual Alluvial Aquifer Wells under the 2008 Groundwater Operating Plan

Well Name	Alluvial Subarea	2005 Operating Plan		2008 Operating Plan			Comments
		Normal	Dry	Normal	Dry Yr 1	Dry Yr 2+	
NCWD-Castaic 1	Castaic Valley	385	345	350	300	250	
NCWD-Castaic 2	Castaic Valley	166	125	100	100	100	
NCWD-Castaic 4	Castaic Valley	100	45	100	0	0	
NCWD-Castaic 7	Castaic Valley			300	200	200	Assume similar pumping as at NCWD-Castaic3 during early 1980s
NCWD-Pinetree 1	Above Mint Canyon	164	0	150	0	0	
NCWD-Pinetree 3	Above Mint Canyon	545	525	350	300	300	
NCWD-Pinetree 4	Above Mint Canyon	300	0	300	200	200	
NCWD-Pinetree 5	Above Mint Canyon			300	200	200	
NCWD Total		**1,660**	**1,040**	**1,950**	**1,300**	**1,250**	
NLF-161	Below Valencia WRP	485	485	1,000	1,000	1,000	
NLF-B10	Below Valencia WRP	344	344	500	350	350	
NLF-B11	Below Valencia WRP	232	232	100	200	200	
NLF-B14	Below Valencia WRP			300	1,000	1,000	
NLF-B20	Below Valencia WRP	584	584	350	500	500	Pumping was assigned to former B7 well in 2005 analysis.
NLF-B5	Below Valencia WRP	1,582	1,582	2,400	1,900	1,900	
NLF-B6	Below Valencia WRP	1,766	1,766	1,100	1,100	1,100	
NLF-C	Below Valencia WRP	1,373	1,373	1,100	1,000	1,000	
NLF-C3	Below Valencia WRP	192	192	100	200	200	
NLF-C4	Below Valencia WRP	809	809	200	450	450	
NLF-C5	Below Valencia WRP	850	850	900	850	850	
NLF-C7	Below Valencia WRP	1,107	1,107	350	300	300	

Well Name	Alluvial Subarea	2005 Operating Plan		2008 Operating Plan			Comments
		Normal	Dry	Normal	Dry Yr 1	Dry Yr 2+	
NLF-C8	Below Valencia WRP	594	594	400	400	400	
NLF-E5	Below Valencia WRP	750	750	100	150	150	
NLF-E9	Below Valencia WRP	814	814	900	350	350	
NLF-G45	Below Valencia WRP	390	390	350	400	400	
NLF Total		**11,872**	**11,872**	**10,150**	**10,150**	**10,150**	
SCWD-Clark	Bouquet Canyon	782	700	700	700	700	
SCWD-Guida	Bouquet Canyon	1,320	1,230	1,300	1,250	1,200	
SCWD-Honby	Above Saugus WRP	696	870	1,000	850	700	
SCWD-Lost Canyon 2	Above Mint Canyon	741	640	700	700	650	
SCWD-Lost Canyon 2A	Above Mint Canyon	1,034	590	700	650	600	
SCWD-Mitchell #5A	Above Mint Canyon	0	0	500	350	200	
SCWD-Mitchell #5B	Above Mint Canyon	557	0	800	550	300	
SCWD-N. Oaks Central	Above Mint Canyon	822	1,640	850	800	700	
SCWD-N. Oaks East	Above Mint Canyon	1,234	485	800	750	700	
SCWD-N. Oaks West	Above Mint Canyon	898	0	800	750	700	
SCWD-Sand Canyon	Above Mint Canyon	930	195	1,000	600	200	
SCWD-Sierra	Above Mint Canyon	846	0	1,100	900	700	
SCWD-Valley Center	Above Saugus WRP	800	800	800	800	800	Pumping transferred from former well SCWD-Stadium
SCWD Total		**10,660**	**7,150**	**11,050**	**9,650**	**8,150**	
VWC-D	Castaic Valley	690	690	880	880	880	
VWC-E15	Below Valencia WRP			800	800	800	
VWC-N	Below Saugus WRP	620	620	650	650	650	
VWC-N7	Below Saugus WRP	1,160	1,160	1,160	1,160	1,160	
VWC-N8	Below Saugus WRP	1,160	1,160	1,160	1,160	1,160	
VWC-Q2	Below Saugus WRP	985	985	1,100	1,100	1,100	

Well Name	Alluvial Subarea	2005 Operating Plan		2008 Operating Plan			Comments
		Normal	Dry	Normal	Dry Yr 1	Dry Yr 2+	
VWC-S6	Below Saugus WRP	865	865	1,000	1,000	1,000	
VWC-S7	Below Saugus WRP	865	865	500	500	500	
VWC-S8	Below Saugus WRP	865	865	500	500	500	
VWC-T7	Above Saugus WRP	920	920	750	750	750	Pumping transferred from former wells VWC-T2 and VWC-T4
VWC-U4	Above Saugus WRP	935	935	800	800	800	
VWC-U6	Above Saugus WRP	825	825	800	800	800	Pumping transferred from former well VWC-U3
VWC-W10	San Francisquito Canyon	865	865	1,000	1,000	1,000	Pumping was assigned to former W6 well in 2005 analysis.
VWC-W11	San Francisquito Canyon	600	600	800	800	800	
VWC-W9	San Francisquito Canyon	350	350	950	950	950	
VWC Total		**11,705**	**11,705**	**12,850**	**12,850**	**12,850**	
Robinson Ranch	Above Mint Canyon	932	400	600	550	450	
WHR	Castaic Valley	1,600	1,600	2,000	2,000	2,000	
Purveyor Alluvial Usage		**24,025**	**19,895**	**25,850**	**23,800**	**22,250**	**2008 Operating Plan:**
Other Alluvial Usage		**14,404**	**13,872**	**12,750**	**12,700**	**12,600**	**35,000 to 40,000 afy in normal and wet years**
Total Alluvial Pumping		**38,429**	**33,767**	**38,600**	**36,500**	**34,850**	**30,000 to 35,000 afy in dry years**

Notes:
All pumping volumes are listed in units of acre-feet per year (afy).
Wells that are not listed are assumed to not be pumping in the future.
NLF = Newhall Land & Farming Company; NCWD = Newhall County Water District
SCWD = Santa Clarita Water Division of Castaic Lake Water Agency; VWC = Valencia Water Company
WHR = Wayside Honor Rancho, whose wells are owned by the Los Angeles County Waterworks District No. 36
"Other Alluvial Usage" consists of pumping by NLF, WHR, and Robinson Ranch. An additional 500 afy of pumping by other private well owners is not included in this table.
Source: Analysis of Groundwater Supplies and Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin, August 2009.

Table 4.8-6
Pumping Rates Simulated for Individual Saugus Formation Wells under the 2008 Groundwater Operating Plan

Owner	Well Name	Non-Drought Years	Drought Year 1	Drought Year 2	Drought Year 3
NCWD	12	1,765	2,494	2,494	2,494
	13	1,765	2,494	2,494	2,494
Total Pumping (NCWD Wells)		**3,530**	**4,988**	**4,988**	**4,988**
SCWD	Saugus1	1,772	1,772	1,772	1,772
	Saugus2	1,772	1,772	1,772	1,772
Total Pumping (SCWD Wells)		**3,544**	**3,544**	**3,544**	**3,544**
Private	Palmer Golf Course	500	500	500	500
Total Pumping (Future Golf)		**500**	**500**	**500**	**500**
VWC	159	50	50	50	50
	160 (Municipal)	500	830	830	830
	160 (Val. Ctry Club)	500	500	500	500
	201	300	300	3,777	3,777
	205	1,211	2,945	4,038	4,038
	206	1,175	2,734	3,500	3,500
	207	1,175	2,734	3,500	3,500
Total Pumping (VWC Wells)		**4,911**	**10,093**	**16,195**	**16,195**
	Future #1	0	0	0	3,250
	Future #2	0	0	0	3,250
	Future #3	0	0	0	3,250
Total Pumping (Future Wells)		**0**	**0**	**0**	**9,750**
Total Pumping (All Saugus Wells)		**12,485**	**19,125**	**25,227**	**34,977**

Notes:
All pumping volumes are listed in units of acre-feet per year (afy).
Wells that are not listed are assumed to not be pumping in the future.
NLF = Newhall Land & Farming Company; NCWD = Newhall County Water District;
SCWD = Santa Clarita Water Division of Castaic Lake Water Agency; VWC = Valencia Water Company
Source: Analysis of Groundwater Supplies and Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin, August 2009.

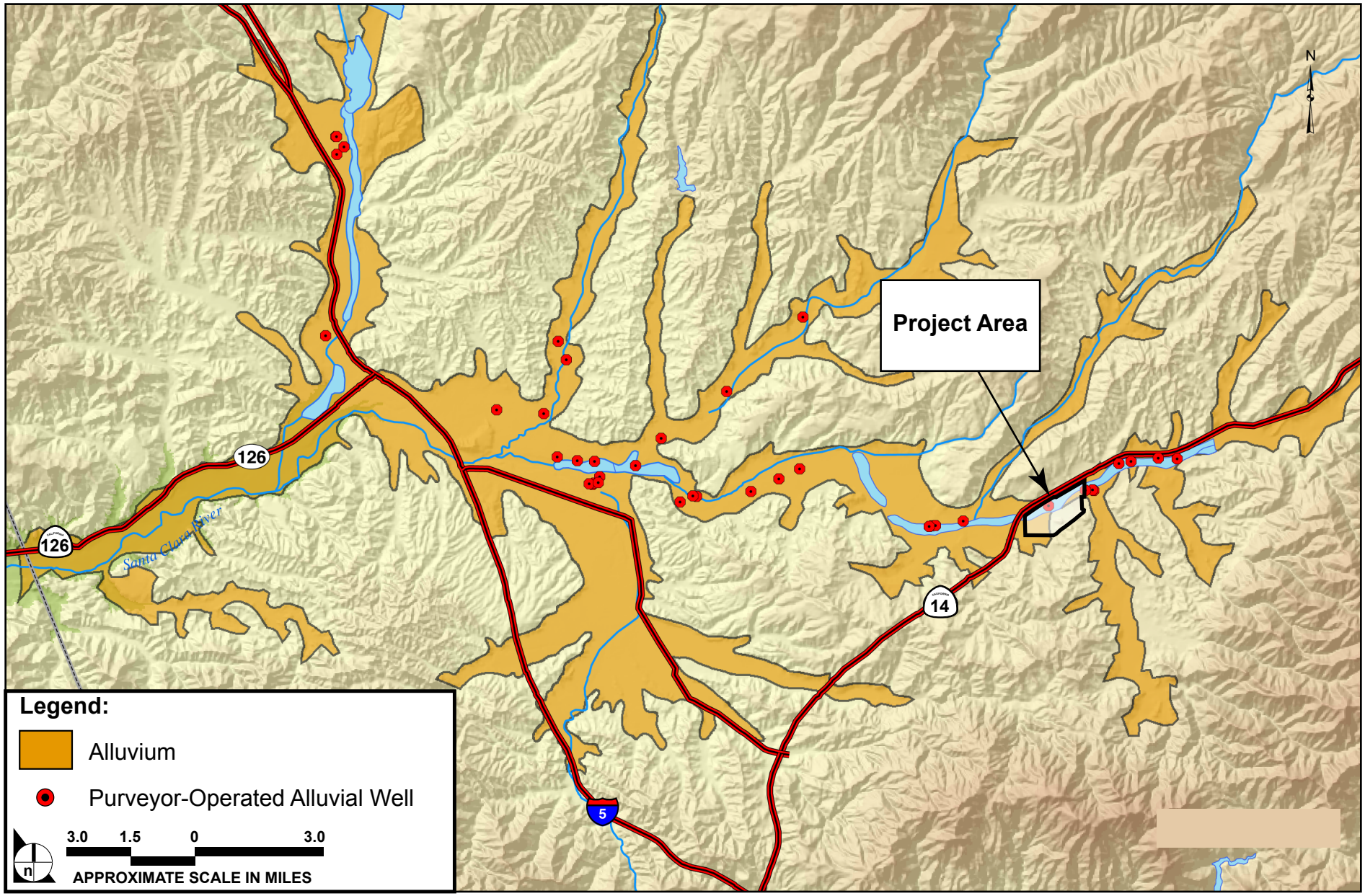
Adequacy of Supply. For municipal water supply, with existing wells and pumps, the three retail water purveyors with Alluvial wells (NCWD, SCWD, and VWC) have a combined pumping capacity from active wells (not contaminated by perchlorate) of 38,600 afy. Alluvial pumping capacity from all the active municipal supply wells is summarized in **Table 4.8-5, Pumping Rates Simulated for Individual Alluvial Aquifer Wells under the 2008 Groundwater Operating Plan**. The locations of the various

municipal Alluvial wells throughout the Basin are illustrated on **Figure 4.8-4, Municipal Alluvial Well Locations; Santa Clara River Valley, East Groundwater Subbasin**. As indicated, the pumping capacity of the SCWD Stadium well (deactivated due to the perchlorate contamination), representing another 800 afy of pumping capacity, has been transferred to the Valley Center well.

In terms of adequacy and availability, the combined active Alluvial groundwater source capacity of municipal wells is approximately 38,600 afy. This is more than sufficient to meet the municipal, or urban, component of groundwater supply from the Alluvium.

Sustainability. Until recently, the long-term renewability of Alluvial groundwater was empirically determined from approximately 60 years of recorded experience. This empirical data confirmed long-term stability in groundwater levels and storage, with some dry period fluctuations in the eastern part of the Basin, over a historical range of total Alluvial pumpage from as low as about 20,000 afy to as high as about 43,000 afy. These empirical observations have been complemented by the development and application of a numerical groundwater flow model, which has been used to predict aquifer response to the planned operating ranges of pumping. The numerical groundwater flow model also has been used to analyze the control of perchlorate contaminant migration under selected pumping conditions that would restore, with treatment, pumping capacity inactivated due to perchlorate contamination detected in some wells in the Basin. The latter use of the model is described in Chapter 5 of the *2005 UWMP*, and the *2009 Basin Yield Update,* which address the Saugus Formation and the overall approach to the perchlorate contamination found in four Saugus wells.

To examine the yield of the Alluvium or, the sustainability of the Alluvium on a renewable basis, the groundwater flow model was used to examine the long-term projected response of the aquifer to pumping for municipal and agricultural uses in the 30,000 to 40,000 afy range under average/normal and wet conditions, and in the 30,000 to 35,000 afy range under locally dry conditions (for modeling methodology, please see the 2009 Basin Yield Update presented in Draft EIR **Appendix 4.8**.). To examine the response of the entire aquifer system, the model also incorporated pumping from the Saugus Formation in accordance with the normal (7,500–15,000 afy) and dry year (15,000–35,000 afy) operating plan for that aquifer. The model was run over a 78-year hydrologic period, which was selected from actual historical precipitation to examine a number of hydrologic conditions expected to affect both groundwater pumping and groundwater recharge. The selected 78-year simulation period was assembled from an assumed recurrence of 1980 to 2003 conditions, followed by an assumed recurrence of 1950 to 2003 conditions. The 78-year period was analyzed to define both local hydrologic conditions (normal and dry), which affect the rate of pumping from the Alluvium, and hydrologic conditions that affect SWP operations, which in turn affect the rate of pumping from the Saugus. The resultant simulated pumping cycles included the distribution of pumping for each of the existing Alluvial aquifer wells, for normal and dry years, respectively, as shown in **Table 4.8-5**.



SOURCE: Luhdorff & Scalmanini Consulting Engineers – January 2006

FIGURE **4.8-4**

Municipal Alluvial Well Locations; Santa Clara River Valley, East Groundwater Subbasin

Simulated Alluvial aquifer response to the range of hydrologic conditions and pumping stresses is essentially a long-term repeat of the historical conditions that have resulted from similar pumping over the last several decades. The resultant response consists of (1) generally constant groundwater levels in the middle to western portion of the Alluvium and fluctuating groundwater levels in the eastern portion as a function of wet and dry hydrologic conditions; (2) variations in recharge that directly correlate with wet and dry hydrologic conditions; and (3) no long-term decline in groundwater levels or storage. The Alluvial aquifer is considered a sustainable water supply source to meet the Alluvial portion of the operating plan for the Basin. This is based on the combination of actual experience with Alluvial aquifer pumping at capacities similar to those planned for the future and the resultant sustainability (recharge) of groundwater levels and storage, and further based on modeled projections of aquifer response to planned pumping rates that also show no depletion of groundwater.

Aquifer Protection. The remaining key consideration related to current and future use of the Alluvium is the impact of perchlorate contamination. Extensive investigation of the extent of perchlorate contamination, combined with the groundwater modeling previously described, has led CLWA and the retail purveyors to commence restoration of impacting pumping (well) capacity and integrated control of contamination migration. In the short term, the response plan for Alluvial production wells, located down gradient of the former Whittaker-Bermite site, was to promptly install wellhead treatment to ensure adequate water supplies. This plan was effectively implemented in 2005 by Valencia Water Company through the permitting and installation of wellhead treatment at Valencia Water Company's Well Q2. After returning the well to service with wellhead treatment in October 2005, followed by nearly two years of operation with wellhead treatment, during which there was no detection of perchlorate, Valencia Water Company was authorized by the California Department of Public Health to discontinue treatment. Since that time, Well Q2 has been operating without treatment and there has been no detection of perchlorate since the wellhead treatment was discontinued. As a result, Well Q2 remains a part of the Valley's active municipal groundwater source capability.

The purveyors' response plan also addressed the impacted Alluvial production well owned by SCWD (Stadium Well), which was shut down due to the detection of perchlorate in 2002. In response, SCWD recently drilled a replacement well (Valley Center Well) to the east, north-northeast of the former Whittaker-Bermite site. The Valley Center Well also is part the Valley's active municipal groundwater source capability.

As discussed below, the long-term plan includes the CLWA groundwater containment, treatment, and restoration project to prevent further downstream migration of perchlorate, the treatment of water extracted as part of that containment process, and the recovery of lost local groundwater production from the Saugus Formation.

(b) Saugus Formation

Based on historical operating experience and extensive recent testing and groundwater modeling analysis, the Saugus Formation can supply water on a long-term sustainable basis in a normal range of 7,500 to 15,000 afy, with intermittent increases to 25,000 to 35,000 acre-feet in dry years. The dry-year increases, based on limited historical observation and modeled projections, demonstrate that a small amount of the large groundwater storage in the Saugus Formation can be pumped over a relatively short (dry) period. This would be followed by recharge (replenishment) of that storage during a subsequent normal-to-wet period when pumping would be reduced.

Background. Total pumping from the Saugus in 2009 was about 7,700 acre-feet, or about 750 acre-feet more than in the preceding year. Of the total Saugus pumping in 2009, most (about 6,700 acre-feet) was for municipal water supply, and the balance (1,000 acre-feet) was for agricultural and other irrigation uses. Historically, groundwater pumping from the Saugus peaked in the early 1990s and then steadily declined through the remainder of that decade. Since then, Saugus pumping had been in the range of about 4,000 to 6,500 afy, with the increase to almost 7,700 acre-feet in 2007 and again in 2009. Over the last five years, the municipal use of Saugus water has been relatively unchanged; almost all of the relatively small fluctuations from year to year have been related to non-municipal usage. On a long-term average basis since the importation of SWP water, total pumping from the Saugus Formation has ranged between a low of about 3,700 afy (in 1999) and a high of nearly 15,000 afy (in 1991); average pumping from 1980 to present has been about 6,800 afy. These pumping rates remain well within, and generally at the lower end of, the range of Operational Yield of the Saugus Formation. The overall historic record of Saugus pumping is illustrated in Figure 3-8 of the 2009 Water Report (May 2010).

Unlike the Alluvium, which has an abundance of wells with extensive water level records, the water level data for the Saugus Formation are limited by both the distribution of the wells in that Formation and the periods of water level records. The wells that do have water level records extending back to the mid-1960s indicate that groundwater levels in the Saugus Formation were highest in the mid-1980s and are currently higher than they were in the mid-1960s (2009 Water Report Figure 3-9). Based on these data, there is no evidence of any historic or recent trend toward permanent water level or storage decline. There continue to be seasonal fluctuations in groundwater levels but the prevalent longer-term trend is one of general stability.

Consistent with the 2001 Update Report (Slade), the 2005 Basin Yield Report (CH2M Hill and LSCE), the Basin Yield Update, and the 2005 UWMP, the purveyors continue to maintain groundwater storage and associated water levels in the Saugus Formation so that supply is available during drought periods, when Alluvial pumping might be reduced and/or SWP or other supplemental supplies also decreased. The

period of increased pumping during the early 1990s is a good example of this management strategy. Most notably, in 1991, when SWP deliveries were substantially reduced, increased pumping from the Saugus made up almost half of the decrease in SWP deliveries. The increased Saugus pumping over several consecutive dry years (1991–1994) resulted in short-term declining groundwater levels, reflecting the use of water from storage. However, groundwater levels subsequently recovered when pumping declined, reflecting recovery of groundwater storage in the Saugus Formation.

Adequacy of Supply. For municipal water supply with existing wells, the three retail water purveyors with Saugus wells (NCWD, SCWD, and VWC) have a combined pumping capacity from active wells (accounting for those contaminated by perchlorate) of 12,485 afy in non-drought years, and up to 34,977 afy by the third year of a three-year drought. Saugus pumping capacity from all the active municipal supply wells is summarized in **Table 4.8-6, Pumping Rates Simulated for Individual Saugus Formation Wells under the 2008 Groundwater Operating Plan**, and the locations of the various active municipal Saugus wells are illustrated on **Figure 4.8-5, Saugus Well Locations; Santa Clara River Valley, East Groundwater Subbasin**. These capacities do not include the four Saugus wells contaminated by perchlorate, although they indirectly reflect the capacity of one of the contaminated wells, VWC's Well 157, which has been sealed and abandoned, and replaced by VWC's Well 206 in a non-impacted part of the Basin.

In terms of adequacy and availability, the combined active Saugus groundwater source capacity of municipal wells of up to 19,125 afy, is more than sufficient to meet the planned use of Saugus groundwater in normal years of 7,500 to 15,000 afy. This currently active capacity is more than sufficient to meet water demands, in combination with other sources, if both of the next two years are dry. At that time, the combination of currently active capacity and restored impacted capacity, through a combination of treatment at two of the impacted wells and replacement well construction, will provide sufficient total Saugus capacity to meet the planned use of Saugus groundwater during multiple dry years of 35,000 acre-feet, if the third year is also a dry year.

Sustainability. Until recently, the long-term sustainability of Saugus groundwater was empirically determined from limited historical experience. The historical record shows fairly low annual pumping in most years, with one four-year period of increased pumping up to about 15,000 afy that produced no long-term depletion of the substantial groundwater storage in the Saugus. Those empirical observations have now been substantially strengthened by the development and application of the numerical groundwater flow model, which has been used to examine aquifer response to the operating plan for pumping from both the Alluvium and the Saugus and also to examine the effectiveness of pumping for both contaminant extraction and control of contaminant migration within the Saugus Formation. The

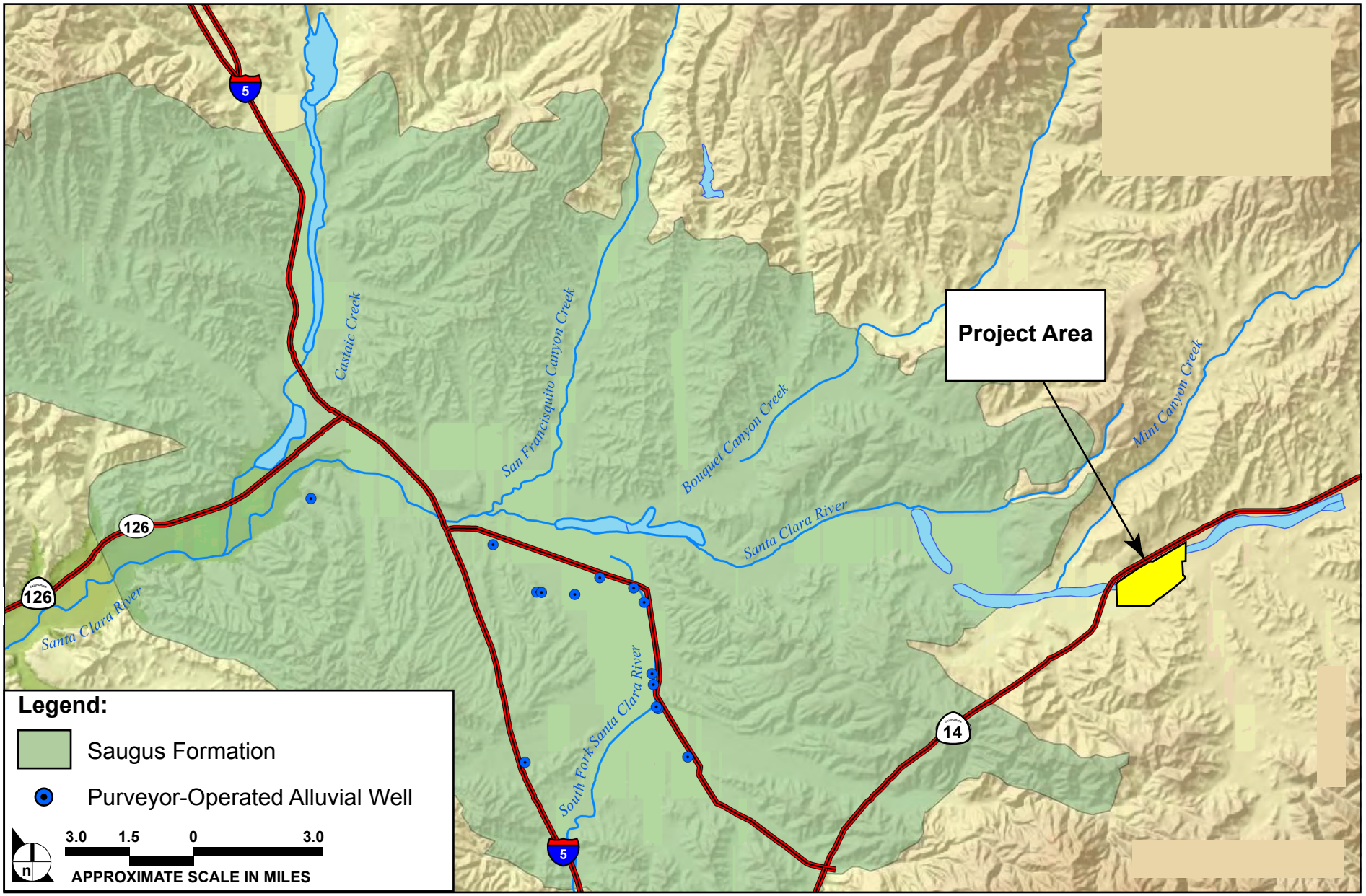
latter aspects of Saugus pumping are discussed in further detail in the *2009 Basin Yield Update* (see, Draft EIR **Appendix 4.8**).

To examine the yield of the Saugus Formation or, its sustainability on a renewable basis, the groundwater flow model was used to examine long-term projected response to pumping from both the Alluvium and the Saugus over the 78-year period of hydrologic conditions using alternating wet and dry periods as have historically occurred. The pumping simulated in the model was in accordance with the operating plan for the Basin. For the Saugus, simulated pumpage included the planned restoration of recent historic pumping from the perchlorate-impacted wells. In addition to assessing the overall recharge of the Saugus, pumping was analyzed to assess the effectiveness of controlling the migration of perchlorate by extracting and treating contaminated water close to the source of contamination.

Simulated Saugus Formation response to the ranges of pumping under assumed recurrent historical hydrologic conditions is consistent with actual experience under smaller pumping rates. The response consists of (1) short-term declines in groundwater levels and storage near pumped wells during dry-period pumping; (2) rapid recovery of groundwater levels and storage after cessation of dry-period pumping; and (3) no long-term decreases or depletion of groundwater levels or storage. The combination of actual experience with Saugus pumping and recharge up to about 15,000 afy, now complemented by modeled projections of aquifer response that show long-term utility of the Saugus at 7,500 to 15,000 afy in normal years and rapid recovery from higher pumping rates during intermittent dry periods, shows that the Saugus Formation can be considered a sustainable water supply source to meet the Saugus portion of the operating plan for the Basin.

Aquifer Protection. The operating plan for the Saugus Formation accounts for historical perchlorate detections and the resulting containment and remedial response activities that are being constructed at this time. As described in further detail below, in 1997, a total of four Saugus production wells were inactivated for water supply service due to the presence of perchlorate. The four Saugus wells removed from service were as follows: (a) two Saugus production wells owned by SCWD (Saugus wells 1 and 2); (b) one Saugus production well owned by NCWD (NCWD Well 11); and (c) one Saugus production well owned by Valencia Water Company (VWC Well 157).

As part of the ongoing implementation of perchlorate containment and restoration of impacted capacity, VWC Well 157 was abandoned in January 2005 and replaced by new Well VWC 206 in a non-impacted portion of the basin. Thus, the Saugus capacity analysis includes planned pumping from replacement Well VWC 206.



SOURCE: Luhdorff & Scalmanini Consulting Engineers – January 2006

FIGURE **4.8-5**

Saugus Well Locations; Santa Clara River Valley, East Groundwater Subbasin

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The longer range plan of CLWA and the purveyors has been to pursue a project to contain further downstream migration of perchlorate from the former Whittaker-Bermite site, treatment and subsequent use of the pumped water from the containment process for water supply, and installation of replacement wells in non-impacted portions of the basin to restore the remainder of groundwater supply impacted by perchlorate.

(c) Impacted Alluvial and Saugus Wells

A small group of wells that have been impacted by perchlorate represent a temporary loss of well capacity within the CLWA service area. Of the six wells that were initially removed from active water supply service upon the detection of perchlorate, three wells remain out of service. However, CLWA and the purveyors have commenced restoration of this well capacity. This implementation effort includes a combination of treatment facilities and replacement wells.

As background, in 1997, the State of California conducted tests on a number of municipal water wells owned by SCWD, NCWD and VWC located in the vicinity of the former Whittaker Bermite site. These and subsequent tests found perchlorate in four of the purveyors' deep Saugus Formation aquifer wells: NCWD-11, SCWD Saugus 1, SCWD Saugus 2 and VWC-157 at maximum levels ranging from 14 ppb to 47 ppb depending on the well.[11] These wells were removed from active service and have not been used for drinking water supplies since 1997. In November 2002, perchlorate was found in a shallow Alluvial aquifer groundwater well—SCWD Stadium—at levels up to 5.9 ppb. In April 2005, perchlorate contamination was found in another shallow Alluvial aquifer groundwater well—VWC-Q2. The source of the perchlorate is believed to be from the Whittaker-Bermite site given the proximity of all six impacted wells to the property and the fact that both groundwater and surface water flows from the property to the six wells.

In November 2000, CLWA, NCWD, SCWD, and VWC (collectively, "Plaintiffs") filed a complaint against past owner Whittaker and current owners SCLLC and Remediation Financial, Inc., (RFI) (Whittaker, SCLLC and RFI are collectively referred to as "Defendants") in federal court asserting that hazardous substances (including perchlorate) released from the Whittaker Bermite site contaminated some of Plaintiffs' water production wells. In July 2002, Plaintiffs moved the Court for partial summary judgment that Defendants were liable for response costs under the Comprehensive Environmental Response, Compensation, and Recovery Act (CERCLA). At the same time, Whittaker moved the Court to establish Plaintiffs' liability under CERCLA. In July 2003, the Court granted (in part) Plaintiffs' motion, found that

11 Perchlorate is a regulated drinking water contaminand in California, with a maximum contaminant level (MCL) of 6 micrograms per liter (μg/l).

Whittaker and SCLLC were liable for CERCLA response costs, and denied Whittaker's motion. (*Castaic Lake Water Agency v. Whittaker Corporation*, 272 F.Supp.2d 1053 (2003).)

In September 2003, the parties entered into an interim settlement agreement that stayed litigation to allow the parties to, *inter alia*, develop an engineering solution to contain and abate the groundwater contamination and negotiate a final settlement agreement. As a condition for staying litigation activities, Defendants were required to reimburse CLWA for past monitoring and investigation costs and fund the development of the engineering solution.

On April 19, 2005, Plaintiffs and Defendants reached an agreement in principle on damages that was subject to Defendants reaching a settlement funding agreement with their insurance carriers. During the April 2005 mediation, VWC informed Defendants of the perchlorate contamination found in VWC's groundwater well Q2. Whittaker agreed to provide $500,000 for the installation of a wellhead treatment unit. All capital as well as operating and maintenance costs for this treatment unit were funded by insurance companies representing the current and past owners of the property. Utilizing these funds, VWC installed a perchlorate removal system utilizing ion exchange technology. After only six months from the initial detection of perchlorate in the well, Q2 was returned to active service on October 12, 2005. Subsequently in October 2007, the California Department of Public Health approved a request by VWC to remove the treatment system as a result of two years of continuous operation without a detection of perchlorate in the untreated groundwater produced by Q2. Currently, Q2 remains in operation without any requirement for well head treatment.

In November 2005, Defendants and their insurance carriers reached an agreement on the allocation of environmental insurance proceeds for the site. In May 2007, the water purveyors announced a settlement of their lawsuit against Whittaker to contain and remove perchlorate from the Santa Clarita Valley's groundwater aquifers. The water purveyors estimate this settlement provides up to $100 million to address the problem. The underlying litigation was dismissed by the U.S. District Court in August 2007. See **Appendix 4.8**, which contains the following documents: (1) *Castaic Lake Water Agency Litigation Settlement Agreement*, (2) *Order Granting Joint Motion for Court Approval, Good Faith Settlement Determination and Entry of Consent Order* dated July 16, 2007, and (3) *Stipulation to Dismiss Plaintiffs' Claims and Defendants' Counterclaim*, dated August 20, 2007.

The Settlement Agreement provides funding to construct replacement wells, pipelines, and a treatment plant to remove perchlorate. The Settlement Agreement also provides funds to operate and maintain the treatment system for up to 30 years, which is estimated to cost as much as $50 million over the life of the project. The treatment plant has been designed by CLWA and the Settlement Agreement provides $1.7 million to reimburse CLWA for past expenditures. In addition, a $10 million "rapid response fund"

will be established to allow the water purveyors to immediately treat threatened wells that could become impacted by perchlorate contamination in the future. VWC received a total of $3.5 million under the Settlement Agreement, which included $2.5 million for past environmental claims, and $1.0 million to close and abandon V-157 and drill replacement well V-206.

Following the settlement of the litigation, VWC and the other water purveyors entered into two separate agreements, each formally prepared as a Memorandum of Understanding (MOU). These MOUs were necessary to implement the various obligations under the Settlement Agreement. The first MOU sets forth the rights among the water purveyors to receive payments pursuant to the Settlement Agreement and clarifies project administration, which includes such things as project modification, future perchlorate detections, monitoring, payment of ongoing legal fees, dispute resolution and other provisions described in the Settlement Agreement. The second MOU sets forth the operational plan and financial arrangements to deliver certain quantities of groundwater from the perchlorate treatment system and a future replacement well field that, in total, would restore the water supply capacity impacted by perchlorate to SCWD and NCWD. Both MOUs are included in Draft EIR **Appendix 4.8**.

b. Water Quality in the Alluvial Aquifer and Saugus Formation

Given that one of the sources of potable water for the project is from the local basin, in particular the Alluvial aquifer, local groundwater quality is an important consideration.

(1) Overview

The groundwater quality of the Alluvial aquifer and the Saugus Formation consistently meets drinking water standards set by the U.S. Environmental Protection Agency (U.S. EPA) and Department of Public Health (DPH). The water is delivered by the local retail purveyors in the CLWA service area for domestic use without treatment, although the water is disinfected by the retail purveyors prior to delivery. Existing water quality conditions for urban water uses in the CLWA service area are documented in the Santa Clarita Valley Water Quality Reports. The latest report is the 2010 Santa Clarita Valley Water Report. This report provides the cumulative results of thousands of water quality tests performed each year in the Santa Clarita Valley on CLWA's and the local purveyors' water supplies.

A Consumer Confidence Report (CCR) also is provided to all Santa Clarita Valley residents who receive water from the local retail water purveyors in the CLWA service area. The latest CCR is the 2007 Santa Clarita Valley Consumer Confidence Report. In that report, there is detailed information about the results of the testing of groundwater quality and treated SWP water supplied to the residents of the Santa Clarita Valley. Water quality regulations are constantly changing to reflect the discovery of new potential contaminants and associated new standards. In addition, existing water quality standards are becoming

more stringent in terms of allowable levels in drinking water. However, all groundwater produced by the retail water purveyors in the Santa Clarita Valley meets or exceeds stringent drinking water quality regulations set by U.S. EPA, DPH, and the continuing oversight of the California Public Utilities Commission (CPUC).

(2) Groundwater Quality – Alluvium

Groundwater quality is, of course, a key factor in assessing the Alluvial aquifer as a municipal and agricultural water supply. Groundwater quality details and long-term conditions, examined by integration of individual records from several wells completed in the same aquifer materials and in close proximity to each other, have been discussed in previous annual Water Reports and in the 2005 UWMP. There were some changes in groundwater quality in 2009 that reflect fluctuations, trends, or other groundwater quality conditions as illustrated in 2009 Water Report Figures 3-11 and 3-12. These graphs show historical specific conductance values for representative wells in the Valley with the California Department of Public Health Secondary Maximum Levels included for reference. Most of the trends show a significant lowering of the specific conductance values by half following the wet years of 2004-2005. Since then, those trends have returned to 2004 levels but do not exceed historical levels. In summary, those conditions include: no long-term overall trend and, most notably, no long-term decline in Alluvial groundwater quality; a general groundwater quality "gradient" from east to west, with lowest dissolved mineral content to the east, increasing in a westerly direction; and periodic fluctuations in some parts of the basin, where groundwater quality has inversely varied with precipitation and stream flow. Those variations are typically characterized by increased mineral concentrations through dry periods of lower stream flow and lower groundwater recharge, such as is currently occurring, followed by lower mineral concentrations through wetter periods of higher stream flow and higher groundwater recharge. The presence of long-term consistent water quality patterns, although intermittently affected by wet and dry cycles, supports the conclusion that the Alluvial aquifer remains a viable ongoing water supply source in terms of groundwater quality.

Perchlorate. The most notable groundwater quality issue in the Alluvium is perchlorate contamination. In 2002, one Alluvial production well owned by SCWD (Stadium Well), located near the former Whittaker-Bermite site, was inactivated for municipal water supply due to detection of perchlorate

slightly below the Notification Level.[12] SCWD has recently drilled a replacement well (Valley Center Well) further to the east, north-northeast of the former Whittaker-Bermite site in a non-impacted portion of the basin. As a result, the Valley Center Well capacity is part of the purveyors' operating plan.

Wells with perchlorate concentrations exceeding the then-applicable Action Level (18 μg/l) or, more recently, the then-applicable Notification Level (6 μg/l) were removed from active water supply service. In early 2005, perchlorate was detected in a second Alluvial production well owned by Valencia Water Company (Well Q2). Valencia Water Company's response was to remove the well from active water supply service and to rapidly seek approval for installation of wellhead treatment and return of the well to service. As part of outlining its plan for treatment and return of the well to service, Valencia Water Company analyzed the impact of the temporary inactivation of the well on its water supply capability; and the analysis determined that Valencia Water Company's other sources are sufficient to meet demand and the inactivation of Well Q2 thus had no impact on Valencia Water Company's water supply capability.[13] Valencia Water Company proceeded through mid-2005 to gain approval for installation of wellhead treatment (ion-exchange as described below), including environmental review, and completed installation of the wellhead treatment facilities in September 2005. Well Q2 was returned to active water supply service with wellhead treatment in October 2005. After nearly two years of operation with wellhead treatment, during which there was no detection of perchlorate, Valencia Water Company was authorized by DPH to discontinue wellhead treatment. Since that time, Well Q2 has been operated without wellhead treatment and without detection of perchlorate. As a result, Well Q2's capacity is part of the purveyors' operating plan. The other impacted wells remain out of service; two wells (VWC's Well 157 and SCWD's Stadium Well) have been sealed and replaced by new wells, and two wells (SCWD's Saugus 1 & 2 Wells) are being returned to service as described below. Ongoing monitoring of all active municipal wells near the Whittaker-Bermite site has shown no detections of perchlorate in any active Alluvial wells. However, based on a combination of proximity to the Whittaker-Bermite site and prevailing groundwater flow directions, complemented by findings in the ongoing on- and off-site investigations by Whittaker-Bermite and the Army Corps of Engineers, there is logical concern that

12 "Notification level" means the concentration level of a contaminant in drinking water delivered for human consumption that the state DPH has determined, based on available specific information, does not pose a significant health risk but warrants notification pursuant to applicable law. Notification levels are non-regulatory, health-based advisory levels established by the state DPH for contaminants in drinking water for which maximum contaminant levels have not been established. Notification levels are established as precautionary measures for contaminants that may be considered candidates for establishment of maximum contaminant levels, but have not yet undergone or completed the regulatory standard setting process prescribed for the development of maximum contaminant levels. Notification levels are not drinking water standards.

13 See, *Impact and Response to Perchlorate Contamination, Valencia Water Company, Well Q2*, prepared for Valencia Water Company by Luhdorff & Scalmanini Consulting Engineers, April 2005. This report is available for public review and inspection in EIR **Appendix 4.8**.

perchlorate could impact nearby, down-gradient Alluvial wells (see, *2005 UWMP*, Appendix D, in **Appendix 4.8**). As a result, provisions are in place to respond to perchlorate contamination if it should occur. The groundwater model was used to examine capture zones around Alluvial wells under planned operating conditions (pumping capacities and volumes) for the period through currently scheduled restoration of impacted wells in 2006.[14] The capture zone analysis of Alluvial wells generally near the Whittaker-Bermite site, shown on **Figure 4.8-6, Forecasted Two-Year Groundwater Capture Zones for Active Alluvial Production Wells Located Closest to the Whittaker-Bermite Property Santa Clarita, California**, suggests that inflow to alluvial wells (depicted by the color bands) will either be upgradient of the contamination site, or will be from the Alluvium beyond where perchlorate is most likely to be transported, with the possible exception of the Valencia Water Company's Pardee wellfield, which includes Wells N, N7, and N8. Although the capture zone analysis does not show that the Pardee wells will be impacted, they are considered to be at some potential risk due to the proximity of their capture zone to the Whittaker-Bermite site.

The combined pumping capacity of Valencia Water Company's Pardee wells is 6,200 gallons per minute (gpm), which equates to about 10,000 acre-feet of maximum annual capacity. However, in the operating plan for both normal and dry year Alluvial pumping, the planned use of those wells represents 2,940 afy of the total 30,000 to 40,000 afy Alluvial groundwater supply. Thus, if the wells were to become contaminated with perchlorate, they would represent an amount of the total Alluvial supply that could be readily replaced, on a short-term interim basis, by utilizing an equivalent amount of imported water from CLWA or by utilizing existing capacity from other Alluvial wells (see, **Table 4.8-5**, above). Furthermore, if the Pardee wells were to become contaminated by perchlorate contamination, Valencia Water Company has made site provisions at its Pardee wellfield for installation of wellhead treatment. Such treatment would be the same as once installed at Valencia's Well Q2, and would likely result in the impacted Pardee wells being promptly returned to active service.

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14 Technical Memorandum entitled, *Analysis of Near-Term Groundwater Capture Areas for Production Wells Located Near the Whittaker-Bermite Property (Santa Clarita, California)*, prepared by CH2MHill, for the Santa Clarita Valley Water Purveyors, dated December 21, 2004. This memorandum is available for public review and inspection in **Appendix 4.8** of this EIR.

LEGEND

CONTAMINATED PRODUCTION WELL

- ALLUVIUM
- SAUGUS

UNCONTAMINATED PRODUCTION WELL

- ALLUVIUM
- SAUGUS

MONITORING WELL

- ALLUVIUM
- SAUGUS

TWO-YEAR GROUNDWATER CAPTURE ZONE

- SCWC-HONBY
- VWC-N
- VWC-N7
- VWC-N8
- VWC-Q2
- VWC-S6
- VWC-S7
- VWC-S8
- VWC-T2
- VWC-T4
- VWC-U4
- VWC-U6
- WHITTAKER-BERMITE PROPERTY BOUNDARY

NOTES:

1. VALUES PRESENTED UNDER WELL SYMBOLS REPRESENT PERCHLORATE CONCENTRATION IN GROUNDWATER (µg/L).
2. PUMPING VALUES IN PARENTHESES ARE ANNUAL PUMPING VOLUMES
3. ND = PERCHLORATE NOT DETECTED IN GROUNDWATER SAMPLE.
4. µg/L = MICROGRAMS PER LITER; AF/yr = acre feet per year
5. FLOWPATHS ARE DELINEATED USING AN EFFECTIVE POROSITY OF 0.10 IN THE ALLUVIAL AQUIFER AND 0.05 IN THE SAUGUS FORMATION.

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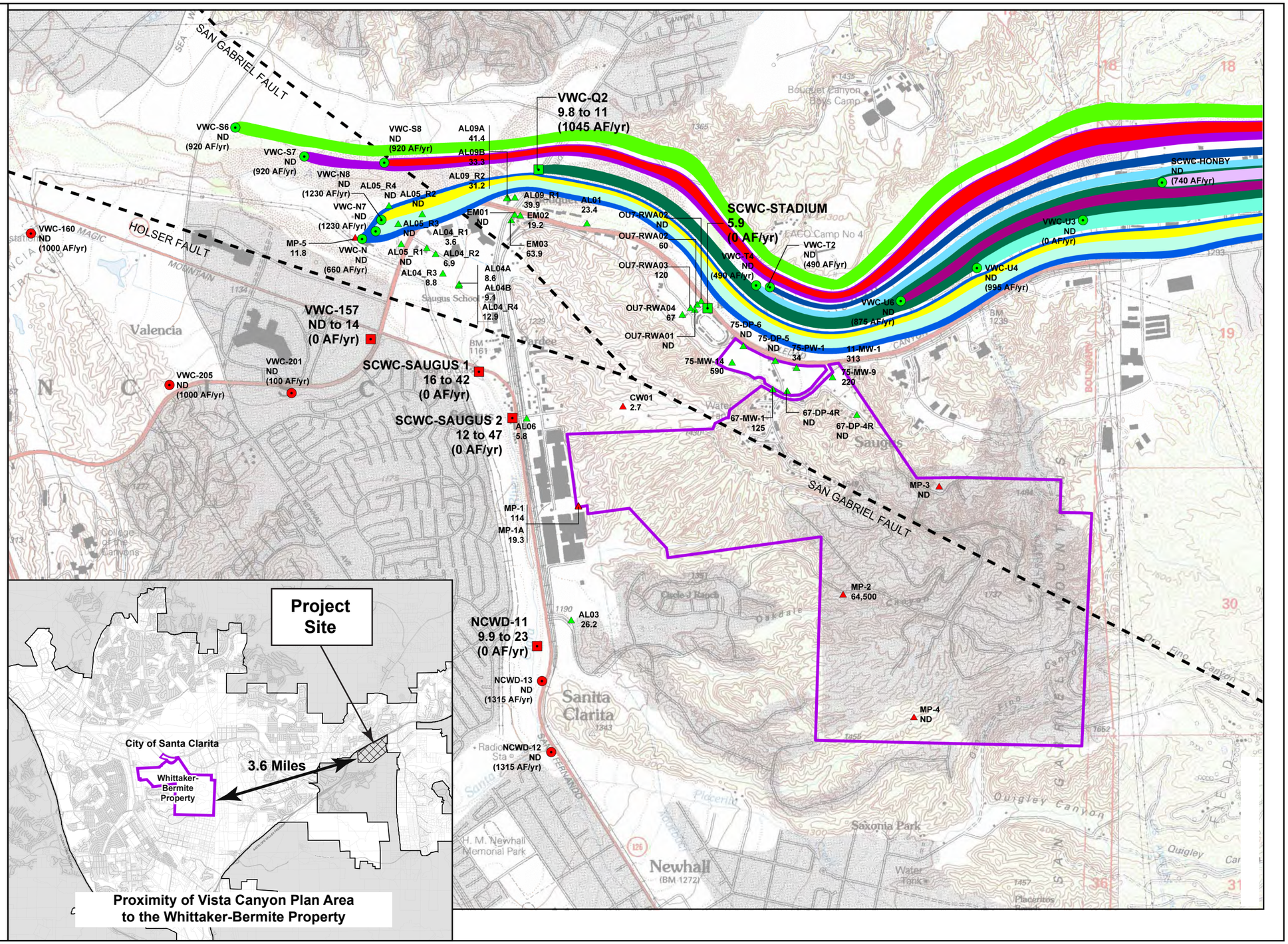
APPROXIMATE SCALE IN FEET



SOURCE: Luhdorff & Scalmanini Consulting Engineers – January 2006

FIGURE **4.8-6**

Forecasted Two-Year Groundwater Capture Zones for Active Alluvial Production Wells Located Closest to the Whittaker-Bermite Property Santa Clarita, California

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In 2009, additional significant progress has been made with respect to perchlorate remediation. For example, in September 2009, CLWA, in partnership with other local retail purveyors and the City of Santa Clarita, completed construction of CLWA's Rio Vista Intake Pump Station, which is CLWA's new perchlorate treatment facility. The facility is designed to restore groundwater production capacity impacted by perchlorate contamination and stop migration of perchlorate from the former Whittaker-Bermite site. The new plant is in use and operating. Through constructed pipelines, perchlorate-impacted water from Saugus Wells 1 and 2 is pumped and treated at the plant, restoring approximately 3,400 afy of groundwater. Pumping and treatment operations is expected to occur on a continuous basis for several years. The new facility removes perchlorate from the groundwater using ion-exchange technology.

Additional perchlorate-related remediation activities continue to move forward at the former Whittaker-Bermite site. For example, soil remediation operations are continuing on site, including completion of the third draft Remedial Action Plan (RAP) for sitewide soils remediation. Groundwater and surface water issues also continue to be addressed and reported to the Department of Toxic Substances Control (DTSC). (See Draft EIR, **Appendix 4.8** [Progress Letter Report from Hassan Amini, Ph.D., Project Coordinator for AMEC Geomatrix, to DTSC, dated September 15, 2009].)

As of August 31, 2009, approximately 23 million gallons of perchlorate-impacted groundwater have been treated and discharged under the National Pollutant Discharge Elimination System (NPDES) permit authorizing such activities. Routine weekly and monthly NPDES sampling, treatment, and discharge is continuing in compliance with NPDES permit requirements. An additional 12 to 14 wells also are being installed on the Whittaker property to pump and treat contaminated perchlorate on site.

In short, work continues on multiple tasks to address groundwater contaminated by perchlorate stemming from past manufacturing activities on the former Whittaker-Bermite site. CLWA and the local retail purveyors are proceeding to restore the production capacity of the few remaining groundwater supply wells contaminated by perchlorate, while working on the objectives of containing the downgradient migration of perchlorate. For technical information regarding these up-to-date activities, please refer to the following documents in the Draft EIR, **Appendix 4.8**: (1) letter from Hassan Amini, Ph.D., Project Coordinator for AMEC Geomatrix, to DTSC, dated June 8, 2009; (2) CLWA News Release, dated September 14, 2009; (3) Progress Letter Report from Hassan Amini, Ph.D., Project Coordinator for AMEC Geomatrix, to DTSC, dated September 15, 2009; and (4) CLWA Memorandum from Brian J. Folsom to CLWA Board of Directors, dated October 1, 2009.

(3) Groundwater Quality – Saugus Formation

As discussed above for the Alluvium, groundwater quality is a key factor in also assessing the Saugus Formation as a municipal and agricultural water supply. As with groundwater level data, long-term

Saugus groundwater quality data are not sufficiently extensive to permit any sort of basin-wide analysis or assessment of pumping-related impacts on quality. However, integration of individual records from several wells has been used to examine general water quality trends. Based on those records, water quality in the Saugus Formation has not historically exhibited the precipitation-related fluctuations seen in the Alluvium. Based on available data over the last 50 years, groundwater quality in the Saugus has exhibited a slight overall increase in dissolved mineral content as illustrated in 2009 Water Report Figure 3-13. More recently, several wells within the Saugus Formation have exhibited an additional increase in dissolved mineral content, similar to short-term changes in the Alluvium, possibly as a result of recharge to the Saugus Formation from the Alluvium. Since 2005, however, these levels have been steadily dropping or remaining constant. Dissolved mineral concentrations in the Saugus Formation remain below the Secondary (aesthetic) Upper Maximum Contaminant Level. Groundwater quality within the Saugus will continue to be monitored to ensure that degradation to the long-term viability of the Saugus as a component of overall water supply does not occur.

Perchlorate. As with the Alluvium, the most notable groundwater quality issue in the Saugus Formation is perchlorate contamination. Under oversight by the California Department of Toxic Substances Control (DTSC), and with ultimate approval by DPH, in accordance with its Policy 97-005 (for restoration of water supply from "severely impaired" water sources), the purveyors have developed a remedial strategy that entails pumping of two impacted wells for containment of perchlorate migration; treatment, and subsequent use of the pumped water for water supply; and installation of replacement wells in non-impacted portions of the basin to restore the remainder of groundwater supply impacted by perchlorate. A noteworthy detail of these activities is that the groundwater flow model was used to identify the design of a pumping scheme that would meet the purveyors' objectives for perchlorate containment in the Saugus Formation (see Draft EIR **Appendix 4.8** [2009 Basin Yield Update, p. III-7]).

The final containment plan specifies that wells SCWD-Saugus 1 and SCWD-Saugus 2 operate at an instantaneous pumping rate of 1,200 gallons per minute (gpm) at each well (for a combined total of 2,400 gpm from the two wells). The annual pumping volume of 1,772 afy per well is based on this rate and also on the assumption that pumping will occur continuously, except for up to four weeks per year for maintenance purposes. Construction of facilities and pipelines necessary to implement the containment program and to restore inactivated well capacity was completed, and in operational start-up, at the time of this writing.

Under the direction of DTSC, Whittaker has submitted a comprehensive site-wide remediation plan for the contaminants of concern in soil and groundwater detected on the property. A Draft Remedial Action Plan for Operable Units 2 through 6 that is focused on soil remediation was submitted to DTSC in 2009. The plan contains a number of recommended technologies to remove contaminants from the soil, in addition to a proposed clean-up schedule for the site. Whittaker has also completed a Draft Operable Unit 7 Feasibility Study to identify and select treatment technologies for both on-site and off-site groundwater.

Final approval by DTSC of soil and groundwater clean-up plans is expected by the end of 2010. The question of whether existing active Saugus wells are likely to be contaminated by perchlorate migration prior to the installation of treatment and pumping for perchlorate contamination control has been evaluated by using the groundwater flow model to analyze capture zones of existing active wells through 2006, the scheduled period for permitting, installation of treatment, and restoration of impacted capacity. For that analysis, recognizing current hydrologic conditions and available supplemental SWP supplies, the rate of Saugus pumping was conservatively projected to be in the normal range (7,500 to 15,000 afy) for the near-term. The results of the capture zone analysis, illustrated on **Figure 4.8-7, Forecasted Two-Year Groundwater Capture Zones for Active Saugus Production Wells Located Closest to the Whittaker-Bermite Property Santa Clarita, California**, were that the two nearest downgradient Saugus wells, Valencia Water Company's Wells 201 and 205, would draw water from very localized areas around the wells and would not draw water from locations where perchlorate has been detected in the Saugus Formation.

As shown on the figure, the capture zone analysis projected Well 201 would potentially draw Saugus groundwater from areas located up to 450 feet east of the well, but was unlikely to draw water from areas farther to the east through that period. During the same time, Well 205 would potentially draw Saugus groundwater from areas as much as 650 feet to the east and northeast of this well.

As a result, the currently active downgradient Saugus wells are expected to remain active as sources of water supply in accordance with the overall operating plan for the Saugus Formation, given the generally low planned pumping from the nearest downgradient Saugus wells in the operating plan through 2006, after which restored capacity and resultant aquifer hydraulic control are scheduled to be in place.

(4) Perchlorate Treatment Technology

Effective technologies presently exist to treat perchlorate in water in order to meet drinking water standards. In a publication from the U.S. EPA, *Region 9 Perchlorate Update*,[15] the U.S. EPA discussed the current state of perchlorate treatment technology, and the current and planned treatment development efforts being carried out as part of U.S. EPA Superfund program studies, U.S. Air Force research, water utility-funded studies, and the federally funded research effort underway by the East Valley Water District, California and the American Water Works Association Research Foundation (AWWARF). The U.S. EPA also summarized two of the technologies that are in use today, which are capable of removing perchlorate from groundwater supplies: the ion exchange and biological treatment methods.

A number of full-scale perchlorate treatment systems have been implemented in California and other states. In an effort to evaluate the various available treatment technologies, CLWA commissioned an

15 U.S. EPA Web site, *Perchlorate*, and *Region 9 Perchlorate Update*, found at http://www.epa.gov/ogwdw/ccl/perchlor/perchlo.html, and included in **Appendix 4.8** of this EIR.

investigation to identify and evaluate alternative treatment processes effective in removing perchlorate. The scope of that investigation included resolving permitting issues pertaining to the construction and certification of a treatment facility, conducting bench-scale and pilot-scale tests to determine treatment process performance, and preparing preliminary capital and operations and maintenance cost estimates.

Three treatment technologies, an ion exchange system and two biological systems, were selected for study. All three systems were determined to be effective in removing perchlorate.[16] However, there was considerable uncertainty with respect to the capital and operations and maintenance costs associated with each process. Therefore, a technical group comprised of representatives from CLWA, the retail water purveyors, and consultants retained by Whittaker-Bermite agreed to solicit competitive bids for the design, construction, and operation of both ion exchange and biological treatment systems. After thorough evaluation of several bids, the technical group determined that ion exchange is the preferred technology based upon treatment performance, ease of regulatory compliance, and comparison of costs associated with construction and operations and maintenance.

The preferred single-pass ion exchange treatment technology does not generate a concentrated perchlorate waste stream that would require additional treatment before discharge to a sanitary sewer or a brine line (if one is available). This technology incorporates an active resin (a material that attracts perchlorate molecules) that safely removes the perchlorate from water. The resin is contained in pressure vessels and the water is pumped through the vessel. The resin is eventually replaced with new resin after a period of time. The old resin is removed and transported by truck to an approved waste disposal site where it is safely destroyed. This technology is robust and reliable for use in drinking water systems.

DPH has approved operation of perchlorate treatment plants, and those plants currently in operation are listed in **Table 4.8-7**, **Perchlorate Treatment Summary**.

16 *Treatment of Perchlorate Contaminated Groundwater from the Saugus Aquifer, TM 3 Bench and Pilot Test Results*, Carollo Engineers, February 2004. A copy of this report is available for public review and inspection in **Appendix 4.8** of this EIR.

LEGEND

CONTAMINATED PRODUCTION WELL

- ALLUVIUM
- SAUGUS

UNCONTAMINATED PRODUCTION WELL

- ALLUVIUM
- SAUGUS

MONITORING WELL

- ALLUVIUM
- SAUGUS

TWO-YEAR GROUNDWATER CAPTURE ZONE

- NC-12
- NC-13
- VWC-160
- VWC-201
- VWC-205
- WHITTAKER-BERMITE PROPERTY BOUNDARY

NOTES:

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2. PUMPING VALUES IN PARENTHESES ARE ANNUAL PUMPING VOLUMES.
3. ND = PERCHLORATE NOT DETECTED IN GROUNDWATER SAMPLE.
4. µg/L = MICROGRAMS PER LITER; AF/yr = acre feet per year
5. FLOWPATHS ARE DELINEATED USING AN EFFECTIVE POROSITY OF 0.10 IN THE ALLUVIAL AQUIFER AND 0.05 IN THE SAUGUS FORMATION.

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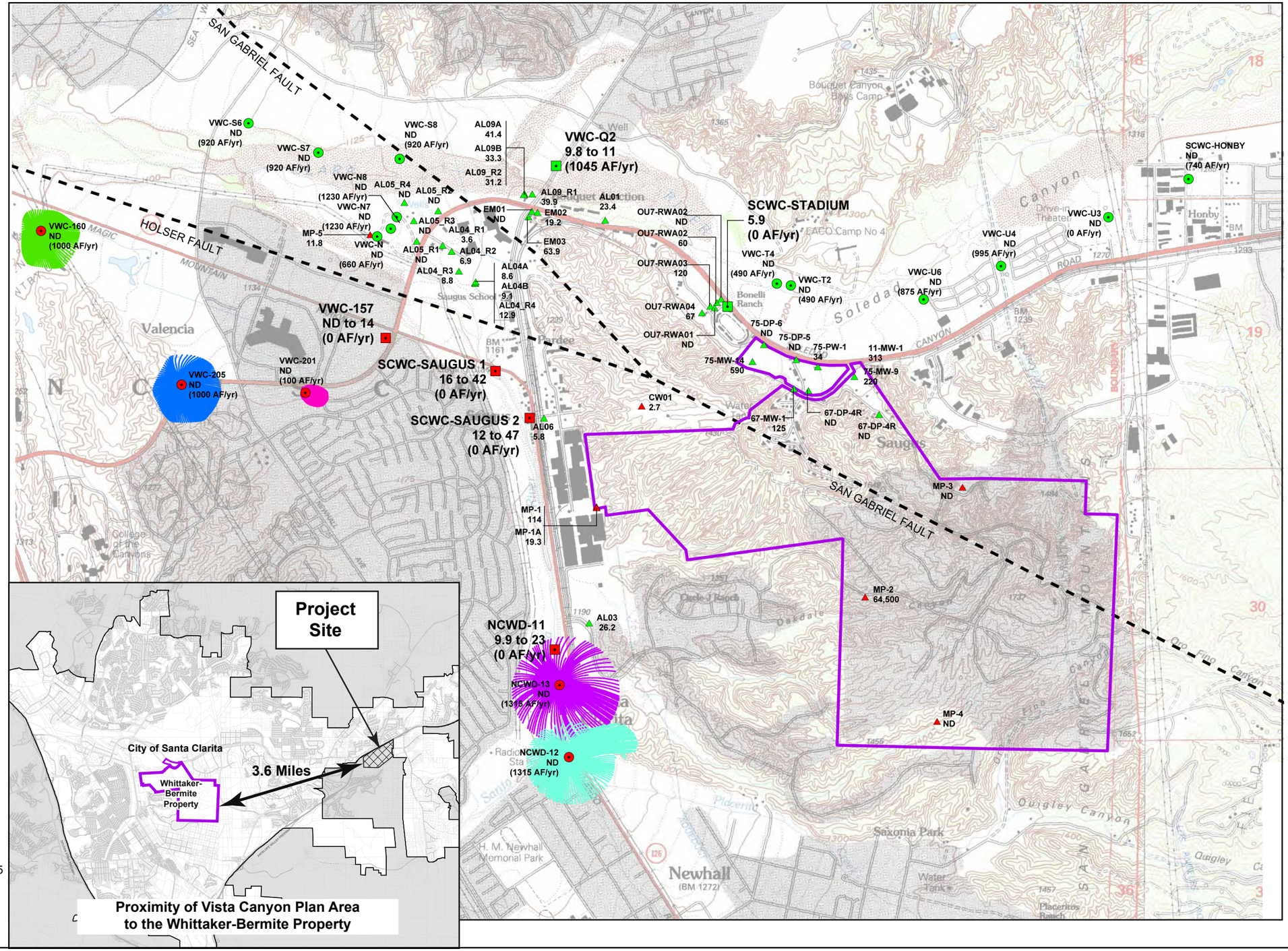
APPROXIMATE SCALE IN FEET



SOURCE: Luhdorff & Scalmanini Consulting Engineers – January 2006

FIGURE **4.8-7**

Forecasted Two-Year Groundwater Capture Zones for Active Saugus Production Wells Located Closest to the Whittaker-Bermite Property Santa Clarita, California

112-024•06/10

Table 4.8-7
Perchlorate Treatment Summary

Location	Treatment Plant Capacity (gallons per minute)	Concentration of Perchlorate in Groundwater (parts per billion)	Concentration of Perchlorate after Treatment (parts per billion)
1) Valencia Water Company (Santa Clarita Valley – Well Q2)	1,300	<11	ND
2) La Puente Valley County Water District (Baldwin Park)	2,500	<200	ND
3) San Gabriel Valley Water Company (El Monte)	7,800	<80	ND
4) Lincoln Avenue Water Company (Altadena)	2,000	<20	ND
5) City of Riverside	2,000	<60	ND
6) City of Rialto	2,000	<10	ND
7) City of Colton	3,500	<10	ND
8) Fontana Union Water Company	5,000	<15	ND

ND = non-detect. The non-detect level represents concentrations less than 4 parts per billion.
Source: Perchlorate Contamination Treatment Alternatives, prepared by the Office of Pollution Prevention and Technology Development, DTSC, California Environmental Protection Agency, Draft January 2004.

Based on (1) the results of CLWA's investigation of perchlorate removal technologies, (2) the technical group's evaluation, and (3) DPH approval of single-pass ion exchange for treatment in other settings, CLWA and the local retail water purveyors are planning single-pass ion exchange for the treatment technology for restoration of impacted capacity (wells) in accordance with the permitting, testing, and installation process described in the *2005 UWMP*. The wellhead treatment installed at Valencia Water Company's Well Q2 in October 2005 is the same single-pass ion exchange as is planned for restoration of impacted Saugus well capacity.

(5) Groundwater Pollutants of Concern

Research conducted on the effects on groundwater from stormwater infiltration by Pitt et al. (1994) indicate that the potential for contamination is dependent on a number of factors, including the local hydrogeology and the chemical characteristics of the pollutants of concern. Chemical characteristics that influence the potential for groundwater impacts include high mobility (low absorption potential), high solubility fractions, and abundance in runoff and dry weather flow. As a class of constituents, trace metals tend to adsorb onto soil particles and are filtered out by the soils. This has been confirmed by

extensive data collected beneath stormwater detention/retention ponds in Fresno (conducted as part of the Nationwide Urban Runoff Program) that showed trace metals tended to be adsorbed in the upper few feet in the bottom sediments. Bacteria also are filtered out by soils. More mobile constituents, such as chloride and nitrate, would have a greater potential for infiltration.

The pollutants of concern for the groundwater quality analysis are those that are anticipated or that have the potential to be generated by the land uses associated with the project. The pollutants specific to each land use have been identified based on water quality data collected in Los Angeles County. Pollutants generated by land uses in the project have the potential to impact groundwater via infiltration of runoff in PDF, direct infiltration of irrigation water and stormwater, exfiltration or seepage from sewers or stormwater drains, and direct discharges of treated wastewater to the Santa Clara River.

Nitrate. Nitrate+nitrite-N is a pollutant of concern for purposes of evaluating groundwater quality impacts based upon the potential use of nitrogen fertilizers and nitrates high mobility in groundwater.

Bacteria. The Basin Plan contains numeric criteria for bacteria in drinking water sources. Bacteria are not highly mobile in groundwater and are easily removed through filtration in soils (for example, as with septic tank discharges). Bacteria in stormwater originating from pets and wildlife is not expected to exceed the numeric criteria and, therefore, is not a pollutant of concern.

Taste and Odor. The Basin Plan contains a narrative objective for taste and odors that cause a nuisance or adversely affect beneficial uses. Undesirable tastes and odors in groundwater may be a nuisance and may indicate the presence of a pollutant(s). Odor associated with water can result from natural processes, such as the decomposition of organic matter or the reduction of inorganic compounds, such as sulfate. Other potential sources of odor causing substances, such as industrial processes, will not occur as part of the proposed project. Therefore, taste and odor-producing substances are not pollutants of concern for the proposed project.

Mineral Quality: TDS, Sulfate, Chloride, and Boron. Mineral quality in groundwater is largely influenced by the mineral assemblage of soils and rocks that it comes into contact with. Elevated mineral concentrations could impact beneficial uses; however, the minerals listed in the Basin Plan are not believed to be pollutants of concern due to the anticipated runoff concentrations and the typical mineral concentrations in irrigation water (Castaic Lake Water Agency), which are below the Basin Plan objectives (**Table 4.8-8**). Therefore, these constituents are not considered pollutants of concern for the proposed project.

Table 4.8-8
Comparison of Basin Plan Mineral Groundwater Objectives with Mean Measured Values in Los Angeles County and SWP Water Quality at Castaic Lake

Mineral	Los Angeles Basin Plan Groundwater Quality Objective[1] (mg/L)	Range of Mean Concentrations in Urban Runoff[2] (mg/L)	Typical Concentration in CLWA Water[3] (mg/L)
Total Dissolved Solids	700	53–237	333
Sulfate	250	7–35	56
Chloride	100	4–50	76

[1] *Santa Clara-Bouquet and San Francisquito Canyons Subbasin*
[2] *Source: Los Angeles County, 2000. Includes all monitored land uses.*
[3] *Source: The Santa Clarita Valley Water Quality Report (2010)*

(6) Other Groundwater Quality Issues

Methyl-Tertiary Butyl Ether (MTBE). MTBE has been a concern for the past several years, and on May 17, 2000, DPH adopted a primary MCL for MTBE of 0.013 mg/L. CLWA and the local retail purveyors have been testing for MTBE since 1997 and, to date, have not detected it in any of the production wells.

Total Trihalomethanes (TTHMs). In 2002, the U.S. EPA implemented the new Disinfectants and Disinfection Byproducts Rule. In part, this rule establishes a new maximum contaminant level (MCL) of 80 ug/L (based on an annual running average) for TTHM. TTHMs are byproducts created when chlorine is used as a means for disinfection. In 2005, CLWA and the local retail purveyors implemented an alternative method of disinfection, chloramination, to maintain compliance with the new rule and future regulations relating to disinfection byproducts.[17] TTHM concentrations have remained significantly below the MCL since implementation of the alternative disinfection method.

Arsenic. The US EPA revised the federal MCL for arsenic from 50 μg/l to 10 μg/l. Naturally occurring arsenic has historically only been detected at concentrations of less that 5 μg/l in local groundwater supplies and at concentrations of less than 6 μg/l in SWP water supplies. The analytical results for arsenic for most groundwater wells in the Valley have been non-detect where the detection limit was 2 μg/l (Luhdorff & Scalmanini, 2004).

17 See U.S. EPA Web site: http://www.epa.gov/region09/water/drinking/files/dwsha_0607.pdf.

c. Santa Clara River

The MOU between the Santa Clarita Valley Purveyors and the United Water Conservation District, which manages surface and groundwater resources in seven groundwater basins in the Lower Santa Clara River Valley Area, was a significant accomplishment when it was prepared and executed in 2001. The MOU initiated a collaborative and integrated approach to data collection; database management; groundwater flow modeling; assessment of groundwater basin conditions, including determination of basin yield amounts; and preparation and presentation of reports, including continued annual reports such as this one for current planning and consideration of development proposals, and also including more technically detailed reports on geologic and hydrologic aspects of the overall stream aquifer system. Meetings of the MOU participants have continued, and integration of the Upper (Santa Clarita Valley) and Lower (United WCD) Santa Clara River databases has been accomplished. As discussed above, a numerical groundwater flow model of the entire Santa Clarita groundwater basin was developed and calibrated in 2002–2004. Subsequent to its initial use in 2004 for assessing the effectiveness of various operating scenarios to restore pumping capacity impacted by perchlorate contamination (by pumping and treating groundwater for water supply while simultaneously controlling the migration of contaminated groundwater), the model was used in 2005 for evaluation of basin yield under varying management actions and hydrologic conditions. The results completed the determination of sustainable operating yield values for both the Alluvium and the Saugus Formation, which were incorporated in the 2005 UWMP. The updated analysis of basin yield, completed in 2009, indicates that the 2008 Operating Plan will maintain river flows at higher levels than occurred prior to urbanization of the Valley.

On occasion, issues have been raised about whether use and management of groundwater in the Santa Clarita Valley have adversely impacted surface water flows into Ventura County. Part of the groundwater modeling work has addressed the surface water flow question as well as groundwater levels and storage. While the sustainability of groundwater has logically derived primarily from projected long-term stability of groundwater levels and storage, it has also derived in part from modeled simulations of surface water flows and the lack of streamflow depletion by groundwater pumping. In addition, the long-term history of groundwater levels in the western and central part of the basin, as illustrated in 2009 Water Report Figures 3-4 and 3-5, supports the modeled analysis and suggests that groundwater has not been lowered in such a way as to induce infiltration from the river and thus impact surface water flows.

Historical annual stream discharge in the Santa Clara River, into and out of the Santa Clarita Valley, is shown on 2009 Water Report Figure 3-14. The upstream gauge at Lang Station was reinstated in 2002 and shows a wide range of average annual inflow over the last seven years. The downstream gauge was moved in 1996 to its present location near Piru, about 2 miles downriver from the former County Line

Gauge. The combined record (1953–2009) of these two downstream gauges indicates an annual stream discharge of about 47,000 afy. These data gauged near the County line show notably higher flows from the Santa Clarita Valley into the uppermost downstream basin, the Piru Basin, over the last 30 to 35 years.

d. Imported Water Supplies

As indicated previously above, imported water from the SWP is one of the three sources of water for the project. More detailed information regarding this water source is provided below.

(1) State Water Project and Associated Facilities

The SWP is a water supply, storage, and distribution system that includes 28 storage facilities, reservoirs, and lakes; 20 pumping plants; six pumping-generating plants and hydroelectric power plants; and about 660 miles of aqueducts and pipelines.[18] Principal SWP facilities are shown on **Figure 4.8-8**.

Summary Description. In the southern Sacramento-San Joaquin Delta (Delta), water is pumped into the 444-mile-long California Aqueduct at the Clifton Court Forebay by the Banks Pumping Plant (or by agreement with the U.S. Bureau of Reclamation, at the Central Valley Project's (CVP) Tracy Pumping Plant). From the southern Delta facilities, water in the California Aqueduct travels along the west side of the San Joaquin Valley and is delivered directly to SWP Contractors or is stored in San Luis Reservoir, the SWP's main storage facility south of the Delta. Water is conveyed via the California Aqueduct to the urban region of the Bay area, and south of San Luis Reservoir, to the primarily agricultural regions in the San Joaquin Valley and the primarily urban regions of the Central Coast and Southern California. Water is diverted from the California Aqueduct and delivered directly to SWP Contractors in the central and southern San Joaquin Valley at various locations along the California Aqueduct. The California Aqueduct traverses the west side of the San Joaquin Valley, and water is pumped through a series of four pumping plants (Dos Amigos, Buena Vista, Teerink, and Chrisman) before reaching the Edmonston Pumping Plant. The Edmonston Pumping Plant pumps water over the Tehachapi Mountain Range, and the California Aqueduct then divides into the East Branch and the West Branch. Water intended for use by CLWA is conveyed through the West Branch to Quail and Pyramid Lakes and then to Castaic Lake, the terminus for the West Branch.

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18 Bulletin 132-06, Management of the California State Water Project (December 2007), is the most recent published data by DWR describing the status of SWP operations and water deliveries to SWP Contractors. Because Bulletin 132-06 covers SWP activities through calendar year 2005, some of the SWP delivery information presented in this EIR is through calendar year 2005, which is the latest year available. (See this EIR, **Appendix 4.8** [Bulletin 132-06, Management of the California State Water project (December 2007)].)

SWP Operations, Deliveries, and Constraints. In the early 1960s, DWR began entering into individual water supply contracts with various urban and agricultural public water supply agencies (i.e., SWP Contractors). The total planned annual delivery capability of the SWP and the sum of all SWP Contractors' maximum Table A[19] amounts specified in the water supply contracts were approximately 4.2 million acre-feet (maf). The initial SWP storage facilities were designed to meet SWP Contractors' water demands in the early years of the project, with construction of additional storage facilities planned as demands increased. Conveyance facilities were generally designed and constructed to deliver full Table A Amounts to SWP Contractors. Water deliveries to SWP Contractors began as initial SWP facilities were completed in the late 1960s and early 1970s; however, no additional SWP storage facilities have been constructed since that time. (See Draft EIR **Appendix 4.8** [DWR Bulletin 132-06, Management of the California State Water Project, December 2007].)

From 1990 to 2003, actual SWP annual deliveries of Table A supplies to SWP Contractors ranged from approximately 550,000 acre-feet in 1991 to approximately 3.2 maf in 2000 and 2003 (excluding Article 21 deliveries). The amount of water DWR determines is available and allocates for delivery in a given year is based on that year's hydrologic conditions, the amount of water in storage in the SWP system, current regulatory, operational, and environmental constraints, the SWP Contractors' requests for SWP supplies, and other factors. These factors can significantly alter and reduce the availability of SWP water in any given year. Since historically low SWP Contractor demands have limited deliveries in wetter years when additional supplies were available, historic deliveries only provide an indication of actual SWP delivery capability in supply-limited dry years.

To determine the SWP delivery capability under current and future conditions, DWR uses a computer model (currently, CALSIM II) that simulates operations of the SWP and CVP. DWR's most recently published estimates of SWP delivery reliability are included in DWR's *The State Water Project Delivery Reliability Report 2009*, dated August 2010 (2009 DWR Delivery Reliability Report).[20]

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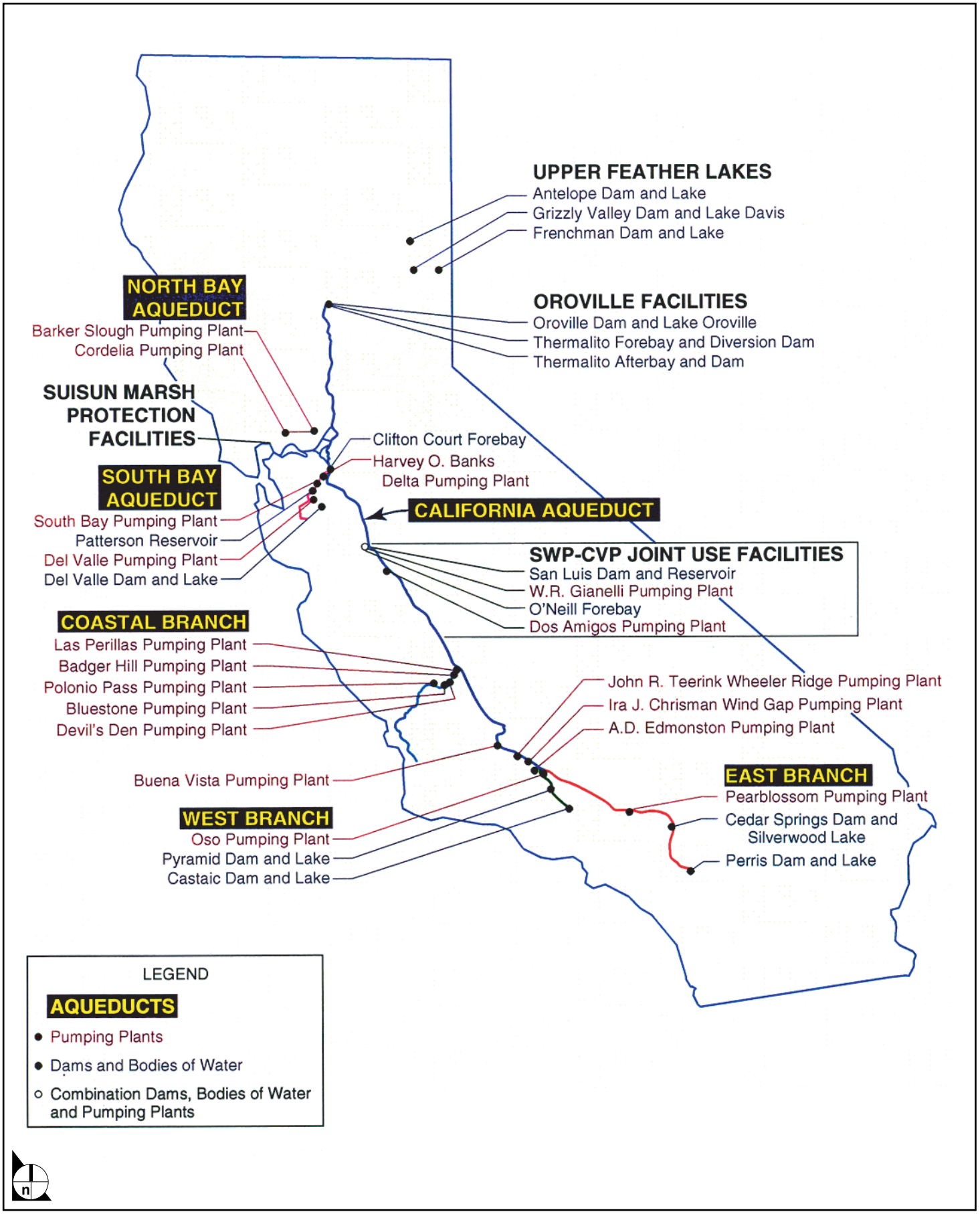
19 Table A is used to define each contractor's portion of the available water supply that DWR will allocate and deliver to each contractor.

20 A copy of this report is incorporated into this EIR by reference and is available for public review on the State's Web site at, http://baydeltaoffice.water.ca.gov..



SOURCE: DWR (1997a)

FIGURE **4.8-8**

Principal State Water Program Facilities

As background, DWR has assessed the impact of various conditions on SWP supply reliability since 2003. (See DWR Reliability Report, May 2003). The report assisted SWP contractors in assessing the reliability of the SWP component of their overall supplies. DWR subsequently issued its 2005 SWP Delivery Reliability Report (April 2006). This updated analysis estimated that the SWP, using existing facilities operated under current regulatory and operational constraints, and with all contractors requesting delivery of their full Table A Amounts in most years, could deliver 77 percent of total Table A Amounts on a long-term average basis. The 2005 UWMP's discussion of SWP supply reliability is based on the analysis contained in the DWR 2005 Delivery Reliability Report, April 2006. Since that time, DWR released the 2007 Delivery Reliability Report (August 2008) and the 2009 DWR Delivery Reliability Report (August 2010). The 2007 Delivery Reliability Report estimated that the SWP, with all contractors requesting delivery of their full Table A Amounts in most years, could deliver 66 to 69 percent of total Table A Amounts on a long-term average basis.

The 2009 DWR Delivery Reliability Report updated the 2007 Delivery Reliability Report (DWR released a draft of the 2009 DWR Delivery Reliability Report for public review and comment on January 26, 2010). The latest report updates estimates of the current (2009) and future (2029) SWP delivery reliability and incorporates regulatory requirements for SWP and Central Valley Project (CVP) operations in accordance with a U.S. Fish and Wildlife Service biological opinion for the Delta smelt (December 2008) and a National Marine Fisheries Service biological opinion for salmon (June 2009). Estimates of future SWP delivery reliability also reflect potential impacts of climate change, sea level rise and the vulnerability of Delta levees to failure due to floods and earthquakes.[21]

The 2009 DWR Delivery Reliability Report represents the state of water affairs if no actions for improvement are taken. It shows continued erosion of SWP water delivery reliability under the current method of moving water through the Delta. The updated analysis shows that the primary component of the annual SWP deliveries (referred to as Table A deliveries) will be less under current and future conditions, when compared to the preceding report (*2007 DWR Delivery Reliability Report)*. As in previous reports, estimates of SWP deliveries are based upon operation simulations with DWR's CalSim II model using an extended record of runoff patterns. These patterns have been adjusted to reflect the levels of development in the source areas and, for future conditions, possible impact due to climate change and accompanying sea level rise. Potential deliveries under current conditions are estimated at the 2009 level and assume current methods of conveying water across the Delta and the current operational rules contained in the federal biological opinions. Potential deliveries under future conditions are estimated at

21 Because DWR just issued this latest delivery reliability report, and because it is still in draft form with public comments due by March 4, 2010, the County anticipates that further information will be provided in the Final EIR with respect to this report.

the 2029 level and are also based on the assumptions that no changes will be made in either the way water is conveyed across the Delta or in the operational rules. The analysis of future conditions incorporates a climate change scenario from DWR's 2009 report, *Using Future Climate Projections to Support Water Resources Decision Making in California*, which represents the median effects of the 12 scenarios contained in the report (this report is incorporated by reference and is available on the State's website, at: http://www.energy.ca.gov/2009publications/CEC-500-2009-052/CEC-500-2009-052-D.PDF). The 2009 draft report shows greater reductions in water deliveries on average when compared to the 2007 report. The 2007 report incorporates the interim operation rules established by Judge Wanger in the federal court in 2007. It shows very significant reductions in SWP deliveries when compared to the 2005 report, which assumes operation rules that were less restrictive. The 2007 report shows current SWP annual Table A deliveries averaging 63 percent (2595 thousand acre-feet [taf]) of the maximum contract amount of 4,133 taf per year. The 2009 report shows a corresponding value of 60 percent (2485 taf). The 2007 report projects an annual average of 66 to 69 percent (2725-2850 taf) for the future condition, whereas the updated report has 60 percent.

The 2009 DWR Delivery Reliability Report (August 2010) included the information presented in **Table 4.8-9**, **Average And Dry Period SWP Table A Deliveries From The Delta Under Current Conditions**, and **Table 4.8-10, Average And Dry Period SWP Table A Deliveries From The Delta Under Future Conditions**, below, which provide average and dry period estimated deliveries for current conditions (2009) and future conditions (2029), and compares those figures to those in the 2007 DWR Delivery Reliability Report.

As shown, under the updated Future Conditions (2029), average SWP delivery amounts may decrease from 6 to 9 percent of maximum Table A Amounts as compared to earlier estimates in the 2007 DWR Delivery Reliability Report. This decrease in reliability results in an estimated average delivery of 60 percent versus 66 percent to 69 percent as identified in the 2007 DWR Delivery Reliability Report).

Table 4.8-9
Average and Dry Period SWP Table A Deliveries from The Delta Under Current Conditions

SWP Table A Delivery from the Delta (in percent of maximum Table A[1])						
Study of Current Conditions	**Long-term Average[2]**	**Single dry-year (1977)**	**2-year drought (1976–1977)**	**4-year drought (1931–1934)**	**6-year drought (1987–1992)**	**6-year drought (1929–1934)**
2007 DWR Delivery Reliability Report, Study 2007	63%	6%	34%	35%	35%	34%
2009 DWR Delivery Reliability Report, 2009 Studies[3]	60%	7%	36%	34%	35%	34%

Notes:
[1] *Maximum Table A Amount is 4,133 thousand acre-feet/year.*
[2] *1922–2003 for Update with 2007 and 2009 studies.*
[3] *Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets described in the 2009 DWR Delivery Reliability Report.*
Source: 2009 DWR Delivery Reliability Report.

Applying the 60 percent figure to CLWA's Table A Amount of 95,200 acre-feet, results in approximately 57,100 acre-feet expected under average Future Conditions (2029) according to the 2009 DWR Delivery Reliability Report. This is compared to the 77 percent, or 73,300 acre-feet, included in the water supply planning in the 2005 UWMP in 2030 in an average year.

Table 4.8-10
Average and Dry Period SWP Table A Deliveries From The Delta Under Future Conditions

SWP Table A Delivery from the Delta (in percent of maximum Table A[1])						
Study of Future Conditions	**Long-term Average[2]**	**Single dry-year (1977)**	**2-year drought (1976–1977)**	**4-year drought (1931–1934)**	**6-year drought (1987–1992)**	**6-year drought (1929–1934)**
2007 DWR Delivery Reliability Report, Study 2027	66–69%	7%	26–27%	32–37%	33–35%	33–36%
2009 DWR Delivery Reliability Report, Study 2029 [3]	60%	11%	38%	35%	32%	36%

Notes:
[1] *Maximum Table A Amount is 4,133 thousand acre-feet/year.*
[2] *1922–2003 for 2007 and 2009 DWR Delivery Reliability Reports with 2027 and 2029 studies.*
[3] *Range in values reflects four modified scenarios of climate change: annual Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.*
Source: 2009 DWR Delivery Reliability Report, August 2010.

Global Climate Change Constraints. A topic of growing concern for water planners and managers is global climate change and the potential impacts it could have on California's future water supplies. DWR's California Water Plan Update 2005 contains the first-ever assessment of such potential impacts in a California Water Plan. Volume 1, Chapter 4 of the Water Plan, *Preparing for an Uncertain Future*, lists the potential impacts of global climate change, based on more than a decade of scientific studies on the subject. In addition, please refer to this EIR, **Section 4.22**, **Global Climate Change**, which contains the best available information on the subject of global climate change and its effects on California's water supplies.

Reduction of snowpack patterns (the source of the SWP's water supply in Lake Oroville), changes in hydrologic patterns, sea level, rainfall intensity and statewide water demands are all possible should global climate change prove to be increasing through time. Computer models (such as CALVIN) have been developed to show water planners what types of effect climate change could have on the water supply. DWR has committed to continue to update and refine these models based on ongoing scientific data collection, and to incorporate this information into future California Water Plans, so that agencies like CLWA and the purveyors can plan accordingly.

The 2009 DWR Delivery Reliability Report (August 2010) also addressed global climate change and its effects on the state's water resources, particularly the SWP's ability to deliver water. For the SWP, climate change has the potential to simultaneously affect the availability of source water, the ability to convey water, and users' demands for water. These potential effects are described further in the 2009 DWR Delivery Reliability Report, pp. 19-24.

Regulatory and Litigation Constraints. SWP water exports for users south of the Banks and Tracy pumping plants are currently limited by a series of water quality and operational constraints, governed primarily by the State Water Resource Control Board (SWRCB) Water Right Decision 1641 (D-1641), as amended. D-1641 was adopted by the SWRCB in 1999; prior to that time, SWP water exports from the Delta were limited by the SWRCB's Water Right Decision 1485 (adopted in 1978), Order Water Right (WR) 95-6 (adopted in 1995), and Order WR 98-09 (adopted in 1998).

In addition, DWR has acknowledged constraints on the SWP system due to recent federal court litigation (*Natural Resources Defense Council v. Kempthorne*, 506 F.Supp.2d 322 (E.D. Cal. 2007) (*Wanger* Decision – Delta smelt); and *Pacific Coast Federation of Fishermen's Associations, et al. v. Gutierrez, et al.*, No. 06-CV-00245-OWW-GSA (E.D. Cal. 2008) (*Wanger* Decision – Chinook salmon/steelhead) and two Biological Opinions addressing the effects of the proposed coordinated operations of the Central Valley Project and State Water Project (CVP/SWP).

The first Biological Opinion, issued by the U.S. Fish and Wildlife Service (USFWS) on December 15, 2008, addressed the effects of the CVP/SWP operations on the threatened Delta smelt and its designated habitat (2008 BO).[22] The second Biological Opinion, issued by the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), on June 4, 2009, addressed the effects of the CVP/SWP operations on the federally listed Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, green sturgeon, and Southern Resident killer whales, and the designated critical habitats of the salmon, steelhead, and sturgeon (2009 BO).[23] (The current status of the federal court litigation and the two Biological Opinions is provided below.)

State/Federal Court Litigation. Recent state and federal court litigation has had an impact upon the availability and reliability of imported SWP supplies. For example, in October 2006, plaintiff, Watershed Enforcers, a project of the California Sportfishing Protection Alliance, filed a lawsuit in Alameda County Superior Court alleging that DWR was not in compliance with the California Endangered Species Act (CESA) and did not have the required state incidental take permit to protect the Delta smelt as part of DWR's pumping operations at the Harvey O. Banks Pumping Plant located near the town of Tracy (*Watershed Enforcers, et al. v. California Department of Water Resources, et al.* Alameda County Superior Court No. RG06292124 [*Watershed* decision]). In April 2007, the court agreed with the plaintiff and ordered a shutdown of pumping from the Delta if appropriate permits could not be obtained in 60 days. In May 2007, DWR filed an appeal of the trial court's decision, which automatically stayed the decision pending the outcome of the appeal. At the same time, DWR entered into a Memorandum of Understanding with the California Department of Fish and Game (CDFG) to jointly work with the appropriate federal agencies to develop a federal Biological Opinion that complies with CESA. During preparation of the new Biological Opinion, DWR committed itself to actions related to protecting the Delta smelt and other species through adaptive management provisions. Upon completion of this effort, DWR plans to submit a request to CDFG for a consistency determination under CESA that would allow for incidental take based on the new federal Biological Opinion.

The *Wanger* Decisions also have affected imported SWP supplies.[24] The background of the *Wanger* Decisions and their implications are discussed further below.

2007 *Wanger* Decision. On February 16, 2005, the USFWS issued its Biological Opinion, determining that the operations and criteria for both the CVP and SWP would not result in jeopardy to the Delta smelt. On

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22 Please refer to **Appendix 4.8** of this Draft EIR for a copy of the 2008 BO for the Delta smelt.

23 Please refer to **Appendix 4.8** of this Draft EIR for a copy of the 2009 BO for the Chinook salmon/sturgeon.

24 Please refer to **Appendix 4.8** of this Draft EIR for a copy of the 2009 BO for the Chinook salmon/sturgeon.

May 20, 2005, the Natural Resources Defense Council (NRDC) and others filed a supplemental complaint in federal court against the Secretary of the Interior and the Director of USFWS, challenging the adequacy of the 2005 Biological Opinion. On June 9, 2006, plaintiffs filed their motion for summary judgment. On July 6, 2006, in light of new information, the U.S. Bureau of Reclamation (Bureau), operator of CVP, requested that USFWS reinitiate consultation on the operations plan and criteria for the CVP. Notwithstanding the request for reinitiation of consultation, the parties proceeded with briefing their cross-motions for summary judgment and, on May 25, 2007, the U.S. District Court for the Eastern District, the Honorable Oliver W. Wanger, presiding, found that the 2005 Biological Opinion was inadequate and that the no-jeopardy determination was arbitrary, capricious, and contrary to the law.[25]

Thereafter, on August 31, 2007, Judge Wanger announced an initial ruling, which outlined an operational plan calling for reductions in water supplies to protect the Delta smelt. The Court specified that reduced operations would last until the fall of 2008, while federal agencies develop a revised Biological Opinion for Delta smelt that will ensure the SWP's and CVP's compliance with the requirements of the federal Endangered Species Act (ESA).

On December 14, 2007, Judge Wanger issued a final court order, which curtailed Delta pumping to protect the Delta smelt. The range of reduced operations is consistent with earlier estimates made by DWR following the Court's initial ruling in August 2007. Following Judge Wanger's final ruling, DWR performed additional modeling and analysis of the impacts of the *Wanger* Decision on Delta pumping. According to DWR, the final ruling will primarily affect export pumping between January and June 2008, when juvenile Delta smelt are at greatest risk of entrainment in pumps. Further, DWR has stated that the actual impact on SWP water supply will depend on a number of factors, including the locations where adult smelt spawn and offspring hatch, levels of precipitation for the year, and water temperatures affecting how quickly the fish migrate. The Court's restrictions on SWP/CVP operations lasted until the fall of 2008, while the revised Biological Opinion for Delta smelt was completed.

2008 *Wanger* Decision. U.S. District Court Judge Oliver Wanger also recently invalidated a 2004 biological opinion issued by the NMFS. The 2004 NMFS Biological Opinion determined that, pursuant to section 7 of the federal ESA, the operations of the CVP/SWP would not jeopardize the continued existence of three listed Delta fish species protected under the federal ESA, namely, the Sacramento River winter-run Chinook salmon, the Central Valley spring-run Chinook salmon, the Central Valley steelhead, and green sturgeon. Judge Wanger invalidated this biological opinion, relying on several of the factual findings made by NMFS in that opinion. Judge Wanger also faulted the

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25 The 2007 *Wanger* decision (*Natural Resources Defense Council v. Kempthorne*, 506 F.Supp.2d 322 (E.D. Cal. 2007)) is found in Appendix B of the Landmark Village Final EIR (November 2007).

biological opinion for, among other issues, failing to adequately analyze the impact of the operations plan on the critical habitat of the three species.[26]

After Judge Wanger's ruling, the court held hearings in June and July 2008 on possible remedies; however, no further remedies were imposed beyond the curtailments already issued with respect to the Delta smelt in the prior 2007 *Wanger* Decision.

2008 BO. On December 15, 2008, USFWS issued the new Biological Opinion for Delta smelt (2008 BO). The Opinion continues restrictions on the CVP/SWP operations that have been in place under Judge Wanger's order concerning Delta smelt. However, the 2008 BO also imposed new requirements for Delta outflows under certain conditions and requires increased reservoir releases in the fall of some years to reduce salinity. DWR recently (January 26, 2009) issued the 2009 DWR Delivery Reliability Report, which addresses the ramifications of the new 2008 BO, and its effects on SWP supplies and deliveries. In cooperation with the US Bureau of Reclamation (USBR), NMFS, USFWS, and CDFG, DWR has developed new assumptions for implementation of both the USFWS BO (December 15, 2008) and NMFS BO (June 4, 2009) in CALSIM II. The USFWS BO and NMFS BO assumptions are included in Appendix A of the 2009 DWR Delivery Reliability Report. The DWR State Water Project Delivery Reliability Report (DWR Delivery Reliability Report) has been issued biennially since 2003. It is specifically intended to assist SWP Contractors in assessing the delivery reliability of the SWP component of their overall water supplies. In response to the 2008 BO, on March 5, 2009, the State Water Contractors filed litigation challenging the new 2008 BO for the Delta smelt under provisions of the federal Endangered Species Act. Additional litigation, brought by the Coalition for a Sustainable Delta and Kern County Water Agency, also challenged the regulatory restrictions placed on SWP operations in the 2008 BO under the federal ESA. The litigation is still pending.

2009 BO. On June 4, 2009, NOAA/NMFS released the 2009 BO addressing the effects of the CVP/SWP operations on the salmon, steelhead, and sturgeon. Federal biologists and hydrologists concluded that current water pumping operations in the CVP/SWP should be changed to ensure survival of the fish species. According to the NMFS, the 2009 BO's restrictions on CVP/SWP operations will impact an estimated 5 to 7 percent of the available annual water on average moved by the federal and state pumping plants, or about 330,000 acre-feet per year (afy); however, water operations will not be affected

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26 The 2008 *Wanger* decision (*Pacific Coast Federation of Fishermen's Associations, et al. v. Gutierrez, et al.*, No. 06-CV-00245-OWW-GSA (E.D. Cal. 2008)) is found in Appendix B of the Landmark Village Final EIR (November 2007).

by the 2009 BO immediately and will be tiered to water year type. The 2009 BO also includes exception procedures for drought and health and safety issues.[27]

DWR issued an initial response to the new 2009 BO on June 4, 2009. According to DWR, the 2009 BO "reaffirms the need for a comprehensive solution to the water and environmental conflicts in the Delta."[28] DWR's initial estimates show the average year impacts closer to 10 percent, which could reduce Delta export on average by about 300,000 to 500,000 acre-feet, which is in addition to current pumping restrictions imposed by the 2008 BO to protect the Delta smelt. Again, in cooperation with USBR, NMFS, USFWS, and CDFG, DWR has developed new assumptions for implementation of both the USFWS BO (December 15, 2008) and NMFS BO (June 4, 2009) in CALSIM II. The USFWS BO and NMFS BO assumptions are included in Appendix A of the 2009 DWR Delivery Reliability Report.

After issuance of the 2009 BO, on August 6, 2009, the SWP Contractors filed a lawsuit against federal agencies challenging the 2009 BO on federal ESA grounds. According to the litigation, the BO failed to take into account the many other factors contributing to the fish population decline, and failed to consider the impacts that the 2009 BO would have on people, a requirement of the National Environmental Policy Act (NEPA).[29] In addition, on August 28, 2009, the Coalition for a Sustainable Delta and Kern County Water Agency jointly filed suit against federal agencies challenging the 2009 BO under the federal ESA.[30] This litigation is still pending.

Implications of Regulatory/Litigation Constraints. The *Watershed* decision, the two *Wanger* Decisions, and the recent actions taken by USFWS, NMFS, and California Fish and Game Commission, as well as the associated litigation, have implications on imported SWP/CVP water supplies throughout California. These implications are outlined below based on the best available information.

In terms of short-term water supply availability, there have been short-term effects related to issues presented in the *Watershed* and *Wanger* Decisions. For example, pumping operations were shut down for approximately nine days in June 2007 due to concerns over the declining number of Delta smelt. DWR then operated the pumps at limited levels for several weeks while waiting for the smelt to migrate to cooler waters. DWR then resumed normal operations in July 2007. There is also concern that the remedy

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27 Please refer to this EIR, **Appendix 4.8**, for the NOAA/NMFS release, dated June 4, 2009, summarizing the 2009 BO.

28 Please refer to this EIR, **Appendix 4.8**, for the DWR release, dated June 4, 2009, responding to the new 2009 BO.

29 Please refer to this EIR, **Appendix 4.8**, for the SWP Contractors release, dated August 6, 2009, concerning the litigation filed challenging the 2009 BO.

30 Please refer to this EIR, **Appendix 4.8**, for the Coalition for a Sustainable Delta/ Kern County Water Agency release, dated August 28, 2009, concerning the litigation filed challenging the 2009 BO.

adopted by the District Court could ultimately become part of the conditions in the new incidental take permit, which is currently subject to litigation. These concerns, if they materialize, could limit the percentage of SWP water that can be delivered to SWP Contractors, including CLWA. If such remedies are not ultimately part of the incidental take permit, the permit itself may contain conditions that would lower the percentage of SWP water made available for delivery to Southern California, including the Santa Clarita Valley. The 2009 DWR Delivery Reliability Report updates the information contained in the 2007 DWR Delivery Reliability Report by estimating the amounts of water deliveries for current (2009) conditions and conditions 20 years in the future (2029). These estimates incorporate restrictions of SWP and CVP operations in accordance with the BOs of the USFWS (2008) and NMFS (2009), respectively.

Executive/Legislative Response. Because of these concerns, Governor Schwarzenegger directed DWR to take immediate action to improve conditions in the Delta.[31] According to the Office of the Governor, the Governor is building on his Strategic Growth Plan from last year, which consists of approximately $6 billion to upgrade California's water systems. The Governor's plan invests $4.5 billion to develop additional surface and groundwater storage. The plan also includes $1 billion toward restoration of the Delta, including development of a new conveyance system, $250 million to support restoration projects on the Kalamath, San Joaquin, and Sacramento rivers, and the Salton Sea project, and $200 million for grants to California communities to help conserve water. Using existing resources, DWR will implement numerous actions, including screening Delta agriculture intake pumps to protect smelt, restoring the North Delta's natural habitat, improving the Central Delta water flow patterns, and improving DWR's ability to respond to Delta emergencies, such as levee failures.

The Governor also has directed the Delta Vision Blue Ribbon Task Force to develop a delta management plan. The Task Force presented its findings and recommendations in early 2008, and its strategic plan was released at the end of 2008. The final report includes a suite of strategic recommendations for long-term, sustainable management of the Bay-Delta. Please refer to the Delta Vision website for the final report and associated information (http://deltavision.ca.gov/ [last visited March 20, 2009]). The Bay-Delta Conservation Plan is also underway. The Plan is intended to ensure compliance with federal and state Endangered Species Act requirements in the Delta. The $1 billion proposed in the Governor's comprehensive plan will be used to fund recommendations from both the Delta Vision Task Force and the Conservation Plan.[32]

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31 For the Governor's release issued July 17, 2007, please refer to http://gov.ca.gov/ index.php?/print-version/press-release/6369/.

32 Please refer to the 2009 DWR Delivery Reliability Report (August 2010) for the current status of planning activities that may affect SWP delivery reliability, pages 25-28, incorporated by reference.

Over the long-term, water supply availability and reliability will continue to be assessed by DWR in DWR's biennial State Water Project Delivery Reliability Reports. These reports take into account a myriad of factors in evaluating long-term water supply availability and reliability. These factors include multiple sources of water, a range of water demands, timing of water uses, hydrology, available facilities, regulatory restraints including pumping constraints due to impacts on listed fish species, water conservation strategies, and future weather patterns. The *Watershed* Decision, the two *Wanger* Decisions, and the two Biological Opinions, highlight the regulatory restraints applicable to SWP supplies, which have impacted DWR deliveries of SWP supplies in the past, and could curtail such deliveries in the future.

2009 California Legislation. Governor Schwarzenegger and the California legislature successfully crafted a comprehensive package of bills aimed at ensuring a reliable water supply in the future, as well as restoring the Delta and other ecologically sensitive areas. This comprehensive legislation places water supply and the Delta environment on an equal footing, establishing those principles as the State of California's fundamental and co-equal goals for the Delta. In summary, the plan is comprised of four policy bills and an $11.14 billion bond. The package establishes a Delta Stewardship Council, sets ambitious water conservation policy, ensures better groundwater monitoring, and provides funds for the State Water Resources Control Board for increased enforcement of illegal water diversions. The bond, if approved in the November 2010 general election, will fund, with local cost-sharing, drought relief, water supply reliability, Delta sustainability, statewide water system operational improvements, conservation and watershed protection, groundwater protection, and water recycling and water conservation programs.[33]

(a) Summary of the Four Bills

SB 1 – Delta Governance/Delta Plan: SB 1 establishes the framework to achieve the co-equal goals of providing a more reliable water supply to California and restoring and enhancing the Delta ecosystem. The co-equal goals will be achieved in a manner that protects the unique cultural, recreational, natural resource, and agricultural values of the Delta. Specifically, this bill:

1. Creates the Delta Stewardship Council, consisting of seven members with diverse expertise providing a broad statewide perspective. The Chairperson of the Delta Protection Commission is a permanent member of the Council. The Council is also tasked with:

   (a) Developing a Delta Plan to guide state and local actions in the Delta in a manner that furthers the co-equal goals of Delta restoration and water supply reliability;

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[33] Please refer to this EIR, **Appendix 4.8**, for DWR's 2009 Comprehensive Water Package, Special Session Policy Bills and Bond Summary, dated November 2009.

(b) Developing performance measures for the assessment and tracking of progress and changes to the health of the Delta ecosystem, fisheries, and water supply reliability;

(c) Determining if a state or local agency's project in the Delta is consistent with the Delta Plan and the co-equal goals, and acting as the appellate body in the event of a claim that such a project is inconsistent with the goals; and

(d) Determining the consistency of the Bay-Delta Conservation Plan (BDCP) with the co-equal goals.

2. Ensures that the Department of Fish and Game and the State Water Resources Control Board identify the water supply needs of the Delta estuary for use in determining the appropriate water diversion amounts associated with BDCP.

3. Establishes the Sacramento-San Joaquin Delta Conservancy to implement ecosystem restoration activities within the Delta. In addition to the restoration duties the Conservancy is required to:

   (a) Adopt a strategic plan for implementation of the Conservancy goals;

   (b) Promote economic vitality in the Delta through increased tourism and the promotion of Delta legacy communities;

   (c) Promote environmental education about, and the public use of, public lands in the Delta; and

   (d) Assist in the preservation, conservation, and restoration of the region's agricultural, cultural, historic, and living resources.

4. Restructures the current Delta Protection Commission (DPC), reducing the membership from 23 to 15 members, and tasks DPC with the duties of:

   (a) Adopting an economic sustainability plan for the Delta, which is to include flood protection recommendations to state and local agencies; and

   (b) Submitting the economic sustainability plan to the Delta Stewardship Council for inclusion in the Delta Plan.

5. Appropriates funding from Proposition 84 to fund the Two-Gates Fish Protection Demonstration Program, a project in the central Delta that will utilize operable gates for protection of sensitive species and management of water supply.

SB 6 – Groundwater Monitoring: SB 6 requires, for the first time in California's history, that local agencies monitor the elevation of their groundwater basins to help better manage the resource during both normal water years and drought conditions. Specifically, this bill:

1. Requires the DWR to establish a priority schedule for the monitoring of groundwater basins and the review of groundwater elevation reports, and to make recommendations to local entities to improve the monitoring programs.

2. Requires DWR to assist local monitoring entities on compliance with this statute.

3. Allows local entities to determine regionally how best to set up their groundwater monitoring program, crafting the program to meet their local circumstances.

4. Provides landowners with protections from trespass by state or local entities.

5. Provides that if the local agencies fail to implement a monitoring program and/or fail to provide the required reports, DWR may implement the groundwater monitoring program for that region.

6. Provides that failure to implement a monitoring program will result in the loss of eligibility for state grant funds by the county and the agencies responsible for performing the monitoring duties.

SB 7X7 – Statewide Water Conservation: SB 7X7 creates a framework for future planning and actions by urban and agricultural water suppliers to reduce California's water use. For the first time in California's history, this bill requires the development of agricultural water management plans and requires urban water agencies to reduce statewide per capita water consumption 20 percent by 2020. Specifically, this bill:

1. Establishes multiple pathways for urban water suppliers to achieve the statewide goal of a 20 percent reduction in urban water use. Specifically, urban water suppliers may:

   (a) Set a conservation target of 80 percent of their baseline daily per capita water use;

   (b) Utilize performance standards for water use that are specific to indoor, landscape, and commercial, industrial and institutional uses;

   (c) Meet the per capita water use goal for their specific hydrologic region as identified by DWR and other state agencies in the 20 percent by 2020 Water Conservation Plan; or

   (d) Use an alternate method that is to be developed by DWR before December 31, 2010.

2. Requires urban water suppliers to set an interim urban water use target and meet that target by December 31, 2015 and meet the overall target by December 31, 2020.

3. Requires DWR to cooperatively work with the California Urban Water Conservation Council to establish a task force that shall identify best management practices to assist the commercial, industrial, and institutional sectors in meeting the water conservation goal.

4. Requires agricultural water suppliers to measure water deliveries and adopt a pricing structure for water customers based at least in part on quantity delivered, and, where technically and economically feasible, implement additional measures to improve efficiency.

5. Requires agricultural water suppliers to submit Agricultural Water Management Plans beginning December 31, 2012 and include in those plans information relating to the water efficiency measures they have undertaken and are planning to undertake.

6. Makes ineligible for state grant funding any urban or agricultural water supplier who is not in compliance with the requirements of this bill relating to water conservation and efficient water management.

7. Requires DWR to, in 2013, 2016, and 2021, report to the Legislature on agricultural efficient water management practices being undertaken and reported in agricultural water management plans.

8. Requires DWR, the State Water Resources Control Board, and other state agencies to develop a standardized water information reporting system to streamline water reporting required under the law.

SB 8 – Water Diversion and Use/Funding: SB 8 improves accounting of the location and amounts of water being diverted by recasting and revising exemptions from the water diversion reporting requirements under current law. Additionally, this bill appropriates existing bond funds for various activities to benefit the Delta ecosystem and secure the reliability of the state's water supply, and to increase staffing at the State Water Resources Control Board to manage the duties of this statute. Specifically, this bill:

1. provides a stronger accounting of water diversion and use in the Delta by removing an exemption from reporting water use by in-Delta water users.

2. redefines the types of diversions that are exempt from the reporting requirement.

3. assesses civil liability and monetary penalties on diverters who fail to submit the required reports, and for willful misstatements, and/or tampering with monitoring equipment.

4. appropriates $546 million from Propositions 1E and 84, in the following manner:

   (a) $250 million (Proposition 84) for integrated regional water management grants and expenditures for projects to reduce dependence on the Delta;

   (b) $202 million ($32 million Proposition 84 and $170 million Proposition 1E) for flood protection projects in the Delta to reduce the risk of levee failures that would jeopardize water conveyance;

   (c) $70 million (Proposition 1E) for stormwater management grants; and

   (d) $24 million (Proposition 84) for grants to local agencies to develop or implement Natural Community Conservation plans.

5. appropriates $3.75 million from the Water Rights Fund to the State Water Resources Control Board for staff positions to manage the duties in this bill relating to water diversion reporting, monitoring, and enforcement.

(b) Water Bond Summary

The Safe, Clean, and Reliable Drinking Water Supply Act of 2010 is an $11.14 billion general obligation bond proposal that would provide funding for California's aging water infrastructure and for projects and programs to address the ecosystem and water supply issues in California. The bond is comprised of seven categories, including drought relief, water supply reliability, Delta sustainability, statewide water

system operational improvement, conservation and watershed protection, groundwater protection and water quality, and water recycling and water conservation.

Drought Relief – $455 million. This funding will be available for local and regional drought relief projects that reduce the impacts of drought conditions, including the impacts of reductions to Delta diversions. Projects will include water conservation and water use efficiency projects, water recycling, groundwater cleanup and other water supply reliability projects including local surface water storage projects that provide emergency water supplies and water supply reliability in drought conditions. Funds will be available to disadvantaged communities and economically distressed areas experiencing economic impacts from the drought for drought relief projects and programs. Funds will also be available to improve wastewater treatment facilities to protect water quality or prevent contamination of surface water or groundwater resources.

Delta Sustainability – $2.25 billion. This bond will provide funds for projects to assist in maintaining and restoring the Delta as an important ecosystem. These investments will help to reduce the seismic risk to water supplies derived from the Delta, protect drinking water quality, and reduce conflict between water management and environmental protection.

Water Supply Reliability – $1.4 billion. These funds would be in addition to prior funding provided by Proposition 50 and Proposition 84 and would support the existing Integrated Regional Water Management (IRWM) program. IRWM is designed to encourage integrated regional strategies for management of water resources that will protect communities from drought, protect and improve water quality and improve local water security by reducing dependence on imported water. The bond would provide funds for water supply projects in 12 regions throughout the state and would also be available for local and regional conveyance projects that support regional and interregional connectivity and water management.

Statewide Water System Operational Improvement – $3.0 billion. This funding would be dedicated to the development of additional water storage, which, when combined with other water management and flood system improvement investments being made, can increase reliability and offset the climate change impacts of reduced snow pack and higher flood flows. Eligible projects for this funding include surface storage projects identified in the CALFED Bay-Delta Record of Decision; groundwater storage projects and groundwater contamination prevention or remediation projects that provide water storage benefits; conjunctive use and reservoir reoperation projects; local and regional surface storage projects that improve the operation of water systems in the state and provide public benefits.

The bond provides that water suppliers who would benefit from new storage will pay their share of the total costs of the project while the public benefits of new water storage can be paid for by this general obligation bond.

Groundwater Protection and Water Quality – $1 billion. To protect public health, funds will be available for projects to prevent or reduce the contamination of groundwater that serves as a source of drinking water.

Funds will also be used to finance emergency and urgent actions on behalf of disadvantaged communities and economically distressed areas to ensure that safe drinking water supplies are available to all Californians.

Water Recycling and Water Conservation – $1.25 billion. Funds will be available for water recycling and advanced treatment technology projects that recycle water or that remove salts and contaminants from water sources. Funds will also be available for urban and agricultural water conservation and water use efficiency plans, projects, and programs. These funds will assist urban water users in achieving water conservation targets.

Conservation and Watershed Protection – $1.785 billion. Funds will be available, through a 50-50 cost share program, for ecosystem and watershed protection and restoration projects in 21 watersheds throughout the state, including coastal protection, wildlife refuge enhancement, fuel treatment and forest restoration, fish passage improvement and obsolete dam removal.

In summary, while the bills just recently passed into law, and the bond still must be approved by voters in the November 2012 general election, the legislative package represents historic steps to reform and rebuild California's water system.[34] The legislative package also has brought state-wide implications, the most significant of which include establishing a Delta Stewardship Council to govern the Delta; setting aggressive water conservation policies and targets for both urban and agricultural uses of water (policies that mandate a 20 percent reduction in urban per capita water use by December 31, 2020, including incremental progress toward the 20 percent goal by reducing per capita urban water use by at least 10 percent on or before December 31, 2015); and a bond measure authorizing the funding of several water reliability, conservation, and efficiency projects. The effects of the bills and bond package cannot be quantified at this time; however, they represent statewide solutions to several competing interests,

[34] Please refer to this EIR, **Appendix 4.8**, for the Office of the Governor's release, dated November 4, 2009, regarding passage of historic comprehensive water package.

including drought relief, water supply reliability, Delta sustainability, water conservation, and groundwater protection.

Draft Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. As described above, in November 2009, California enacted a comprehensive package of four policy bills and a bond measure intended to meet California's growing water challenges by adopting a policy of sustainable water supply management to ensure a reliable water supply for the state and to restore the Delta and other ecologically sensitive areas. One of these bills, Senate Bill No. 1 (SB 1) (Stats. 2009 (7th Ex. Sess.) ch 5, Sections 39) contains the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act), Water Code section 85000 et seq. The Delta Reform Act establishes a Delta Stewardship Council (Council), tasked with developing a comprehensive, long-term management plan for the Delta, known as the Delta Plan, and providing direction to multiple state and local agencies that take actions related to the Delta. Water Code section 85086 requires the State Water Resources Control Board (State Water Board) to use the best available scientific information gathered as part of a public process conducted as an informational proceeding to develop new flow criteria for the Delta ecosystem to protect public trust resources. The purpose of the flow criteria is to inform planning decisions for the Delta Plan and the Bay Delta Conservation Program (BDCP). In July 2010 and in accordance with the legislation, the SWRCB prepared a report entitled, Draft Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. A summary of this report is provided below.

The Sacramento-San Joaquin Delta (Delta) is a critically important natural resource for California and the nation. It is both the hub of California's water supply system and the most valuable estuary and wetlands on the western coast of the Americas. The Delta is in ecological crisis, resulting in high levels of conflict that affect the sustainability of existing water policy in California. Several species of fish have been listed as protected species under the California Endangered Species Act (CESA) and under the federal Endangered Species Act (ESA). These two laws and other regulatory constraints have restricted water diversions from the Delta in an effort to prevent further harm to the protected species.

The State Water Board held an informational proceeding on March 22, 23, and 24, 2010, to receive scientific information from technical experts on the Delta outflows needed to protect public trust resources. The State Water Board also received information at the proceeding on flow criteria for inflow to the Delta from the Sacramento and San Joaquin rivers and Delta hydrodynamics. The State Water Board did not solicit information on the need for water for other beneficial uses, including the amount of water needed for human health and safety, during the informational proceeding. Nor did the State Water Board consider other policy considerations, such as the state goal of providing a decent home and suitable living environment for every Californian. During this process, participants cautioned the State Water Board on the limitations of any flow criteria (Fleenor et al., 2010).

State Water Board Approach: In determining the extent of protection to be afforded public trust resources through the development of the flow criteria, the State Water Board considered the broad goals of the planning efforts the criteria are intended to inform, including restoring and promoting viable, selfsustaining populations of aquatic species. Given the accelerated time frame in which to develop the criteria, the State Water Board's approach to developing criteria was limited to review of instream needs in the Delta ecosystem, specifically fish species and Delta outflows, while also receiving information on hydrodynamics and major tributary inflows. The State Water Board's flow criteria determinations are accordingly limited to protection of aquatic resources in the Delta.

Limitations of State Water Board Approach: When setting flow objectives with regulatory effect, the State Water Board reviews and considers all the effects of the flow objectives through a broad inquiry into all public trust and public interest concerns. For example, the State Water Board would consider other public trust resources potentially affected by Delta outflow requirements and impose measures for the protection of those resources, such as requiring sufficient water for cold water pool in reservoirs to maintain temperatures in Delta tributaries. The State Water Board would also consider a broad range of public interest matters, including economics, power production, human health and welfare requirements, and the effects of flow measures on non-aquatic resources (such as habitat for terrestrial species). The limited process adopted for this proceeding does not include this comprehensive review.

The State Water Board's Public Trust Responsibilities in this Proceeding: Under the public trust doctrine, the State Water Board must take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible. (National Audubon Society v. Superior Court (1983) 33 Cal.3d 419, 446.) Public trust values include navigation, commerce, fisheries, recreation, scenic, and ecological values. "[I]n determining whether it is 'feasible' to protect public trust values like fish and wildlife in a particular instance, the [State Water] Board must determine whether protection of those values, or what level of protection, is 'consistent with the public interest.'" (State Water Resources Control Bd. Cases (2006) 136 Cal.App.4th 674, 778.) The State Water Board does not make any determination regarding the feasibility of the public trust recommendations and consistency with the public interest in this report.

In this forum, the State Water Board has not considered the allocation of water resources, the application of the public trust to a particular water diversion or use, water supply impacts, or any balancing between potentially competing public trust resources (such as potential adverse effects of increased Delta outflow on the maintenance of coldwater resources for salmonids in upstream areas). Any such application of the State Water Board's public trust responsibilities, including any balancing of public trust values and water rights, would be conducted through an adjudicative or regulatory proceeding. Instead, the State Water

Board's focus here is solely on identifying public trust resources in the Delta ecosystem and determining the flow criteria, as directed by Water Code section 85086.

Future Use of This Report: None of the determinations in this report have regulatory or adjudicatory effect. Any process with regulatory or adjudicative effect must take place through the State Water Board's water quality control planning, water rights processes, or public trust proceedings in conformance with applicable law. In the State Water Board's development of Delta flow objectives with regulatory effect, it must ensure the reasonable protection of beneficial uses, which may entail balancing of competing beneficial uses of water, including municipal and industrial uses, agricultural uses, and other environmental uses. The State Water Board's evaluation will include an analysis of the effect of any changed flow objectives on the environment in the watersheds in which Delta flows originate, the Delta, and the areas in which Delta water is used. It will also include an analysis of the economic impacts that result from changed flow objectives. Nothing in either the Delta Reform Act or in this report amends or otherwise affects the water rights of any person. In carrying out its water right responsibilities, the State Water Board may impose any conditions that in its judgment will best develop, conserve, and utilize in the public interest the water to be appropriated. In making this determination, the State Water Board considers the relative benefit to be derived from all beneficial uses of the water concerned and balances competing interests.

If the DWR and/or the USBR in the future request the State Water Board to amend the water right permits for the State Water Project (SWP) and/or the Central Valley Project (CVP) to move the authorized points of diversion for the projects from the southern Delta to the Sacramento River, Water Code section 85086 directs the State Water Board to include in any order approving a change in the point of the diversion of the projects appropriate Delta flow criteria. At that time, the State Water Board will determine appropriate permit terms and conditions. That decision will be informed by the analysis in this report, but will also take many other factors into consideration, including any newly developed scientific information, habitat conditions at the time, and other policies of the State, including the relative benefit to be derived from all beneficial uses of water. The flow recommendations in this report are not pre-decisional in regard to any State Water Board action. (e.g., Wat. Code, Section 85086, subd. (c)(1).) The water supply costs of the flows identified in this report illustrate to the State Water Board the need for an integrated approach to management of the Delta. Best available science supports that it is important to directly address the negative effects of other stressors, including habitat, water quality, and invasive species, that contribute to higher demands for water to protect public trust resources. The flow criteria highlight the continued need for the BDCP to develop an integrated set of solutions and to implement non flow measures to protect public trust resources.

Summary Determinations: This report contains the State Water Board's determinations as to the flows that protect public trust resources in the Delta, under the narrow circumstances analyzed in this report.

As required, the report includes the volume, timing, and quality of flow for protection of public trust resources under different hydrologic conditions. The flow criteria represent a technical assessment only of flow and operational requirements that provide fishery protection under existing conditions. The flow criteria contained in this report do not represent flows that might be protective under other conditions. The State Water Board recognizes that changes in existing conditions may alter the need for flow. Changes in existing conditions that may affect flow needs include, but are not limited to, reduced reverse flows in Delta channels, increased tidal habitat, improved water quality, reduced competition from invasive species, changes in the point of diversion of the State Water Project (SWP) and Central Valley Project (CVP), and climate change.

Flow Criteria and Conclusions: The numeric criteria determinations in this report must be considered in the following context:

- The flow criteria in this report do not consider any balancing of public trust resource protection with public interest needs for water.
- The State Water Board does not intend that the criteria should supersede requirements for health and safety such as the need to manage water for flood control.
- There is sufficient scientific information to support the need for increased flows to protect public trust resources; there is uncertainty regarding specific numeric criteria.

The State Water Board has considered the testimony presented during the Board's informational proceeding to develop flow criteria and to support the following summary conclusions. Several of these summary conclusions rely in whole or in part on conclusions and recommendations made to the State Water Board by the Delta Environmental Flows Group[35] and the University of California at Davis Delta Solutions Group.[36]

1. The effects of non-flow changes in the Delta ecosystem, such as nutrient composition, channelization, habitat, invasive species, and water quality, need to be addressed and integrated with flow measures.

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35 The Delta Environmental Flows Group of experts consists of William Bennett, Jon Burau, Cliff Dahm, Chris Enright, Fred Feyrer, William Fleenor, Bruce Herbold, Wim Kimmerer, Jay Lund, Peter Moyle, and Matthew Nobriga.

36 The Delta Solutions Group consists of William Bennett, William Fleenor, Jay Lund, and Peter Moyle.

2. Recent Delta flows are insufficient to support native Delta fishes for today's habitats.[37] Flow modification is one of the immediate actions available although the links between flows and fish response are often indirect and are not fully resolved. Flow and physical habitat interact in many ways, but they are not interchangeable.

3. In order to preserve the attributes of a natural variable system to which native fish species are adapted, many of the criteria developed by the State Water Board are crafted as percentages of natural or unimpaired flows. These criteria include:

- 75 percent of unimpaired Delta outflow from January through June;
- 75 percent of unimpaired Sacramento River inflow from November through June; and
- 60 percent of unimpaired San Joaquin River inflow from February through June.

It is not the State Water Board's intent that these criteria be interpreted as precise flow requirements for fish under current conditions, but rather they reflect the general timing and magnitude of flows under the narrow circumstances analyzed in this report. In comparison, historic flows over the last 18 to 22 years have been:

- approximately 30 percent in drier years to almost 100 percent of unimpaired flows in wetter years for Delta outflows;
- about 50 percent on average from April through June for Sacramento River inflows; and
- approximately 20 percent in drier years to almost 50 percent in wetter years for San Joaquin River inflows.

4. Other criteria include: increased fall Delta outflow in wet and above normal years; fall pulse flows on the Sacramento and San Joaquin Rivers; and flow criteria in the Delta to help protect fish from mortality in the central and southern Delta resulting from operations of the State and federal water export facilities.

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37 This statement should not be construed as a critique of the basis for existing regulatory requirements included in the 2006 Bay-Delta Plan and biological opinions. Those requirements were developed pursuant to specific statutory requirements and considerations that differ from this proceeding. Particularly when developing water quality objectives, the State Water Board must consider many different factors including what constitutes reasonable protection of the beneficial use and economic considerations. In addition, the biological opinions for the SWP and CVP Operations Criteria and Plan were developed to prevent jeopardy to specific fish species listed pursuant to the federal Endangered Species Act; in contrast, the flow criteria developed in this proceeding are intended to halt population decline and increase populations of certain species.

5. The report also includes determinations regarding: variability and the natural hydrograph, floodplain activation and other habitat improvements, water quality and contaminants, cold water pool management, and adaptive management:

- Criteria should reflect the frequency, duration, timing, and rate of change of flows, and not just volumes or magnitudes. Accordingly, whenever possible, the criteria specified above are expressed as a percentage of the unimpaired hydrograph.

- Inflows should generally be provided from tributaries to the Delta watershed in proportion to their contribution to unimpaired flow unless otherwise indicated.

- Studies and demonstration projects for, and implementation of, floodplain restoration, improved connectivity and passage, and other habitat improvements should proceed to provide additional protection of public trust uses and potentially allow for the reduction of flows otherwise needed to protect public trust resources in the Delta.

- The Central Valley and San Francisco Regional Water Quality Control Boards should continue developing Total Maximum Daily Loads (TMDLs) for all listed pollutants and adopting programs to implement control actions.

- The Central Valley Regional Water Quality Control Board should require additional studies and incorporate discharge limits and other controls into permits, as appropriate, for the control of nutrients and ammonia.

- Temperature and water supply modeling and analyses should be conducted to identify conflicting requirements to achieve both flow and cold water temperature goals.

- A strong science program and a flexible management regime are critical to improving flow criteria. The State Water Board should work with the Council, the Delta Science Program, BDCP, the Interagency Ecological Program, and others to develop the framework for adaptive management that could be relied upon for the management and regulation of Delta flows.

- The numeric criteria recommended in this report are all recommendations that are only appropriate for the current physical system and climate; as other factors change the flow needs advanced in this report will also change. As physical changes occur to the environment and our understanding of species needs improves, the long-term flow needs will also change. Actual flows should be informed by adaptive management.

- Only the underlying principles for the numeric criteria and other measures are advanced as long term recommendations.

6. Past changes in the Delta may influence migratory cues for some fishes. These cues are further scrambled by a reverse salinity gradient in the south Delta. It is important to establish seaward gradients and create more slough networks with natural channel geometry. Achieving a variable more complex estuary requires establishing seasonal gradients in salinity and other water quality variables and diverse habitats throughout the estuary. These goals in turn encourage policies, which establish internal Delta flows that create a tidally mixed upstream- downstream gradient (without cross-Delta flows) in water quality. Continued through-Delta conveyance is likely to continue the need for in- Delta flow requirements and restrictions to protect fish within the Delta.

7. Restoring environmental variability in the Delta is fundamentally inconsistent with continuing to move large volumes of water through the Delta for export. The drinking and agricultural water quality requirements of through-Delta exports, and perhaps even some current in-Delta uses, are at odds with the water quality and variability needs of desirable Delta species.

8. The Delta ecosystem is likely to dramatically shift within 50 years due to large scale levee collapse. Overall, these changes are likely to promote a more variable, heterogeneous estuary. This changed environment is likely to be better for desirable estuarine species; at least it is unlikely to be worse.

9. Positive changes in the Delta ecosystem resulting from improved flow or flow patterns will benefit humans as well as fish and wildlife. Ecosystems are complex; there are many factors that affect the quality of the habitat that they provide. These factors combine in ways that can amplify the effect of the factors on aquatic resources. The habitat value of the Delta ecosystem for favorable species can be improved by habitat restoration, contaminant and nutrient reduction, changes in diversions, control of invasive species, and island flooding. Each of these non-flow factors has the potential to interact with flow to affect available aquatic habitat in Delta channels.

The State Water Board supports the most efficient use of water that can reasonably be made. The flow improvements that the State Water Board identifies in this report as being necessary to protect public trust resources illustrate the importance of addressing the negative effects of these other stressors that contribute to higher than necessary demands for water to provide resource protection. Future habitat improvements or changes in nutrients and contaminants, for example, may change the response of fishes to flow. Addressing other stressors directly will be necessary to assure protection of public trust resources and could change the demands for water to provide resource protection in the future. Uncertainty regarding the effects of habitat improvement and other stressors on flow demands for resource protection highlights the need for continued study and adaptive management to respond to changing conditions. The flow criteria identified in this report highlight the need for the BDCP to develop an integrated set of solutions, to address ecosystem flow needs, including flow and non-flow measures. Although flow modification is an action that can be implemented in a relatively short time in order to improve the survival of desirable species and protect public trust resources, public trust resource protection cannot be achieved solely through flows – habitat restoration also is needed. One cannot substitute for the other; both flow improvements and habitat restoration are essential to protecting public trust resources.

CLWA Imported Water Supplies and Facilities. CLWA receives SWP and non-SWP imported water through the terminus of the West Branch of the California Aqueduct at Castaic Lake. Water supplies (whether derived from local or imported water supplies) require treatment (filtration and disinfection) prior to distribution. CLWA operates two water treatment plants, the Earl Schmidt Filtration Plant located near Castaic Lake and the Rio Vista Water Treatment Plant located in Saugus. CLWA produces water that meets drinking water standards set by the U.S. EPA and DPH. SWP water has different aesthetic characteristics than groundwater with lower dissolved mineral concentrations (total dissolved

solids) of approximately 250 to 360 mg/l, and lower hardness (as calcium carbonate) of about 105 to 135 mg/l.

Historically, the State Water Project (SWP) delivered only surface water from the Sacramento-San Joaquin River Delta. However, CLWA and other SWP users, in anticipation of drought, many years ago began "water banking" programs where SWP water could be stored or exchanged during wet years and withdrawn in dry years. The last three years have seen severe statewide drought. As a result, water has been withdrawn from the water banking programs and pumped into the SWP system. During the period of 2008 through 2010, a greater portion of water in the SWP has been this "pumped-in" water. The "pumped-in" water has met all water quality standards established by DWR under its anti-degradation policy for the SWP.

The Rio Vista Plant is currently undergoing expansion from its current 30 million gallons per day (mgd) treatment capacity to 60 mgd, and will eventually be expanded to 90 mgd as demands for treated water increase. Earl Schmidt Plant operates at a treatment capacity of 56 mgd. The current combined capacity of the two treatment plants is approximately 86 mgd.

Santa Clarita Valley Water Supply. The current water supply for the Santa Clarita Valley is derived from both local and imported sources. The principal components of this supply are imported water from the SWP, water purchased in Kern County, and local groundwater from both the Alluvial aquifer and the Saugus Formation. Since 2003, these water supplies have been augmented by the initiation of deliveries from CLWA's recycled water program.

In addition to these supplies, which are available and used to meet service area demands every year, CLWA also has storage programs that are planned for use under shortage situations (e.g., during drier years when imported supplies are limited). These storage programs improve the reliability of CLWA's overall supplies by enabling existing supplies that are not needed in wetter years to be stored for use in drier years, but they do not increase the supplies available to meet service area demand every year.

Table 4.8-11, Summary of Current and Planned Water Supplies and Banking Programs, summarizes the existing and planned water supplies and banking programs for the CLWA service area. According to CLWA, the information presented on this table is not intended to be an operational plan for how supplies would be used in a particular year, but rather an identification of the complete range of water supplies available under varying hydrologic conditions. Diversity of supply allows CLWA and the local retail purveyors the option of drawing on multiple sources of supply in response to changing conditions, such as varying weather patterns (average/normal years, single-dry years, multiple dry years), fluctuations in delivery amounts of SWP water, natural disasters, perchlorate-impacted wells, and other factors. Based

on CLWA's conservative water supply and demand assumptions over the next 20 years (i.e., through 2030 as described in the 2005 UWMP), in combination with conservation of non-essential demand during certain dry years, the water supply plan described in the 2005 UWMP achieves CLWA's and the local retail purveyors' goal of delivering reliable and high-quality water supply for their customers, even during dry periods.[38] Additional tables are provided below that address available water supplies in the Santa Clarita Valley in normal/average years, single-dry years, and multiple-dry years over a 20-year planning horizon.

Table 4.8-11
Summary of Current and Planned Water Supplies and Banking Programs[(1)]

Water Supply Sources	Supply (af)					
	2007	2010	2015	2020	2025	2030
Existing Supplies (1)						
Wholesale (Imported)	***61,800***	***75,787***	***75,787***	***74,407***	***74,407***	***74,407***
SWP Table A Supply (2)	57,120	57,120	57,120	57,120	57,120	57,120
Buena Vista-Rosedale	0	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land	0	1,607	1,607	1,607	1,607	1,607
Flexible Storage Account (CLWA) (3)	4,680	4,680	4,680	4,680	4,680	4,680
Flexible Storage Account (Ventura County) (3) (4)	0	1,380	1,380	0	0	0
Local Supplies						
Groundwater	*40,000*	*46,000*	*46,000*	*46,000*	*46,000*	*46,000*
Alluvial Aquifer	35,000	35,000	35,000	35,000	35,000	35,000
Saugus Formation	5,000	11,000	11,000	11,000	11,000	11,000
Recycled Water	1,700	1,700	1,700	1,700	1,700	1,700
Total Existing Supplies	**103,500**	**123,487**	**123,487**	**122,107**	**122,107**	**122,107**
Existing Banking Programs (3)						
Semitropic Water Bank (5)	50,870	50,870	0	0	0	0
Rosedale-Rio Bravo (7)	64,898	64,898	64,898	64,898	64,898	64,898
Semitropic Water Bank Newhall Land (8)	0	18,828	18,828	18,828	18,828	18,828
Total Existing Banking Programs	**115,768**	**134,596**	**83,726**	**83,726**	**83,726**	**83,726**

38 CLWA articulated the above determinations, through its retail water division (CLWA Santa Clarita Water Division), in the *Final SWP SB 610 Water Supply Assessment for the Skyline Project* (September 2008), p. 30. This document is available for public inspection and review at the SCWD of CLWA, 22722 Soledad Canyon Road, Santa Clarita, California 91350, and is incorporated by reference in this EIR.

Water Supply Sources	Supply (af)					
	2007	2010	2015	2020	2025	2030
Planned Supplies (1)						
Local Supplies						
Groundwater	*0*	*10,000*	*10,000*	*20,000*	*20,000*	*20,000*
Restored wells (Saugus Formation)	0	10,000	10,000	10,000	10,000	10,000
New Wells (Saugus Formation)	0	0	0	10,000	10,000	10,000
Recycled Water - CLWA (6)	0	0	1,600	6,300	11,000	15,700
Recycled Water - Newhall Ranch	0	0	1,500	2,500	3,500	5,400
Total Planned Supplies	**0**	**10,000**	**13,100**	**28,800**	**34,500**	**41,100**
Planned Banking Programs (3)						
Additional Planned Banking	0	0	20,000	20,000	20,000	20,000
Total Planned Banking Programs	**0**	**0**	**20,000**	**20,000**	**20,000**	**20,000**

Notes:

1. *The values shown under "Existing Supplies" and "Planned Supplies" are supplies projected to be available in average/normal years. The values shown under "Existing Banking Programs" are total amounts currently in storage and "Planned Banking Programs" are total amounts projected to be available.*
2. *SWP supplies are calculated by multiplying CLWA's Table A Amount of 95,200 acre-feet by percentages of average deliveries projected to be available, based on Tables 6-12 and 6-13 of DWR's "The State Water Project Delivery Reliability Report 2009." Year 2030 figure is calculated by multiplying by DWR's 2029 percentage of 60%.*
3. *Supplies shown are total amounts that can be withdrawn, and would typically be used only during dry years. Each water bank has annual limitations on withdrawals that are reflected in Tables 4.8-13 and 4.8-14.*
4. *Initial term of the Ventura County entities' flexible storage account is ten years (from 2006 to 2015).*
5. *Supplies shown are the total amount currently in storage, and would typically be used only during dry years. Once the current storage amount is withdrawn, this supply would no longer be available and in any event, is not available after 2013.*
6. *Recycled water supplies based on projections provided in CLWA's 2005 UWMP Chapter 4, Recycled Water.*
7. *CLWA has 64,898 acre-feet of recoverable water as of 12/31/09 in the Rosedale-Rio Bravo Water Banking and Recovery Program.*
8. *Supplies shown are the total amounts currently in storage. As of December 31, 2009, there is 18,828 acre-feet of water stored in the Semitropic Groundwater Storage Bank by The Newhall Land and Farming Company for the Newhall Ranch Specific Plan. The stored water can be extracted from the bank in dry years in amounts up to 4,950 afy. Newhall Ranch is located within the CLWA service area.*

Average/Normal Year. Table 4.8-12, Projected Average/Normal Year Supplies and Demands, summarizes water supplies available to meet demands over the 20-year planning period during an average/normal year. As presented in the table, water supply is broken down into existing and planned water supply sources, including wholesale (imported) water, local supplies, and banking programs. Demands also are reflected on the table with the effects of an estimated 10 percent urban reduction resulting from the implementation of conservation Best Management Practices. Demands do not reflect an additional 10 percent urban per capita reduction by 2020 resulting from the approved California legislation (see discussion of SB 7X7, above). The amount of additional conservation expected in the Santa Clarita Valley as a result of this bill is the subject of study in the 2010 Urban Water Management Plan (2010 UWMP) presently being prepared by CLWA. The 2010 UWMP is expected to be released no later than June 2011.

Single-Dry Year. Table 4.8-13, Projected Single-Dry Year Supplies and Demands, shows the existing and planned water supplies available to meet demands for the CLWA service area over the 20-year planning period, during a single-dry year. The SWP supplies projected to be available in a single-dry year are based on a repeat of the worst-case hydrologic conditions that occurred in California in 1977. Demand during dry years was estimated to increase by 10 percent. **Table 4.8-13** does not reflect a decrease in demand of 20 percent per capita resulting from the passage of SB 7X7, as described above.

Table 4.8-12
Projected Average/Normal Year Supplies and Demands

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Existing Supplies					
Wholesale (Imported)	***69,727***	***69,727***	***69,727***	***69,727***	***69,727***
SWP Table A Supply (1)	57,120	57,120	57,120	57,120	57,120
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land	1,607	1,607	1,607	1,607	1,607
Flexible Storage Account (CLWA) (2)	0	0	0	0	0
Flexible Storage Account (Ventura County) (2)	0	0	0	0	0
Local Supplies					
Groundwater	46,000	46,000	46,000	46,000	46,000
Alluvial Aquifer	35,000	35,000	35,000	35,000	35,000
Saugus Formation	11,000	11,000	11,000	11,000	11,000
Recycled Water	1,700	1,700	1,700	1,700	1,700
Total Existing Supplies	**117,427**	**117,427**	**117,427**	**117,427**	**117,427**
Existing Banking Programs					
Semitropic Water Bank (2)	0	0	0	0	0
Rosedale-Rio Bravo (2)	0	0	0	0	0
Semitropic Water Bank – Newhall Land (2)	0	0	0	0	0
Total Existing Banking Programs	0	0	0	0	0

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Planned Supplies					
Local Supplies					
Groundwater	0	0	0	0	0
Restored wells (Saugus Formation) (2)	0	0	0	0	0
New Wells (Saugus Formation) (2)	0	0	0	0	0
Recycled Water - CLWA (3)	0	1,600	6,300	11,000	15,700
Recycled Water - Newhall Ranch	0	1,500	2,500	3,500	5,400
Total Planned Supplies	**0**	**3,100**	**8,800**	**14,500**	**21,100**
Planned Banking Programs					
Additional Planned Banking (2)	0	0	0	0	0
Total Planned Banking Programs	**0**	**0**	**0**	**0**	**0**
Total Existing and Planned Supplies and Banking	**117,427**	**120,527**	**126,227**	**131,927**	**138,527**
Total Estimated Demand (w/o conservation) (4)	**100,050**	**109,400**	**117,150**	**128,400**	**138,300**
Conservation (5)	(8,600)	(9,700)	(10,700)	(11,900)	(12,900)
Total Adjusted Demand	**91,450**	**99,700**	**106,450**	**116,500**	**125,400**

Notes:

1. SWP supplies are calculated by multiplying CLWA's Table A Amount of 95,200 acre-feet by percentages of average deliveries projected to be available, based on Tables 6-12 and 6-13 of DWR's "The State Water Project Delivery Reliability Report 2009." Year 2030 figure is calculated by multiplying by DWR's 2029 percentage of 60%.

2. Not needed during average/normal years.

3. Recycled water supplies based on projections provided in CLWA's 2005 UWMP Chapter 4, Recycled Water.

4. Demands are for uses within the existing CLWA service area. Demands for any annexations to the CLWA service area are not included.

5. Assumes 10 percent reduction on urban portion of total demand resulting from conservation best management practices, as discussed in CLWA's 2005 UWMP, Chapter 7. Not shown is a 10 percent per capita reduction in urban demand by 2015 and a 20 percent per capita reduction in urban demand by 2020 now mandated by SB 7X7

Table 4.8-13
Projected Single-Dry Year Supplies and Demands

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Existing Supplies					
Wholesale (Imported)	***25,331***	***26,283***	***25,855***	***26,807***	***27,759***
SWP Table A Supply (1)	6,664	7,616	8,568	9,520	10,472
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land	1,607	1,607	1,607	1,607	1,607
Flexible Storage Account (CLWA)	4,680	4,680	4,680	4,680	4,680
Flexible Storage Account (Ventura County)(2)	1,380	1,380	0	0	0
Local Supplies					

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Groundwater	*47,500*	*47,500*	*47,500*	*47,500*	*47,500*
Alluvial Aquifer	32,500	32,500	32,500	32,500	32,500
Saugus Formation	15,000	15,000	15,000	15,000	15,000
Recycled Water	1,700	1,700	1,700	1,700	1,700
Total Existing Supplies	**74,531**	**75,483**	**75,055**	**76,007**	**76,959**
Existing Banking Programs					
Semitropic Water Bank (3)	17,000	0	0	0	0
Rosedale-Rio Bravo (5)	20,000	20,000	20,000	20,000	20,000
Semitropic Water Bank – Newhall Land (10)	4,950	4,950	4,950	4,950	4,950
Total Existing Banking Programs	**41,950**	**24,950**	**24,950**	**24,950**	**24,950**
Planned Supplies					
Local Supplies					
Groundwater	*10,000*	*10,000*	*20,000*	*20,000*	*20,000*
Restored wells (Saugus Formation)	10,000	10,000	10,000	10,000	10,000
New Wells (Saugus Formation)	0	0	10,000	10,000	10,000
Recycled Water - CLWA (4)	0	1,600	6,300	11,000	15,700
Recycled Water - Newhall Ranch	0	1,500	2,500	3,500	5,400
Total Planned Supplies	**10,000**	**13,100**	**28,800**	**34,500**	**41,100**
Planned Banking Programs					
Additional Planned Banking (6)	0	20,000	20,000	20,000	20,000
Total Planned Banking Programs	0	20,000	20,000	20,000	20,000
Total Existing and Planned Supplies and Banking	**126,481**	**133,533**	**148,805**	**155,457**	**163,009**
Total Estimated Demand (w/o conservation) (7) (8)	110,100	120,300	128,900	141,200	152,100
Conservation (9)	(9,500)	(10,700)	(11,700)	(13,100)	(14,200)
Total Adjusted Demand	100,600	109,600	117,200	128,100	137,900

Notes:

1. *SWP supplies are calculated by multiplying CLWA's Table A Amount of 95,200 acre-feet by percentages of single dry year deliveries projected to be available on Tables 6-4 and 6-13 of DWR's "The State Water Project Delivery Reliability Report 2009". Year 2030 figure is calculated by multiplying by DWR's 2029 percentage of 11%.*
2. *Initial term of the Ventura County entities' flexible storage account is ten years (from 2006 to 2015).*
3. *The total amount of water currently in storage is 50,870 acre-feet, available through 2013. Withdrawals of up to this amount are potentially available in a dry year, but given possible competition for withdrawal capacity with other Semitropic banking partners in extremely dry years, it is assumed here that about one third of the total amount stored could be withdrawn.*
4. *Recycled water supplies based on projections provided in CLWA's 2005 UWMP Chapter 4, Recycled Water.*
5. *CLWA has 64,898 acre-feet of recoverable water as of 12/31/09 in the Rosedale-Rio Bravo Water Banking and Recovery Program.*
6. *Assumes additional planned banking supplies available by 2014.*
7. *Assumes increase in total demand of 10 percent during dry years.*
8. *Demands are for uses within the existing CLWA service area. Demands for any annexations to the CLWA service area are not included.*
9. *Assumes 10 percent reduction on urban portion of total normal year demand resulting from conservation best management practices ([urban portion of total normal year demand x 1.10] * 0.10), as discussed in CLWA's 2005 UWMP, Chapter 7.*
10. *Delivery of stored water from the Newhall Land Semitropic Groundwater Bank requires further agreements between CLWA and Newhall Land.*

Multiple-Dry Years. Table 4.8-14, Projected Multiple-Dry Year Supplies and Demands, shows the existing and planned water supplies available to meet demands for the CLWA service area over the 20-year planning period, during multiple-dry years. The multiple-dry year is based on a repeat of the worst-case four-year drought in California from 1931 to 1934. Demand during multiple-dry years was estimated to increase by 10 percent. **Table 4.8-14** does not reflect a decrease in demand of 20 percent resulting from the passage of SB 7X7, as described above.

As shown on each table, SWP supply estimates are based on the data presented in the 2009 DWR Delivery Reliability Report, with SWP water supplies allocated among SWP Contractors in accordance with their water supply contract provisions currently in effect.[39]

Additional Annual Imported Water Supplies. According to CLWA, as shown on **Tables 4.8-11** through **4.8-14**, the following existing additional annual water supplies are available to meet demands when necessary.

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39 The water supply contracts between DWR and the SWP Contractors include provisions regarding how total available SWP water supplies are allocated among SWP Contractors. The allocation provisions currently in effect are as they were amended by the Monterey Amendments. The Monterey Amendments have been in effect for more than ten years, but pursuant to litigation, is undergoing a second environmental review by DWR. In October 2007, DWR released the new Draft EIR analyzing the Monterey Amendments to the SWP contracts, including Kern water bank transfers and associated actions as part of the Monterey Settlement Agreement (SCH No. 2003011118). This Draft EIR, also known as the Monterey Plus Draft EIR, addresses the significant environmental impacts of changes to the SWP operations that are a consequence of the Monterey Amendments and the Monterey Settlement Agreement. It also discusses the project alternatives, growth inducement, water supply reliability, as well as potential areas of controversy and concern. The Draft and Final EIRs are available for public inspection and review by contacting DWR in Sacramento or from DWR's Web site, http://www.des.water.ca.gov/mitigation_restoration_branch/rpmi_section/projects/EIR_index.cfm. The Monterey Plus Draft and Final EIRs are incorporated by reference in this EIR.

Table 4.8-14
Projected Multiple-Dry Year Supplies and Demands [1]

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Existing Supplies					
Wholesale (Imported)	***46,485***	***46,485***	***47,097***	***47,097***	***47,097***
SWP Table A Supply (2)	32,368	32,368	33,320	33,320	33,320
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land	1,607	1,607	1,607	1,607	1,607
Flexible Storage Account (CLWA) (3)	1,170	1,170	1,170	1,170	1,170
Flexible Storage Account (Ventura County) (3)	340	340	0	0	0
Local Supplies					
Groundwater	*47,500*	*47,500*	*47,500*	*47,500*	*47,500*
Alluvial Aquifer	32,500	32,500	32,500	32,500	32,500
Saugus Formation (4)	15,000	15,000	15,000	15,000	15,000
Recycled Water	1,700	1,700	1,700	1,700	1,700
Total Existing Supplies	**95,685**	**95,685**	**96,297**	**96,297**	**96,297**
Existing Banking Programs					
Semitropic Water Bank (3)	12,700	0	0	0	0
Rosedale-Rio Bravo (6) (7)	5,000	15,000	15,000	15,000	15,000
Semitropic Water Bank – Newhall Land (12)	4,950	4,950	4,950	4,950	4,950
Total Existing Banking Programs	**22,650**	**19,950**	**19,950**	**19,950**	**19,950**
Planned Supplies					
Local Supplies					
Groundwater	*6,500*	*6,500*	*6,500*	*6,500*	*6,500*
Restored wells (Saugus Formation) (4)	6,500	6,500	5,000	5,000	5,000
New Wells (Saugus Formation) (4)	0	0	1,500	1,500	1,500
Recycled Water (5)	0	1,600	6,300	11,000	15,700
Recycled Water - Newhall Ranch	0	1,500	2,500	3,500	5,400
Total Planned Supplies	**6,500**	**9,600**	**15,300**	**21,000**	**27,600**

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Planned Banking Programs					
Additional Planned Banking (7) (8)	0	5,000	15,000	15,000	15,000
Total Planned Banking Programs	**0**	**5,000**	**15,000**	**15,000**	**15,000**
Total Existing and Planned Supplies and Banking (13)	**124,835**	**130,235**	**146,547**	**152,247**	**158,847**
Total Estimated Demand (w/o conservation) (9) (10)	**110,100**	**120,300**	**128,900**	**141,200**	**152,100**
Conservation (11)	(9,500)	(10,700)	(11,700)	(13,100)	(14,200)
Total Adjusted Demand	**100,600**	**109,600**	**117,200**	**128,100**	**137,900**

Notes:

1. Supplies shown are annual averages over four consecutive dry years (unless otherwise noted.

2. SWP supplies are calculated by multiplying CLWA's Table A Amount of 95,200 acre-feet by percentages of average deliveries projected to be available during the worst case four-year drought of 1931-1934 as provided in Tables 6-4 and 6-13 of DWR's "The State Water Project Delivery Reliability Report 2009." Year 2030 figure is calculated by multiplying by DWR's 2029 percentage of 35%.

3. Based on total amount of storage available divided by 4 (4-year dry period). Initial term of the Ventura County entities' flexible storage account is ten years (from 2006 to 2015).

4. Total Saugus pumping is the average annual amount that would be pumped under the groundwater operating plan, as summarized in Table 3-6 of the 2005 UWMP ([11,000+15,000+25,000+35,000]/4).

5. Recycled water supplies based on projections provided in CLWA's 2005 UWMP Chapter 4, Recycled Water.

6. CLWA has 64,898 acre-feet of recoverable water as of 12/31/09 in the Rosedale-Rio Bravo Water Banking and Recovery Program.

7. Average dry year period supplies could be up to 20,000 acre-feet for each program depending on storage amounts at the beginning of the dry period.

8. Assumes additional planned banking supplies available by 2014.

9. Assumes increase in total demand of 10 percent during dry years.

10. Demands are for uses within the existing CLWA service area. Demands for any annexations to the CLWA service area are not included.

*11. Assumes 10 percent reduction on urban portion of total normal year demand resulting from conservation best management practices ([urban portion of total normal year demand x 1.10] * 0.10), as discussed in CLWA's 2005 UWMP, Chapter 7. Not shown is a 10 percent per capita reduction in urban demand by 2015 and a 20 percent per capita reduction in urban demand by 2020 now mandated by SB 7X7*

12. Delivery of stored water from the Newhall Land Semitropic Groundwater Bank requires further agreements between CLWA and Newhall Land.

[13] In 2008, CLWA also acquired approximately 850 af of non-SWP imported water supply by entering into a water transfer agreement with Yuba County Water Agency (YCWA); however, CLWA has not yet updated its water supplies/demand tables to reflect this additional non-SWP imported supply.

Buena Vista/Rosedale-Rio Bravo Water Acquisition Project. CLWA has finalized a Water Acquisition Agreement with the Buena Vista and the Rosedale-Rio Bravo districts in Kern County. Under this program, Buena Vista's high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within Rosedale-Rio Bravo's service area on an ongoing basis. CLWA will receive 11,000 acre-feet per year of these supplies annually either through direct delivery of

water to the California Aqueduct via the Cross Valley Canal or by exchange of Buena Vista's and Rosedale-Rio Bravo's SWP supplies.[40]

Nickel Water. The Newhall Ranch Revised Additional Analysis (Volume VIII, May 2003) provides that the Newhall Ranch Specific Plan applicant has secured 1,607 acre-feet of water under contract with Nickel Family LLC in Kern County. This water is 100 percent reliable on a year-to-year basis and not subject to the annual fluctuations that can occur to the SWP in dry-year conditions. The Nickel water is part of a 10,000 acre-foot quantity of annual water supply that Nickel obtained from Kern County Water Agency (KCWA) in 2001 pursuant to an agreement between Nickel, KCWA, and Olcese Water District (Olcese). Under that agreement, Nickel has the right to sell the 10,000 afy to third parties both within or outside Kern County. This additional supply was added by CLWA to the updated water supply/demand tables to reflect current information (see **Tables 4.8-11** through **4.8-14**).

Additional Imported Water Supplies from Banking Programs. According to CLWA, as shown on **Tables 4.8-11**, **4.8-13**, and **4.8-14**, the following existing additional water supplies are available from banking programs to meet demands when necessary.

Flexible Storage Accounts. One of CLWA's Flexible Storage Accounts described in its 2005 UWMP permits it to store up to 4,684 acre-feet in Castaic Lake. Any of this amount that CLWA withdraws must be replaced by CLWA within five years of its withdrawal. CLWA manages this storage by keeping the account full in normal and wet years and then delivering that stored amount (or portions of it) during dry periods. The account is refilled during the next year that adequate SWP supplies are available to CLWA to do so. CLWA also has recently negotiated with Ventura County water agencies to obtain the use of its Flexible Storage Account. This will allow CLWA access to another 1,376 acre-feet of storage in Castaic Lake. CLWA's access to this additional storage is available on a year-to-year basis for 10 years, beginning in 2006.

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40 In November 2006, a petition for writ of mandate was filed by California Water Impact Network, seeking to set aside CLWA's certification of the EIR for the Water Acquisition Agreement Project with Buena Vista and Rosedale-Rio Bravo. (*California Water Impact Network, et al. v. Castaic Lake Water Agency, et al.*, Los Angeles County Superior Court No. BS106546.) The petition was later amended to add Friends of the Santa Clara River (Friends) as a petitioner. In November 2007, the trial court filed its Statement of Decision finding that in certifying the EIR and approving the project, CLWA proceeded in a manner required by law, and that its actions were supported by substantial evidence. Judgment was entered in favor of CLWA in December 2007. Petitioners filed a notice of appeal on January 31, 2008.

On April 20, 2009, the appellate court ruled in CLWA's favor and this water purchase is now considered final and it remains appropriate to list the 11,000 afy as one of CLWA's permanent water supply sources. (Please refer to this EIR, **Appendix 4.8**, for the recent appellate court decision in *California Water Impact Network, Inc. v. Castaic Lake Water Agency*, Second Appellate District, Division Five, Appellate Case No. B205622.)

Yuba County Water Agency Transfer Agreement. One of CLWA's Flexible Storage Accounts described in its 2005 UWMP permits it to store up to 4,684 af in Castaic Lake. Any of this amount that CLWA withdraws must be replaced by CLWA within five years of its withdrawal. CLWA manages this storage by keeping the account full in normal and wet years and then delivering that stored amount (or portions of it) during dry periods. The account is refilled during the next year that adequate SWP supplies are available to CLWA to do so. CLWA also has recently negotiated with Ventura County water agencies to obtain the use of its Flexible Storage Account. This will allow CLWA access to another 1,376 af of storage in Castaic Lake. CLWA's access to this additional storage is available on a year-to-year basis for 10 years, beginning in 2006.

Semitropic Water Storage District Banking. The 2005 UWMP identifies two existing contracts with the Semitropic Water Storage District under which CLWA has stored 59,000 acre-feet of water. (2005 UWMP, p. 3-22.) In accordance with the terms of CLWA's storage agreements with Semitropic, 90 percent of the banked amount, or a total of 50,870 acre-feet, is recoverable through 2012-2013 to meet CLWA water demands when needed. CLWA's approval of one of the contracts (for the 2002 banking program) was challenged in California Water Network v. Castaic Lake Water Agency, Ventura Superior Court Case No. CIV 215327. The trial court entered judgment in favor of CLWA. This ruling was appealed. All issues regarding the 2002 banking program with Semitropic were conclusively resolved in favor of CLWA in June 2006. In 2009 and 2010, CLWA withdrew a total of 4,950 af from its Semitropic programs.

Rosedale-Rio Bravo Water Banking. The 2005 UWMP identifies one existing contract with the Rosedale-Rio Bravo Water Storage District under which CLWA has 64,898 acre-feet of recoverable water as of December 31, 2007. (2005 UWMP, p. 3-23.) This banking program currently offers storage and pump-back capacity of 20,000 afy, with up to 100,000 acre-feet of storage capacity. This stored water will be called upon to meet demands when required and is recoverable through 2035.

Newhall Land – Semitropic Water Storage District Banking. The Newhall Land and Farming Company has entered into an agreement to reserve and purchase water storage capacity of up to 55,000 acre-feet in the Semitropic Water Storage District Groundwater Banking Project (Newhall Ranch Revised Additional Analysis [Volume VIII, May 2003]). Sources of water that could be stored include, but are not limited to, the Nickel Water. The stored water could be extracted in dry years in amounts up to 4,950 afy. There is 18,828 acre-feet of water presently stored in the Semitropic Groundwater Storage Bank by Newhall Land. Newhall Ranch is located within the CLWA service area. Delivery of stored water from the Newhall Semitropic Groundwater Bank requires further agreements between CLWA and Newhall Land. The 2005 UWMP also discusses water banking storage and pumpback capacity both north and south of CLWA's service area, the latter of which would provide an emergency supply in case of catastrophic outage along the California Aqueduct. With short-term storage now in place in the Semitropic banking program and

long-term storage now existing with Rosedale-Rio Bravo, CLWA is assessing southern water banking opportunities. Such banking programs enhance the reliability of both existing and planned future water supplies in the Santa Clarita Valley. As shown on **Tables 4.8-13** and **4.8-14**, CLWA's additional planned banking supplies are anticipated to be 20,000 acre-feet by 2014.

CLWA Recycled Water. As shown on **Tables 4.8-11** through **4.8-14**, above, since 2003, existing local supplies have been augmented by the initiation of recycled water deliveries from CLWA's recycled water program. CLWA currently has a contract with the Los Angeles County Sanitation District for 1,700 afy of recycled water. This supply is available in an average/normal year, a single-dry year, and in each year of a multiple-dry year period. In 2009, recycled water deliveries were 328 acre-feet, generally consistent with recycled water deliveries that have ranged between 311 and 470 afy over the past six years. In addition, in the 2005 UWMP, CLWA projects an increase of 15,700 afy in recycled water by 2030. Similar to the existing recycle water supply, the 15,700 afy of planned recycled water supply is to be available in an average/normal year, a single-dry year, and in each year of a multiple-dry year period. There is also a new phase of the of the recycled water system in design that would extend the existing system southward from the intersection of Magic Mountain Parkway and the Old Road to the intersection of Orchard Village Road and Lyons Avenue, serving large irrigation customers along its proposed alignment. Collectively, these phases will have design capacity to increase recycled water deliveries by about 1,500 afy.

Project Recycled Water. Recycled water would be utilized for the project in three ways. The first is for irrigation of landscaped areas, where the majority of the project would be landscaped with low water use plants. The second use of recycled water is for public restroom facilities in the retail, office, and commercial uses. The third use will be in revegetated areas above the soil cement bank protection along the Santa Clara River. The proposed project's water factory, which would be owned and operated by the City of Santa Clarita, would recycle up to 395,411 gpd of wastewater. There is anticipated to be an average recycled water excess of approximately 277,489 gpd from the water factory. As described in greater detail below, three options have been identified to address this excess recycled water. These include (1) selling recycled water to CLWA as a supply to its recycled water system to offset existing potable water demands; (2) discharging recycled water to percolation ponds to recharge groundwater; and (3) diverting off-site wastewater flow to the water factory from the sewer mainline adjacent to the project. The off-site wastewater flow diverted to the water factory could be reduced to eliminate the excess recycled water that is generated. A combination of option 1 and 2 above is the most likely scenario.

CLWA Service Area Water Demand. Table 4.8-15 shows CLWA's 2005 and projected water demands based on the 2005 UWMP. CLWA's demands vary from year to year depending on local hydrologic and meteorologic conditions, with demands generally increasing in years of below average local precipitation

and decreasing in years of above average local precipitation. Given that the project would be consistent with the City of Santa Clarita General Plan and the draft General Plan Update, its demand is included in the future water demands projected by CLWA.

Table 4.8-15
CLWA's Projected Water Demands

	Demand (af)				
	2010	**2015**	**2020**	**2025**	**2030**
All Purveyors[1]	86,100	97,100	106,500	119,400	129,300
Agricultural/Private Uses	13,950	12,300	10,650	9,000	9,000
Demand w/o Conservation	100,050	109,400	117,150	128,400	138,300
Conservation at 10% [2]	-8,610	-9,710	-10,650	-11,940	-12,930
Total Demand (w/10% conservation)	91,440	99,690	106,500	116,460	125,370

Notes:
[1] *Purveyors refer to CLWA SCWD, NCWD, VWC, and Los Angeles County Waterworks District No. 36.*
[2] *A 10 percent reduction on the urban portion of the normal year demand is estimated to result from conservation BMPs. Not shown is a 10 percent per capita reduction in urban demand by 2015 and a 20 percent per capita reduction now mandated by SB 7X7.*
Source: CLWA (October 2008)

In 2001, CLWA signed the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) on behalf of the CLWA service area. By signing the MOU, CLWA became a member of the California Urban Water Conservation Council (CUWCC) and pledged to implement all cost-effective Best Management Practices (BMPs) for water conservation. CLWA has estimated that conservation measures within the service area can reduce the urban demand water demand by 10 percent. The BMPs include:

- System Water Audits, Leak Detection and Repair; Public Information Programs; School Education Programs;
- Wholesale Agency Programs;
- Conservation Pricing;
- Water Conservation Coordinator;
- Water survey programs for single-family residential and multi-family residential customers;
- System water audits, leak detection and repair;

- Metering with commodity rates for all new connections and retrofit of existing connections;
- Large landscape conservation programs and incentives;
- High-efficiency clothes washing machine financial incentive programs;
- Conservation programs for commercial, industrial, and institutional (CII) accounts; and
- Water waste prohibition.

An additional 10 percent urban demand reduction would result from the recently approved SB 7X7, which requires a 20 percent reduction in per capita urban demand by 2020.

(2) Litigation Effects on Availability of Imported Water

For the past few years, there have been a series of litigation challenges concerning imported water supplies in the Santa Clarita Valley. The litigation challenges have given rise to claims that there is uncertainty regarding the availability and reliability of imported SWP water supplies in the Santa Clarita Valley.

The purpose of this section is to disclose these litigation challenges and their effects on the availability and reliability of imported water supplies in the Santa Clarita Valley. In summary, as discussed below, it has been determined, based on substantial evidence in the record, that the litigation challenges are not likely to affect the short-term or long-term availability or reliability of imported water supplies as projected in the *2005 UWMP*, the Vista Canyon WSA (2010), and other reports, studies, and documents cited in this EIR.

(a) Litigation Concerning CEQA Review of the Monterey Agreement

In *Planning and Conservation League v. Department of Water Resources* (2003) 83 Cal.App.4th 892, the Court of Appeal, Third Appellate District, decertified an EIR prepared by the Central Coast Water Agency (CCWA) to address the "Monterey Agreement." The Monterey Agreement was a statement of principles to be incorporated into an omnibus amendment of the long-term contracts between the DWR and water contractors governing the supply of water under the SWP. The Monterey Agreement was the culmination of negotiations between DWR and most of the 29 SWP Contractors to settle disputes arising out of the allocation of water during times of shortage. Of the 29 SWP Contractors, 27 executed the Monterey Amendments to their water supply contracts in 1996. The Monterey Agreement contemplated revisions in the methodology of allocating water among contractors and provided a mechanism for the permanent transfer of Table A water amounts from one contractor to another. The Monterey Agreement was implemented by the execution of legally binding contracts with DWR (Monterey Amendments).

As stated above, although the court set aside the Monterey EIR prepared by CCWA, it did not set aside, invalidate, or otherwise vacate the Monterey Agreement or the Monterey Amendments. No court has ordered any stay or suspension of the Monterey Agreement pending certification of a new EIR. DWR and the SWP Contractors continue to abide by the Monterey Agreements, as implemented by the Amendments, as the operating framework for the SWP, while the new EIR is undertaken.

Following decertification of the original Monterey EIR, the PCL litigants entered into the Monterey Settlement Agreement in 2003, designating DWR as the lead agency for preparation of the new EIR to address the Monterey Agreement (entitled the "Monterey Plus EIR"). In October 2007, DWR completed the Draft EIR analyzing the Monterey Amendments to the SWP contracts, including Kern water bank transfers and associated actions as part of the Monterey Settlement Agreement (Monterey Plus Draft EIR; SCH No. 2003011118). The Draft EIR addresses the significant environmental impacts of changes to the SWP operations that are a consequence of the Monterey Amendments and the Monterey Settlement Agreement. It also discusses the project alternatives, growth inducement, water supply reliability, as well as potential areas of controversy and concern. DWR certified the Monterey Plus Final EIR on February 1, 2010.

The Monterey Settlement Agreement also facilitated certain water transfers between contracting agencies, including CLWA's 41,000 acre-foot water transfer agreement (discussed further below). The 41,000 acre-foot transfer has been recognized as a permanent transfer by DWR, but it was subject to then pending litigation in Los Angeles Superior Court challenging the EIR prepared for that transfer. (*Friends of the Santa Clarita River v. Castaic Lake Water Agency*, see discussion below.) DWR's new Draft EIR analyzed the potential environmental effects relating to the Monterey transfers, including a focused analysis of the 41,000 acre-foot transfer, which is provided as part of a broader analysis of permanent transfers of Table A Amounts.

(b) Litigation Concerning CEQA Review of the 41,000 acre-foot Transfer

Over the past several years, opposition groups have claimed that a part of CLWA's SWP supplies, specifically, a 41,000 acre-foot transfer, should not be included or relied upon because it is not final and is the subject of litigation. It was asserted that litigation challenges to the 41,000 acre-foot transfer create uncertainty regarding the availability and reliability of such water for the Santa Clarita Valley. Other comments have claimed that DWR's preparation of a new Monterey Agreement EIR also introduced an element of potential uncertainty regarding the availability and reliability of the 41,000 acre-foot transfer. These comments have included claims that the subsequent Monterey Settlement Agreement precluded CLWA from using or relying upon the 41,000 acre-foot transfer until DWR has completed and certified

the new Monterey Agreement EIR. As explained below, a recent published appellate court decision has resolved these claims in favor of the availability, reliability, and use of CLWA's 41,000 acre-foot transfer.

In *Santa Clarita Organization for Planning the Environment v. County of Los Angeles* (2007) 157 Cal.App.4th 149 (*SCOPE II*), the Second District Court of Appeal, Division Six, affirmed the trial court's decision upholding the validity of the EIR's water supply analysis for the West Creek development project in the Santa Clarita Valley, including the EIR's assessment and reliance upon the permanent and final 41,000 acre-foot water transfer. In applying the four principles for a California Environmental Quality Act (CEQA) analysis of future water supplies articulated by the California Supreme Court in *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412 to the 41,000 acre-foot transfer, the Court of Appeal concluded that the transfer is permanent and final, and that with or without the Monterey Agreement and Monterey Amendments, the transfer is valid, permanent, and final, and could be relied upon in the project EIR as part of the water supplies in the Santa Clarita Valley.

In addition, to the *SCOPE II* litigation referenced above, the litigation dispute over the adequacy of CLWA's EIR with respect to the 41,000 afy water transfer has been fully resolved in favor of CLWA. (*Planning and Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210, rehearing denied on January 14, 2010; "*PCL v. CLWA* litigation"). The discussion presented below summarizes the *PCL v. CLWA* litigation.

***PCL v. CLWA* Litigation.** As stated above, on December 17, 2009, the Court of Appeal, Second District, issued its opinion in this litigation. This new published appellate decision upheld CLWA's EIR for the 41,000-afy water transfer. A summary of the new decision is provided below.

In 2004, CLWA certified the 2004 EIR at issue on appeal in the new decision. The 2004 EIR analyzed the significant environmental impacts of the 41,000-afy water transfer. The 2004 EIR acknowledged that the 41,000-afy water transfer was "contractually completed in 1999" and that "[n]o permits and other approvals would be required other than the certification of this EIR." The 2004 EIR also described the underlying history, including the Monterey Agreement and Amendments, the decertification of Central Coast's Monterey Agreement EIR, CLWA's earlier EIR on the 41,000-afy water transfer, and the Monterey Settlement Agreement. As to the 41,000-afy water transfer, the 2004 EIR disclosed that it did not tier from any other EIR and that it examined the environmental impacts that would occur with or without the change in water allocation criteria implemented as part of the Monterey Amendments. In addition, the 2004 EIR examined three potential water delivery scenarios for the 41,000 afy water transfer: (a) SWP allocation with the Monterey Amendments; (b) SWP allocation without the Monterey Amendments, and with the "agriculture first" reduction provision of article 18(a) in place; and (c) SWP allocation without

the Monterey Amendments, but with permanent cutbacks under article 18(b). The 2004 EIR examined the environmental effects of the transfer under all three scenarios.

As to the CLWA service area, the 2004 EIR concluded that the 41,000 afy water transfer will have some significant direct impacts (largely associated with new population growth), and proposed mitigation measures to address these impacts. The 2004 EIR also examined five alternatives to the transfer, including a "no project" alternative, under which CLWA would obtain neither the 41,000 acre-feet of water nor the contractual rights to it. The remaining alternatives addressed the impact of relying on groundwater or desalinated seawater, and of receiving less or more than 41,000 acre-feet of SWP water.

In early 2005, two petitioner groups (Planning and Conservation League and California Water Impact Network) initiated litigation under CEQA, challenging the validity of CLWA's 2004 EIR. In the litigation, petitioners claimed primarily that: (1) DWR was the proper lead agency for the 2004 EIR, and not CLWA; (2) the 2004 EIR constituted improper "piecemeal" review and should have been addressed in DWR's Monterey Plus EIR; (3) the 2004 EIR failed to acknowledge the legal uncertainty surrounding the 41,000 afy water transfer and improperly treated the transfer as a *fait accompli*; (4) the 2004 EIR failed to disclose the potential for DWR's future Monterey Plus EIR to reach different water supply/demand conclusions; and (5) the 2004 failed to analyze the correct "no project" alternative.

After a 2007 writ hearing, the Los Angeles County Superior Court (Judge Chalfant, presiding) generally held in favor of CLWA, rejecting each of the petitioners' claims. However, the trial court found an "analytical hole" in CLWA's 2004 EIR. The trial court reasoned that the EIR failed to explain the relevance of the three potential water delivery scenarios analyzed in the EIR, leaving the public unable to meaningfully assess the EIR's analysis of the 41,000-afy water transfer. Petitioners appealed the trial court's decision. CLWA and others also filed cross-appeals.

The Court of Appeal reviewed the trial court decision anew, and reversed the trial court decision. In doing so, the Court of Appeal determined that CLWA's 2004 EIR adequately analyzed all of the 41,000 afy water transfer's potential significant environmental effects and that the document fully complied with CEQA. The Court of Appeal also remanded the case back to the trial court with directions to vacate the trial court's decision and issue a new judgment denying the petitioners' suits in their entirety.

On appeal, Petitioners first argued that CLWA, in preparing the 2004 EIR, had usurped DWR's duties as the lead agency conducting the environmental review of the Monterey Agreement/Amendments. They contended that DWR must examine the transfer because it is part of the project under review by DWR, namely, the Monterey Agreement and the contractual regime implemented under it. The Court of Appeal rejected these contentions. In doing so, the Court found that "nothing before us suggests that the

Monterey Agreement, viewed as a CEQA project, included the Kern-Castaic transfer when the original Monterey Agreement EIR was prepared and certified in 1995." The appellate court acknowledge that the Monterey Agreement, as executed in December 1994, "laid the foundation for a new contractual regime between DWR and its contractors," and "freed water provided to agricultural providers for transfer to urban suppliers;" however, the court noted that the specific contractual developments for the 41,000 afy water transfer culminated in March 1999, shortly before certification of CLWA's 1999 EIR. As a result, the appellate court concluded that the 41,000 afy water transfer "was no more than 'a gleam in a planner's eye' at the time of the Monterey Agreement," therefore, the transfer "fell outside the original Monterey Agreement EIR, and was properly considered in a separate EIR" by CLWA.

Further, the Court of Appeal found that neither decertification of the 1995 Monterey Agreement EIR, nor implementation of the transfer prior to DWR's new Monterey Plus EIR, brought the transfer within DWR's Monterey Plus EIR or required DWR to be the lead agency. Therefore, relying on *Del Mar Terrace Conservancy, Inc. v. City Council* (1992) 10 Cal.App.4th 712, the Court of Appeal concluded that:

> *Here, as in Del Mar Terrace, the Kern-Castaic transfer has significant independent or local utility, in view of its benefits to Castaic's service area and relative autonomy from the Monterey Agreement.... [A]lthough the Monterey Agreement, in fact, facilitated the transfer, there is substantial evidence (1) that the transfer could have been implemented under the pre-Monterey Agreement contractual regime, and (2) that the parties intend to continue the transfer, regardless of the outcome of DWR's environmental review of the Monterey Agreement. Moreover, as explained below, Castaic's 2004 EIR adequately reflects the potential environmental effects of the Monterey Agreement, the approval of which is 'outside [Castaic's] powers'..., as well as the controversy attached to the transfer arising from DWR's review.*

The Court of Appeal also concluded that the 2004 EIR did not constitute improper piecemealing under CEQA, because "Castaic could properly certify the 2004 EIR prior to the new Monterey Agreement EIR, provided that the 2004 EIR adequately assesses the environmental impact of the Monterey Agreement, to the extent necessary for a fully informed decision regarding the Kern-Castaic transfer." Additionally, the Court of Appeal rejected the contention that Castaic did not have sufficient expertise to prepare the 2004 EIR, determining that Castaic had the primary responsibility for "carrying out" the transfer; and, therefore, was the proper lead agency.

Further, the Court of Appeal rejected the claim that the 2004 EIR "improperly describes the transfer as final," making the project a *fait accompli*. The Court of Appeal cited *Santa Clarita Organization for Planning the Environment v. County of Los Angeles* (2007) 157 Cal.App.4th 149, 152 to support its holding that CLWA's 2004 EIR discussed the contractual basis for the transfer and properly evaluated the legal uncertainty of the Monterey Amendments. Although the 2004 EIR did not "expressly state that the outcome of DWR's review is 'unlikely to unwind' the transfer, its discussion unmistakably conveys this conclusion, as it

characterizes implementation of the transfer without the Monterey Amendments as the 'worst-case scenario' for the transfer." The Court of Appeal also rejected the contention that the 2004 EIR "concealed" the need for DWR's approval of the Monterey Agreement under CEQA, finding that "the transfer is a separate project from the Monterey Agreement."

Similarly, the Court of Appeal rejected the claim that the 2004 EIR failed to disclose the potential for DWR's future Monterey Plus EIR to change the transfer's underlying assumptions, including the potential impact of implementing the transfer under the pre-Monterey Agreement contractual regime. The appellate court found that the 2004 EIR properly analyzed "the three scenarios relevant to the transfer, and evaluate[d] the actual water supplies available under the scenarios." The Court of Appeal also disagreed with the claim that the 2004 EIR was required to assess the possibility that CLWA would not acquire the rights to the 41,000 acre-feet of water under the pre-Monterey Agreement contractual regime as a "No Project" alternative. It found that the EIR's "no project" alternative assuming the absence of the transfer was sufficient because the Monterey Amendment is a separate project.

Finally, on the cross-appeal, the Court of Appeal reversed the trial court's finding that the 2004 EIR contained an "analytical hole." The Court of Appeal concluded that the 2004 EIR is not subject to the challenge on the grounds found by the trial court because the petitioners failed to assert the issue prior to the trial court's ruling. The Court of Appeal also held that the petitioners failed to exhaust their administrative remedies by not raising the issue at the trial court level. In addition, the appellate court upheld the 2004 EIR on the merits, finding the 2004 EIR adequately explained that the delivery scenarios were related to the possible outcomes of DWR's pending Monterey Plus EIR, relying on the established CEQA doctrine that absolute perfection is not required in an EIR.

On January 26, 2010, PCL and CWIN filed a petition for review with the California Supreme Court in the *PCL v. CLWA* litigation. On March 10, 2010, the California Supreme Court (En Banc) denied the petitioners' petition for review and their request to depublish the Court of Appeal decision. Litigation on the transfer to CLWA has now been fully and finally resolved in favor of CLWA.

(3) Summary of the City's Conclusions About Effect of Litigation on Sufficiency of Water Supplies

Based on the above analysis, this EIR acknowledges that multiple court challenges have been filed in the past challenging the sufficiency of water supplies. Based on the status of these challenges, and the fact that no court has yet set aside any of the water transfers or other physical activities approved under any of the challenged documents, substantial evidence exists in this EIR and record to support the conclusions in the *2005 UWMP*, the 2009 Water Report, and the Vista Canyon WSA that there is sufficient water to

serve the proposed Vista Canyon project. As a result, the Vista Canyon project will not contribute to any significant cumulative impacts on Santa Clarita Valley's water supplies.

(4) Summary of Past and Current Drought Conditions

In February 2008, Governor Arnold Schwarzenegger asked the Legislature for a plan to achieve a 20 percent reduction in per capita water use statewide by 2020, explaining that conservation is one of the key ways to provide water for Californians and to protect and improve the Delta ecosystem. In June 2008, after two consecutive years of below-average rainfall, low snowmelt runoff, and court-ordered water transfer restrictions, Governor Schwarzenegger announced a statewide drought and issued an Executive Order (S-06-08), which takes immediate action to address current drought conditions. The Executive Order directed DWR to, among other things: (1) facilitate water transfers to respond to shortages across the state due to drought conditions; (2) work with local water districts and agencies to improve local coordination; and (3) expedite existing grant programs to assist local water districts and agencies. The Executive Order also encourages local water districts and agencies to promote water conservation. Specifically, they were encouraged to work cooperatively on the regional and state level to take immediate action to reduce water consumption locally and regionally for the remainder of 2008 and prepare for potential worsening drought conditions in 2009 (While DWR has indicated that drought conditions have not ended, the 2009/2010 water year had a higher than normal amount of precipitation and snowfall across the state). In response to the Governor's Executive Order, DWR implemented a number of actions to address the 2008-2009 drought conditions. For example, to help facilitate the exchange of water throughout the state, DWR established a 2009 Drought Water Bank. To implement the 2009 Drought Water Bank, DWR purchased water from willing sellers, primarily from water suppliers, upstream of the Sacramento-San Joaquin Delta. This water was transferred using SWP or CVP facilities to water suppliers that are at risk of experiencing water shortages in 2009 due to drought conditions and that require supplemental water supplies to meet anticipated demands. Please refer to DWR's Web site, http://www.water.ca.gov/drought/docs/2009drought_actions.pdf (accessed December 8, 2008) for further information about the drought conditions and DWR's response to those conditions.

Also in response to the Governor's Executive Order, in June 2008, the Metropolitan Water District of Southern California (MWD) issued a “Water Supply Alert” in Southern California urging local agencies to aggressively pursue conservation measures. On August 5, 2008, the County Board of Supervisors approved a resolution declaring a Countywide “water supply and conservation alert.” The Board's resolution, among other things, urged intensification of water conservation efforts to achieve a 15 to 20 percent reduction in overall demand; requested local water purveyors and cities to accelerate and intensify public outreach campaigns to communicate the need for water conservation to the general public; and urged cities to update and adopt water wasting ordinances and prepare for enforcement of

the ordinances, if necessary. The actions at the state, regional, and local level are likely to result in future regulatory action to strengthen the existing framework for water conservation.

Beginning with the first Strategic Growth Plan in 2006, the Governor called for a comprehensive plan to address California's water needs. The Governor renewed that call in his 2008-09 budget by proposing an $11.9 billion water bond for water management investments that will address population growth, climate change, water supply reliability, and environmental needs. Specifically, the bond includes:

- **Water Storage:** $3.5 billion dedicated to the development of additional storage.
- **Delta Sustainability:** $2.4 billion to help implement a sustainable resource management plan for the Delta.
- **Water Resources Stewardship:** $1.1 billion to implement river restoration projects.
- **Water Conservation:** $3.1 billion to increase water use efficiency.
- **Water Quality Improvement:** $1.1 billion for efforts to reduce the contamination of groundwater.
- **Other Critical Water Projects:** $700 million for water recycling, hillside restoration for areas devastated by fire and removal of fish barriers on key rivers and streams.

To address California's third consecutive drought year, on February 27, 2009, Governor Schwarzenegger also proclaimed a state of emergency[41] and ordered immediate action to manage California's water supplies. In the proclamation, the Governor used his authority to direct all state government agencies to utilize their resources, implement a state emergency plan, and provide assistance for people, communities, and businesses impacted by the drought. The proclamation:

- requests that all urban water users immediately increase their water conservation activities in an effort to reduce their individual water use by 20 percent;
- directs DWR to expedite water transfers and related efforts by water users and suppliers;
- directs DWR to offer technical assistance to agricultural water suppliers and agricultural water users, including information on managing water supplies to minimize economic impacts and implementing efficient water management practices;
- directs DWR to implement short-term efforts to protect water quality or water supply, such as the installation of temporary barriers in the Delta or temporary water supply connections;
- directs the Labor and Workforce Development Agency to assist the labor market, including job training and financial assistance;

41 State of Emergency – Water Shortage, Proclamation by the Governor or the State of California, February 27, 2009. This can be found on the Governor's website at http://gov.ca.gov/proclamation/11557/.

- directs DWR to join with other appropriate agencies to launch a statewide water conservation campaign calling for all Californians to immediately decrease their water use; and

- directs state agencies to immediately implement a water use reduction plan and take immediate water conservation actions and requests that federal and local agencies also implement water use reduction plans for facilities within their control.

In accordance with the proclamation, DWR provided an updated report on the state's drought conditions and water availability. Also, according to the proclamation, if the emergency conditions have not been sufficiently mitigated, the Governor will consider additional steps. These could include the institute of mandatory water rationing and mandatory reductions in water use; reoperation of major reservoirs in the state to minimize impacts of the drought; additional regulatory relief or permit streamlining as allowed under the Emergency Services Act; and other actions necessary to prevent, remedy, or mitigate the effects of the extreme drought conditions.

DWR and California's Department of Food and Agriculture also recommended measures to reduce the economic impacts of the drought, including but not limited to water transfers, through-Delta emergency transfers, water conservation measures, efficient irrigation practices, and improvements to the California Irrigation Management Information System.

Drought conditions present significant short-term challenges to the provision of water supplies locally and statewide. Nonetheless, the current drought conditions are part of the historic and ongoing hydrologic cycle that occurs in California and CLWA and local retail purveyors have developed various contingencies in order to minimize short-term impacts on water supplies due to drought conditions. Such actions include voluntary/mandatory conservation measures, public outreach programs promoting efficient water use and conservation, water transfers, and use of "banked" water supplies, if necessary to meet demands in drought conditions.

However, the Vista Canyon WSA (2010) and this water analysis assess overall water supply availability and reliability over the long-term (i.e., the 20-year horizon called for by the Urban Water Management Planning Act), and include the effect of normal/average, dry, and multi-dry weather years from the historic record as modified for potential climate change impacts in reliance on DWR modeling estimates. (See 2009 DWR Delivery Reliability Report) Based on that information, the Vista Canyon WSA, 2009 Water Report, and this analysis conclude that there is adequate water supplies for the proposed project, in addition to the existing and planned uses in the Santa Clarita Valley.

5. PROPOSED PROJECT IMPROVEMENTS

a. Potable Water

The proposed water delivery system consists of a network of varying sized water mainlines that would generally follow major roadways. A network of smaller water lines would be located within the planned roadway network that would distribute the water for connection to lateral lines located on individual lots. Potable water storage would come from the existing SCWD infrastructure system.

Potable water demands for Vista Canyon would be met by using groundwater produced from the Alluvial aquifer from existing SCWD wells located in the area of the project site and SWP water from CLWA through SCWD.

b. Recycled Water

South of the Santa Clara River, wastewater generated by the project would generally gravity flow east to west across the project site to the Vista Canyon water factory. As proposed, the water factory would be sized to treat 395,411 (gpd) of wastewater, and be owned and operated by the City of Santa Clarita. Start-up flows for the water factory would include the diversion of flows from an on-site City of Santa Clarita trunk sewer. The water factory would not process any solids. Rather, solids would be discharged to the existing 12-inch off-site sewer west of the project in Jake's Way for eventual treatment at the Santa Clarita Valley Sanitation District's Water Reclamation Plants.

The water factory treatment process would be a variation of the extended aeration activated sludge process. The process would produce disinfected tertiary recycled water in accordance with the requirements of California Code of Regulations, Title 22, Section 60304(a), including the reliability requirements of Title 22. The main components of the water factory would include:

- headworks and flow equalization for primary treatment;
- secondary and tertiary treatment, which could consist of conventional extended aeration activated sludge with sand filters, sequencing batch reactors with sand filters, or membrane bioreactors; and
- disinfection via ultraviolet methods and/or chlorination.

Treated water disposal would be through the proposed recycled water system and percolation ponds. Treated water would not be discharged to the Santa Clara River. The effluent (treated water) disposal system would consist of approximately 100,000 gallons of storage and a pump station sized for the requirements of the recycled water system. Percolation ponds would be required when there is no demand for recycled water. Additionally, the percolation ponds could receive treated stormwater from

portions of the Vista Canyon project. The percolation ponds could have a working volume of approximately 84,000 cubic feet and an overflow volume of approximately 146,000 cubic feet.

Recycled water generated by the water factory would be distributed by CLWA as the wholesale-recycled water agency for the Santa Clarita Valley. The water factory would supply the recycled water system, using a pump station and on-site storage. Recycled water facilities on the Vista Canyon project site would include distribution system pipelines, which would be routed within roadways to supply recycled water for both irrigation and other allowable uses, such as restroom facilities for office and commercial development. CLWA would ultimately distribute recycled water to future off-site existing land uses and storage facilities.

6. PROJECT IMPACTS

a. Significance Threshold Criteria

The criteria listed below are based on Appendix G of the *State CEQA Guidelines*. The proposed project would normally have a significant impact on water resources if it would:

- substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- have insufficient water supplies available to serve the project from existing entitlements and resources, or new or expanded entitlements are needed; or
- result in inadequate water supplies to meet the domestic demands, and/or fire flows for fire protection from the existing area water system and facilities.

In addition to the above criteria, and given the presence of ammonium perchlorate created by other land uses in the Santa Clarita Valley, impacts to water resources would be significant if implementation of the proposed project would:

- result in the spreading of perchlorate in groundwater beyond the wells currently affected by perchlorate.

b. Environmental Impacts Associated With the Project Water Supplies

To preface, the analysis provided in this section, and particularly the project's water demand of 529 afy (with the residential overlay option), is based on the Vista Canyon WSA (2010) prepared by SCWD. In arriving at the water demand used in the WSA, SCWD relied on the water demand factors from SCWD's 2008 Water Master Plan. According to SCWD those water demand factors were used in prior water

supply assessments. However, it should be noted that the "Engineering Report for the Vista Canyon Water Factory," April 2010 (Engineering Report), prepared by Dexter Wilson Engineering, Inc. provides a refined assessment of the proposed project's water demand. In arriving at the water demand used in the Engineering Report, Dexter Wilson Engineering used water factors based on actual water use consumption data from Valencia Water Company (VWC) and the SCWD for residential and commercial product type that is similar to that proposed by the project. (See **Appendix 4.21** for the Engineering Report.) The Engineering Report relies on such data because the product type contemplated by the proposed project is not typical of the product type located within the jurisdictional area serviced by SCWD. Additionally, the Engineering Report relies on the proposed project's conceptual landscape and vegetation plans for information relevant to the identification of landscape and bank protection water duty factors. Importantly, however, as SCWD found that it has adequate supplies to service the proposed project, assuming a 529 afy demand, and as the Engineering Report identified a lower demand total, an adequate water supply exists under either scenario and impacts would be less than significant.

Water Supply Impacts. As proposed, the project's water factory would result in an excess supply of approximately 311 afy of recycled water. This water would ultimately be made available for use in other areas of the eastern Santa Clarita Valley served with recycled water by CLWA, replacing the existing use of potable water for landscaping purposes in these areas. Furthermore, this excess supply exceeds the project's potable demand of 303 afy.

Additionally, as stated above, and as shown in the Vista Canyon WSA (2010), an adequate supply of water is available to meet the demands of the project even if the project did not include the water factory. The supply available to meet the proposed project's potable demand of 303 afy is SCWD groundwater supplies from the Alluvial aquifer and SWP water from CLWA. The non-potable water demand of the project (194 afy) would be met through the use of recycled water from the proposed project's water factory. The project applicant proposes to use recycled water for landscape irrigation purposes and other allowable uses, such as restroom facilities for office and commercial uses. The water factory would treat the wastewater generated by the project uses along with a portion of non-project flows from a City of Santa Clarita sewer line crossing the project site with all solids sent to the Santa Clarita Valley Sanitation District's existing Saugus and Valencia water reclamation plants for processing and disposal. Excess recycled water generated at the water factory would then be delivered to CLWA as the wholesale water agency for the Santa Clarita Valley. This water would be distributed by CLWA through its reclaimed water distribution system within the project site and ultimately to existing uses outside of the project site. As documented further below in the section assessing the project water demand and supplies, sufficient water supplies are available to serve the proposed project from existing supplies without creating the

need for any new or expanded water entitlements. As a result, the available water supplies also are sufficient to meet the domestic demands and fire flows for the proposed project.

Although the Vista Canyon WSA and this analysis have determined that adequate and reliable water supplies exist to serve the proposed project, in addition to other existing and planned uses in the Santa Clarita Valley, the current statewide drought conditions illustrate the need for improved water efficiency and conservation. The passed legislation (SB 7X7) also requires urban water users to reduce water use by 10 percent per capita by 2015 and 20 percent by 2020. With that said, the Vista Canyon water factory alone would result in a 40 percent reduction in the proposed project's potable water demand, through its use of recycled water on site. Ultimately, when the water factory's excess supply is used off site, replacing existing potable use, the proposed project would completely offset its total water demand.

Groundwater Supply Impacts. Supplying potable water to the project site also would not substantially deplete groundwater supplies, because the previous discussion in this EIR of available local groundwater supplies confirms that there are sufficient local groundwater supplies to support the planned land uses of the project site, in addition to existing and future cumulative development in the valley. As stated above, groundwater supplies were evaluated in the *2005 UWMP*, the 2005 *Basin Yield Report*, the *2009 Basin Yield Update*, and the Vista Canyon WSA (2010). These evaluations resulted in the following findings: (a) both the Alluvial aquifer and the Saugus Formation are reasonable and sustainable sources of local water supplies at the yields stated in the *2005 UWMP* over the next 25 years; (b) the yields are not overstated and will not deplete or "dry-up" the groundwater basin; and (c) there is no need to reduce the yields for purposes of planning, as shown in the *2005 UWMP*, the 2005 *Basin Yield Report* and the *2009 Basin Yield Update* (see Draft EIR **Appendix 4.8**, for the *2005 UWMP*, the *2005 Basin Yield Report*, the *2009 Basin Yield Update*, and the Vista Canyon WSA (2010)). In addition, the *2005 UWMP*, *2005 Basin Yield Report*, the *2009 Basin Yield Update*, and the Vista Canyon WSA (2010) determined that neither the Alluvial aquifer nor the Saugus Formation is in an overdraft condition, or projected to become overdrafted.

Lastly on the topic of groundwater overdraft, some have suggested that information presented in the 2009 Water Report indicates that both the Saugus Aquifer and the Alluvial Aquifer are exhibiting some increase in EC indicative of groundwater overdraft. It is important to understand that in the 2009 Water Report, EC data are used to determine if local groundwater is suitable as a source of drinking water and not to determine if the basin is in a state of overdraft; EC data are used to indicate general trends in the dissolved concentrations of naturally occurring anions and cations. As discussed in a widely used and cited textbook (Freeze, R.A. and J.A. Cherry, *Groundwater*, Prentice-Hall, Inc., 1979), EC is commonly used as a surrogate measure of the concentration of these total dissolved solids (TDS) and is nothing more than a measure of the ability of a substance (such as water) to conduct an electrical current (Freeze and Cherry,

p. 139). Freeze and Cherry (on p. 84) discuss EC and the nature of dissolved anions and cations in groundwater as follows:

> *As a result of chemical and biochemical interactions between groundwater and the geological materials through which it flows, and to a lesser extent because of contributions from the atmosphere and surface-water bodies, groundwater contains a wide variety of dissolved inorganic chemical constituents in various concentrations. … Groundwater can be viewed as an electrolyte solution because nearly all its major and minor dissolved constituents are present in ionic form.*

Freeze and Cherry present their discussion of the use of EC in groundwater studies in a broader discussion of how EC is one parameter that can be measured in the field and provides a good indicator of water quality. EC is commonly used in the hydrogeologic profession to evaluate water quality and therefore is discussed in many references and studies that discuss groundwater quality. Another reference on this subject is a publication entitled, *Groundwater Quality and Groundwater Pollution* (2003), prepared by the University of California, Division of Agriculture and Natural Resources, which was prepared in partnership with the Natural Resources Conservation Service and discusses EC as follows:[42]

> *With more ions in the water, the water's electrical conductivity (EC) increases. By measuring the water's electrical conductivity, we can indirectly determine its TDS concentration. At a high TDS concentration, water becomes saline. Water with a TDS above 500 mg/l is not recommended for use as drinking water (EPA secondary drinking water guidelines). Water with a TDS above 1,500 to 2,600 mg/l (EC greater than 2.25 to 4 mmho/cm) is generally considered problematic for irrigation use on crops with low or medium salt tolerance.*

Notwithstanding that EC is used to address water quality and not the sustainability of the groundwater basin, some have suggested that EC in the Alluvium is rising, and that such a rise is indicative of basin overdraft. The evidence does not support this suggestion. The 2009 Water Report presented in **Appendix 4.8** provides data indicating stable EC levels in the basin, not rising levels. (See 2009 Water Report, Section 3.5 Water Quality, and Figures III-11, 12, and 13.) Trends in groundwater levels are the primary data used to conduct evaluations of groundwater basin sustainability, and such trends were used in the creation of the extensive groundwater modeling conducted to determine if the groundwater pumping plan for the basin will negatively impact groundwater levels in the Santa Clarita Valley and downstream of the Valley. As discussed above, neither groundwater level data, groundwater modeling conducted in the Santa Clarita Valley, nor the multiple detailed studies and annual reports prepared and referenced in this EIR support the position that the local groundwater basin is in a state of overdraft.

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42 See Regents of the University of California, Division of Agriculture and Natural Resources, 2003. *Groundwater Quality and Groundwater Pollution*, Publication 8084. 2003.

Groundwater Recharge Impacts. The supplying of water to the project also would not interfere substantially with groundwater recharge, because the best available evidence shows that no adverse impacts to the recharge of the basin have occurred due to the existing or projected use of local groundwater supplies, consistent with the CLWA/purveyor groundwater operating plan for the basin (see Draft EIR **Appendix 4.8** [*2005 Basin Yield Report and 2009 Basin Yield Update*]). In addition, based on the memorandum prepared by CH2MHill (*Effect of Urbanization on Aquifer Recharge in the Santa Clarita Valley*, February 22, 2004; Draft EIR **Appendix 4.8**), no significant project-specific or cumulative impacts would occur to the groundwater basin with respect to aquifer recharge. This is because urbanization in the Santa Clarita Valley has been accompanied by long-term stability in pumping and groundwater levels, and the addition of imported SWP water to the valley, which together have not reduced recharge to groundwater, nor depleted the amount of groundwater in storage within the local groundwater basin. This finding is supported by the *2009 Basin Yield Update*, which modeled infiltration from irrigation (from urban and agricultural lands), precipitation, and streamflows (stormwater and WRP discharges).

With the exception of a single family home and ancillary storage yard within the southwest portion of the project site, the project site is vacant. Development of the project site would include the implementation of impervious surfaces over mostly undeveloped land. The increase in paved area would reduce overall recharge on the site; however, two factors would serve to counter the impact of urbanization on groundwater recharge:

- Development on the project site would increase stormwater runoff volume discharged after treatment (*e.g.*, in water quality control facilities) to the Santa Clara River, whose channel is predominantly natural and consists of vegetation and coarse-grained sediments. The porous nature of the sands and gravels forming the streambed allows for significant infiltration to occur to the Alluvial aquifer underlying the Santa Clara River;

- Development of the project site would increase the area of irrigated landscaping on currently undeveloped land, which would serve to increase the amount of recharge to the project area; and,

- The percolation ponds associated with the water factory would result in increase recharge in the project area.

As a result, project impacts on groundwater recharge and levels would be less than significant. This finding is based, in part, on the referenced technical report (CH2MHill Memorandum). In the CH2MHill Memorandum, CH2MHill summarized its recharge findings, explaining that natural recharge occurs in the Santa Clarita Valley largely because: (a) a significant volume of natural recharge occurs in the Santa Clara River mainstem and associated tributaries, which contain soft-bottom alluvial deposits in contrast to paved, urban land areas; and (b) importation of SWP water since 1980 has contributed to recharge in the Valley:

In the Santa Clarita Valley, stormwater runoff finds its way to the Santa Clara River and its tributaries, whose channels are predominantly natural and consist of vegetation and coarse-grained sediments (rather than concrete). The stormwater that flows across paved lands in the Santa Clarita Valley is routed to stormwater detention basins and to the river channels, where the porous nature of the sands and gravels forming the streambeds allow for significant infiltration to occur to the underlying groundwater.

Increased urbanization in the Valley has resulted in the irrigation of previously undeveloped lands. The effect of irrigation is to maintain higher soil moisture levels during the summer than would exist if no irrigation were occurring. Consequently, a greater percentage of the fall/winter precipitation recharges groundwater beneath irrigated land parcels than beneath undeveloped land parcels. In addition, urbanization in the Santa Clarita Valley has occurred in part because of the importation of State Water Project (SWP) water, which began in 1980. SWP water use has increased steadily, reaching nearly 44,500 acre-feet in 2003. Two-thirds of this water is used outdoors, and a portion of this water eventually infiltrates to groundwater. The other one-third is used indoors and is subsequently routed to local water reclamation plants (WRPs) and then to the Santa Clara River (after treatment). A portion of this water flows downstream out of the basin, and a portion infiltrates to groundwater.

Records show that groundwater levels and the amount of groundwater in storage were similar in both the late 1990s and the early 1980s, despite a significant increase in the urbanized area during these two decades. This long-term stability of groundwater levels is attributed in part to the significant volume of natural recharge that occurs in the streambeds, which do not contain paved, urban land areas. On a long-term historical basis, groundwater pumping volumes have not increased due to urbanization, compared with pumping volumes during the 1950s and 1960s when water was used primarily for agriculture. Also, the importation of SWP water is another process that contributes to recharge in the Valley. In summary, urbanization has been accompanied by long-term stability in pumping and groundwater levels, plus the addition of imported SWP water to the Valley, which together have not reduced recharge to groundwater, nor depleted the amount of groundwater that is in storage within the Valley. (**Appendix 4.8**, CH2MHill Memorandum, pp. 1–2.)

The 2009 Basin Yield Update also provides additional useful information concerning groundwater recharge, discharge, and storage. In that Update, the sustainability of the two operating plans (2008 Operating Plan and Potential Operating Plan) was evaluated by examining trends in groundwater recharge and groundwater discharge during an 86-year simulation. Focusing on the 2008 Operating Plan, the Update compared the magnitudes and trends in groundwater recharge and groundwater discharge, and concluded that the "2008 Operating Plan is sustainable in the long-term, a conclusion that is consistent with the examination of the groundwater elevation hydrographs discussed ... in Section 4.1.1" of the 2009 Basin Yield Update. (See, 2009 Basin Yield Update, pp. III-5 and III-6.)

Perchlorate Impacts on Groundwater Supply. The detection of perchlorate in local groundwater supplies has raised concerns over the reliability of local groundwater supplies, in particular the Saugus Formation, where three wells remain removed from active service as a result of perchlorate. As discussed in both this EIR, the *2005 UWMP*, Chapter 5 and Appendix D, and the 2009 Basin Yield Update, planning for remediation of the perchlorate and restoration of the impacted well capacity is substantially underway. While that work is being completed, non-impacted production facilities can be relied upon for the quantities of water projected to be available from the Alluvial aquifer and Saugus Formation during the time necessary to restore perchlorate-impacted wells. CLWA, the local retail water purveyors, DTSC, and other agencies continue to monitor and work closely on the remediation of perchlorate-impacted wells. This EIR has presented a detailed summary of the status of perchlorate remediation and restoration of perchlorate-impacted groundwater supply in the Santa Clarita Valley (see above). This work effort continues on multiple fronts to address perchlorate-impacted wells stemming from past manufacturing activities on the former Whittaker-Bermite site, which is located down gradient and over 5 miles away from the project site. As stated above, CLWA and local retail purveyors have restored, and continue work to restore, the production capacity of the groundwater supply wells contaminated by perchlorate, while working on longer-term objectives of containing the downgradient migration of perchlorate.

Perchlorate Impacted Water Purveyor Wells. As discussed above, perchlorate was detected in four Saugus Formation production wells near the former Whittaker-Bermite site in 1997. As a result, these wells (SCWD's Wells, Saugus 1 and Saugus 2, NCWD's Well NC-11, and VWC's Well V-157) were removed from service. In 2002, perchlorate was detected in the SCWD Stadium Well, located in the Alluvial aquifer, directly adjacent to the former Whittaker-Bermite site. This Alluvial well also was removed from service.

Since the detection of perchlorate and resultant inactivation of impacted wells, the purveyors have been conducting regular monitoring of active wells near the Whittaker-Bermite site. In April 2005, that monitoring detected the presence of perchlorate in Valencia Water Company's Well Q2, an Alluvial well located immediately northwest of the confluence of Bouquet Creek and the Santa Clara River. The location of this well is also shown on **Figures 4.8-6** and **4.8-7**. As a result of the detection and confirmation of perchlorate in its Well Q2, Valencia Water Company removed the well from active service and pursued rapid permitting and installation of wellhead treatment in order to return the well to water supply service. In October 2005, Valencia Water Company restored the pumping capacity of Well Q2 with the startup of wellhead treatment designed to effectively remove perchlorate. After nearly two years of operation with wellhead treatment, during which there was no detection of perchlorate, Valencia was authorized by DPH to discontinue treatment. Since that time, Well Q2 has operated without treatment

and there has been no detection of perchlorate since discontinuation of wellhead treatment. As a result, Well Q2 is part of the purveyors' capacity in its operating plan.

In January 2005, Valencia Water Company permanently closed well V-157 and, in September 2005, completed the construction of new Saugus well V-206 located in an area of the Saugus Formation not impacted by perchlorate. Valencia Water Company's V-206, which is operational, has replaced the pumping capacity temporarily impacted by the detection of perchlorate at former well V-157. Well V-206 is part of the purveyors' capacity in its operating plan.

In addition, in response to the deactivation of the Stadium Well, SCWD has recently drilled a replacement well (Valley Center Well) further to the east, north-northeast of the former Whittaker-Bermite site. The Valley Center Well also is a part the Valley's active municipal groundwater source capability.

In summary, three Saugus wells (Saugus 1 and 2 and NC-11) remain off-line due to perchlorate contamination. However, as stated above, there is more than sufficient pumping capacity in the Alluvial and Saugus production wells to meet the purveyors' groundwater operating plan, without any adverse environmental effects.

Locations of the impacted wells and other nearby non-impacted wells, relative to the Whittaker-Bermite site are shown on **Figures 4.8-6** and **4.8-7**.

Restoration of Perchlorate Impacted Water Supply. Since the detection of perchlorate in the four Saugus wells in 1997, CLWA and the retail water purveyors have recognized that one element of an overall remediation program would most likely include pumping from impacted wells, or from other wells in the immediate area, to establish hydraulic conditions that would control the migration of contamination from further impacting the aquifer in a downgradient (westerly) direction. Thus, CLWA and the retail water purveyors report that the overall perchlorate remediation program includes dedicated pumping from some or all of the impacted wells, with appropriate treatment, such that two objectives could be achieved. The first objective is control of subsurface flow and protection of downgradient wells, and the second is restoration of some or all of the contaminated water supply. Not all impacted capacity is required for control of groundwater flow. The remaining capacity would be replaced by construction of replacement wells at non-impacted locations.

As stated above, the groundwater model used in the Santa Clarita Valley was initially intended for use in analyzing the operating yield and sustainability of groundwater in the Basin. However, the model was adaptable to analyze both the sustainability of groundwater under an operational scenario that includes full restoration of perchlorate-contaminated supply and the containment of perchlorate near the Whittaker-Bermite property (i.e., by pumping some of the contaminated wells). In 2004, DTSC reviewed

and approved the development and calibration of the regional model. After DTSC approval, the model was used to simulate the capture and control of perchlorate by restoring impacted wells, with treatment. The results of that work are summarized in a report entitled, *Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property, Santa Clarita, California* (CH2MHill, December 2004) (see Draft EIR **Appendix 4.8**), and is summarized in the 2009 Basin Yield Update (Draft EIR **Appendix 4.8**). The modeling analysis indicates that the pumping of impacted wells SCWD-Saugus 1 and SCWD-Saugus 2 on a nearly continual basis will effectively contain perchlorate migrating westward in the Saugus Formation from the Whittaker-Bermite property. The modeling analysis also indicates that (1) no new production wells are needed in the Saugus Formation to meet the perchlorate containment objective; (2) impacted well NCWD-11 is not a required component of the containment program; and (3) pumping at SCWD-Saugus 1 and SCWD-Saugus 2 is necessary to prevent migration of perchlorate to other portions of the Saugus Formation. This report, and the accompanying modeling analysis, was approved by DTSC in November 2004. With that approval, the model is now being used to support the source water assessment and the balance of the permitting process required by DPH.

Based on the progress made to date, the provision of groundwater to the project site for urban uses would not result in the spread of perchlorate in the Basin beyond the currently impacted wells because: (a) groundwater used to meet a portion of the needs of the project must meet the drinking water quality standards required by law prior to use; and (b) the SCWD wells used to provide water in the project area are not impacted by perchlorate based on laboratory test results.

Project Water Demand Impacts. The project site is mostly vacant with a single family home and ancillary storage yard on the southwestern portion of the project site. For the purposes of this analysis, this EIR assumes that the project site is vacant. Development of the project site would result in a potable water demand of approximately 303 afy. The non-potable water demand for the project would be approximately 194 afy. Total project water demand is summarized in **Table 4.8-16, Summary of Project Water Demand**.

Table 4.8-16
Summary of Project Water Demand (acre-feet)

Land Use Categories	Water Use Factor		Proposed Project Size (option 1)	Estimated Water Use (afy)	Proposed Project Size (option 2) (overlay)	Estimated Water Use (afy)
	Demand Factor (af)	Per				
Single Family Residential	0.82	unit/yr	96	79	96	79
Multi-Family Residential	0.219	unit/yr	1021	224	1254	275
Landscape/OS/Parks	3	ac-ft/ac/yr	30.4	91	30.4	91
Commercial (SCWD)	67.6	gpd/1K ft^2	950,000	72	700,000	53
Bank Protection	1.4	ac-ft/ac/yr	22.3	31	22.3	31
Total				497		529

Project Water Supply Impacts. As discussed above, the projected total water demand for the project is about 497 afy (or approximately 529 afy with implementation of the residential overlay) in a normal/average year. Project water demand increases by approximately 10 percent in a dry year to a total of 367.4 afy. This increase, however, would be offset by the recycled and excess recycled water generated by the proposed project's water factory. To meet overall demand, SCWD, as the local retail purveyor, would provide water to the project. Water sources expected to serve the project are groundwater from the Alluvial aquifer and Saugus Formation provided by SCWD and imported SWP water and other imported water from CLWA, both of which would be treated and used to meet the project's potable demand of 303 afy, and recycled water from the project's water factory, which would be used to meet the project's non potable demand of 194 afy. These water supplies are assessed further below.

Impacts Assessment of Existing Conditions Plus Project Water Demand and Supply. This section describes the existing development demand in the Santa Clarita Valley, plus the project water demand, measured against existing supplies. **Table 4.8-17**, **Existing Plus Project Demand and Supply for the Santa Clarita Valley**, illustrates that existing supplies exceed project demand, in conjunction with existing demand in the Santa Clarita Valley.

7. CUMULATIVE WATER DEMAND AND SUPPLY ANALYSIS

The following discussion focuses on the cumulative impacts to water availability for the Santa Clarita Valley. The analysis evaluates cumulative impacts under the following two future water demand and supply scenarios:

Scenario 1. Existing development within the CLWA service area, plus near-term projections, plus the project (referred to as the SB 610 Water Demand and Supply Scenario).

Scenario 2. Buildout within the CLWA service area by 2030, plus active pending General Plan Amendment requests, plus the project (referred to as the Santa Clarita Valley 2030 Build-Out Scenario).

Table 4.8-17
Existing Plus Project Demand and Supply for the Santa Clarita Valley

2009 Demand		**(acre-feet)**	
2009 Demand (Actual)[1]		86,538	
Vista Canyon Demand		497	
Total Existing Plus Project Demand			**86,872**
Available 2009 Supplies			
Local Groundwater[2]			
Alluvial aquifer		39,986	
Saugus Formation		7,678	
	Subtotal Local Groundwater		**47,664**
Imported Supplies			
Table A Amount[3]		38,080	
Net Carryover from 2008[4]		10,107	
Buena Vista/Rosedale-Rio Bravo[5]		11,000	
Yuba Accord		1,658	
Flexible Storage Account (CLWA)[6]		0	
Flexible Storage Account (Ventura County)[7]		0	
2009 SWP Turnback Pool Water		52	
Semitropic Water Banking and Exchange Program		1,650	
Nickel Water -- Newhall Land		1,607	
	Subtotal Imported Supplies		**68,657**
Recycled Water		328	**328**
Total Available 2009 Supplies			**116,649**

Additional Dry-Year Supplies[8]		
Semitropic Water Bank		**45,920**
2002 Account[9]	16,650	
2003 Account[9]	29,270	
Rosedale-Rio Bravo Banking and Exchange Program		**20,000**
2005-2006 Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement and Banking of Table A in 2005-2007 [10] [11]	20,000	
Semitropic Water Bank -- Newhall Land[12]	3,300	**3,300**
Total Additional 2009 Dry-Year Supplies		**69,220**

Notes:

[1] *See 2009 Water Report, p. ES-1 (May 2010).*

[2] *See 2009 Water Report, pp. ES-1 - ES-2 (May 2010).*

[3] *CLWA's SWP Table A Amount is 95,200 acre-feet. The final 2009 allocation was 40%, or 38,080 acre-feet.*

[4] *Amount used by CLWA in 2009.*

[5] *2008 annual supply from Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement.*

[6] *CLWA can directly utilize up to 4,684 acre-feet of storage capacity in Castaic Lake.*

[7] *By agreement in 2005, CLWA can also utilize 1,376 acre-feet of Ventura County SWP contractors' flexible storage capacity in Castaic Lake.*

[8] *Does not include other reliability measures available to CLWA and the retail water purveyors. These measures include short-term exchanges, participation in DWR's dry-year water purchase programs, local dry-year supply programs, and other future groundwater storage programs.*

[9] *Net recoverable water after banking is 24,000 acre-feet and 32,522 acre-feet in 2002 and 2003, respectively.*

[10] *Net recoverable water after banking is 20,000 acre-feet in each year.*

[11] *Water stored in Rosedale-Rio Bravo Banking and Exchange Program pursuant to the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement.*

[12] *Supply shown is the stored water that can be extracted from the Semitropic Groundwater Storage Bank by The Newhall Land and Farming Company for the Newhall Ranch Specific Plan in dry years minus the 1,650 af also shown in this table under "Semitropic Water Banking and Exchange Program." Together, the total is 4,950 af.. The total amount currently in storage is 18,828 acre-feet. Newhall Ranch is located within the CLWA service area. Delivery of stored water requires further agreements between CLWA and Newhall Land.*

a. SB 610 Water Demand and Supply Scenario

As indicated previously, the SCWD prepared a Vista Canyon WSA (2010) for the proposed project. The WSA is found in **Appendix 4.8**. Based on the information in this WSA, SCWD concludes there will be a sufficient water supply available at the time the project is ready for occupancy to meet the needs of the project, in addition to existing and other planned future uses in the Santa Clarita Valley.

SCWD's current (2009) service area-wide demand is approximately 27,816 afy.[43] Total municipal demand (supplied by all purveyors) in the CLWA service area was approximately 69,974 AFY with and additional 16,564 AFY for agricultural and other uses, for a total of 86,538 AFY (CLWA 2010). The 86,538 AFY demand is the total demand, without conservation, and is over 13,000 AFY less than the 100,050 AFY 2010 demand projected in the 2005 UWMP. The projected 2010 demand without conservation is between 82,000 to 84,000 AFY and is over 14,000 AFY less than the 100,050 AFY 2010 demand projected in the 2005 UWMP (CLWA et al, 2010). As mentioned above, the project will require approximately 497 afy at buildout, or about 529 with implementation of the residential overlay option. The average year, dry year,

43 2009 Santa Clarita Valley Water Report (May 2010), Table 2-1.

and multiple dry-year water assessments are presented below. These assessments are based on current information provided by CLWA, the local retail purveyors, the 2009 Santa Clarita Valley Water Report, and the *2005 UWMP*.

Average Year Water Assessment. Total projected average/normal-year water demands for the CLWA service area through the year 2030 are compared with the supplies projected to be available to meet demands in this average/normal-year water analysis (see **Table 4.8-18, Projected Average/Normal Year Supplies and Demands**).

Single Dry-Year Water Assessment. Table 4.8-19, Projected Single-Dry-Year Supplies and Demands, summarizes the existing and planned water supplies available to the CLWA service area through 2030 should a single-dry-year occur, similar to the drought that occurred in California in 1977. Demand during single-dry years was assumed to increase by 10 percent. During prolonged dry periods, experience indicates that a reduction in demand of 10 percent is achievable through the implementation of conservation Best Management Practices.

Table 4.8-18
Projected Average/Normal Year Supplies and Demands

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Existing Supplies					
Wholesale (Imported)	69,707	69,707	69,707	69,707	69,707
SWP Table A Supply [(1)]	57,100	57,100	57,100	57,100	57,100
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000
Nickel Water – Newhall Ranch	1,607	1,607	1,607	1,607	1,607
Flexible Storage Account (CLWA) [(2)]	0	0	0	0	0
Flexible Storage Account (Ventura County) [(2)]	0	0	0	0	0
Local Supplies					
Groundwater	46,000	46,000	46,000	46,000	46,000
Alluvial Aquifer	35,000	35,000	35,000	35,000	35,000
Saugus Formation	11,000	11,000	11,000	11,000	11,000
Recycled Water	1,700	1,700	1,700	1,700	1,700
Total Existing Supplies [(1)]	**117,407**	**117,407**	**117,407**	**117,407**	**117,407**

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Existing Banking Programs					
Semitropic Water Bank [2]	0	0	0	0	0
Rosedale-Rio Bravo [2]	0	0	0	0	0
Semitropic Water Bank – Newhall Land [2]	0	0	0	0	0
Total Existing Banking Programs	**0**	**0**	**0**	**0**	**0**
Planned Supplies					
Local Supplies					
Groundwater	0	0	0	0	0
Restored wells (Saugus Formation) [2]	0	0	0	0	0
New Wells (Saugus Formation) [2]	0	0	0	0	0
Recycled Water – CLWA [3]	0	1,600	6,300	11,000	15,700
Recycled Water – Newhall Ranch	0	1,500	2,500	3,500	5,400
Total Planned Supplies	**0**	**3,100**	**8,800**	**14,500**	**21,100**
Planned Banking Programs					
Additional Planned Banking [2]	0	0	0	0	0
Total Planned Banking Programs	0	**0**	**0**	**0**	**0**
Total Existing and Planned Supplies and Banking [1]	**117,407**	**120,507**	**126,207**	**131,907**	**138,507**
Total Estimated Demand (w/o conservation) [4]	100,050	109,400	117,150	128,400	138,300
Conservation at 10% [5]	(8,600)	(9,700)	(10,700)	(11,900)	(12,900)
Total Adjusted Demand at 10% Conservation	91,450	99,700	106,450	116,500	125,400
Net Water Surplus (Deficit)	25,957	20,807	19,757	15,407	13,107

[1] *SWP supplies are calculated by multiplying CLWA's Table A Amount of 95,200 acre-feet by percentages of average deliveries projected to be available on Tables 6-3 and 6-12 of DWR's "The State Water Project Delivery Reliability Report 2009." Year 2030 figure is calculated by multiplying by DWR's 2029 percentage of 60%.*

[2] *Not needed during average/normal years.*

[3] *Recycled water supplies based on projections provided in CLWA's 2005 UWMP Chapter 4, Recycled Water.*

[4] *Demands are for uses within the existing CLWA service area. Demands for any annexations to the CLWA service area are not included.*

[5] *A 10 percent reduction on urban portion of total normal demand is estimated to result from conservation best management practices, as discussed in CLWA's 2005 UWMP, Chapter 7. Not shown is a 10 percent per capita reduction in urban demand by 2015 and a 20 percent per capita reduction in urban demand by 2020 now mandated by SB 7X7.*

Source: Vista Canyon WSA (2010)

It should be noted that dry year supplies available above demand reflect water supplies that would be called upon by purveyors in dry years. CLWA and the local purveyors would typically secure water from these supplies only in amounts necessary to meet demand.

Table 4.8-19
Projected Single-Dry Year Supplies and Demands

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Existing Supplies					
Wholesale (Imported)	25,367	26,267	25,887	26,787	27,787
SWP Table A Supply [1]	6,700	7,600	8,600	9,500	10,500
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000
Nickel Water – Newhall Ranch	1,607	1,607	1,607	1,607	1,607
Flexible Storage Account (CLWA)	4,680	4,680	4,680	4,680	4,680
Flexible Storage Account (Ventura County)[2]	1,380	1,380	0	0	0
Local Supplies					
Groundwater	47,500	47,500	47,500	47,500	47,500
Alluvial Aquifer	32,500	32,500	32,500	32,500	32,500
Saugus Formation	15,000	15,000	15,000	15,000	15,000
Recycled Water	1,700	1,700	1,700	1,700	1,700
Total Existing Supplies	**74,567**	**75,467**	**75,087**	**75,987**	**76,987**
Existing Banking Programs					
Semitropic Water Bank [3]	17,000	0	0	0	0
Rosedale-Rio Bravo [5]	20,000	20,000	20,000	20,000	20,000
Semitropic Water Bank – Newhall Land [10]	4,950	4,950	4,950	4,950	4,950
Total Existing Banking Programs	**41,950**	**24,950**	**24,950**	**24,950**	**24,950**
Planned Supplies					
Local Supplies					
Groundwater	10,000	10,000	20,000	20,000	20,000
Restored wells (Saugus Formation)	10,000	10,000	10,000	10,000	10,000
New Wells (Saugus Formation)	0	0	10,000	10,000	10,000
Recycled Water – CLWA [4]	0	1,600	6,300	11,000	15,700
Recycled Water – Newhall Ranch	0	1,500	2,500	3,500	5,400
Total Planned Supplies	**10,000**	**13,100**	**28,800**	**34,500**	**41,100**

Water Supply Sources	Supply (af) 2010	2015	2020	2025	2030
Planned Banking Programs					
Additional Planned Banking [6]	0	20,000	20,000	20,000	20,000
Total Planned Banking Programs	**0**	**20,000**	**20,000**	**20,000**	**20,000**
Total Existing and Planned Supplies and Banking[11]	126,517	133,517	148,837	155,437	163,037
Total Estimated Demand (w/o conservation) [7] [8]	110,100	120,300	128,900	141,200	152,100
Conservation at 10% [9]	(9,500)	(10,700)	(11,700)	(13,100)	(14,200)
Total Adjusted Demand at 10% Conservation	100,600	109,600	117,200	128,100	137,900
Net Water Surplus (Deficit)	25,917	23,917	31,637	27,337	25,137

[1] *SWP supplies are calculated by multiplying CLWA's Table A Amount of 95,200 acre-feet by percentages of single dry year deliveries projected to be available on Tables 6-4 and 6-13 of DWR's "The State Water Project Delivery Reliability Report 2009." Year 2030 figure is calculated by multiplying by DWR's 2029 percentage of 11%.*

[2] *Initial term of the Ventura County entities' flexible storage account is 10 years (from 2006 to 2015).*

[3] *The total amount of water currently in storage is 50,870 acre-feet, available through 2013. Withdrawals of up to this amount are potentially available in a dry year, but given possible competition for withdrawal capacity with other Semitropic banking partners in extremely dry years, it is assumed here that about one third of the total amount stored could be withdrawn.*

[4] *Recycled water supplies based on projections provided in CLWA's 2005 UWMP Chapter 4, Recycled Water.*

[5] *CLWA has 64,898 acre-feet of recoverable water as of 12/31/07 in the Rosedale-Rio Bravo Water Banking and Recovery Program.*

[6] *Assumes additional planned banking supplies available by 2014.*

[7] *Assumes increase in total demand of 10 percent during dry years.*

[8] *Demands are for uses within the existing CLWA service area. Demands for any annexations to the CLWA service area are not included.*

[9] *A 10 percent reduction on urban portion of total normal year demand is estimated to result from conservation best management practices ([urban portion of total normal year demand x 1.10] * 0.10), as discussed in CLWA's 2005 UWMP, Chapter 7. Not shown is a 10 percent per capita reduction in urban demand by 2015 and a 20 percent per capita reduction in urban demand by 2020 now mandated by SB 7X7.*

[10] *Delivery of stored water from the Newhall Land Semitropic Groundwater Bank requires further agreements between CLWA and Newhall.*

[11] *In 2008, CLWA also acquired approximately 850 acre-feet of non-SWP imported water supply by entering into a water transfer agreement with Yuba County Water Agency (YCWA); however, CLWA has not yet updated its water supplies/demand tables to reflect this additional non-SWP imported supply.*

Source: Vista Canyon WSA (2010).

Multiple-Dry Year Water Assessment. Table 4.8-20, Projected Multiple-Dry Year Supplies and Demands, summarizes the existing and planned water supplies available to the CLWA service area through 2030 in the event that a four-year multiple-dry year event occurs, similar to the drought that occurred in California during the years 1931 to 1934. Demand during dry years was assumed to increase by 10 percent. During prolonged dry periods, experience indicates that a reduction in demand of 10 percent is achievable through the implementation of conservation Best Management Practices.

As shown, water supplies exceed demand by 20,947 (in 2030) to 29,347 (in 2020) acre-feet in multiple dry years with the incorporation of conservation measures. Again, it should be noted that dry year supplies available above demand reflect water supplies that would be called upon by purveyors in dry years. CLWA and the local purveyors would typically secure water from these supplies only in amounts necessary to meet demand.

Conclusion. Based on the analysis set forth in this section, the documents used or relied on in preparing this section, the Vista Canyon WSA (2010), information provided by CLWA and the purveyors, and the

2005 UWMP, there are sufficient water supplies to serve the project (with or without implementation of the residential overlay option) and other existing and planned uses within the CLWA service area in an average/normal year, single-dry year, and in multiple-dry years for the present through 2030.

Table 4.8-20
Projected Multiple-Dry Year Supplies and Demands[1]

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Existing Supplies					
Wholesale (Imported)	***46,485***	***46,485***	***47,097***	***47,097***	***47,097***
SWP Table A Supply (2)	32,368	32,368	33,320	33,320	33,320
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land	1,607	1,607	1,607	1,607	1,607
Flexible Storage Account (CLWA) (3)	1,170	1,170	1,170	1,170	1,170
Flexible Storage Account (Ventura County) (3)	340	340	0	0	0
Local Supplies					
Groundwater	*47,500*	*47,500*	*47,500*	*47,500*	*47,500*
Alluvial Aquifer	32,500	32,500	32,500	32,500	32,500
Saugus Formation (4)	15,000	15,000	15,000	15,000	15,000
Recycled Water	1,700	1,700	1,700	1,700	1,700
Total Existing Supplies	**95,685**	**95,685**	**96,297**	**96,297**	**96,297**
Existing Banking Programs					
Semitropic Water Bank (3)	12,700	0	0	0	0
Rosedale-Rio Bravo (6) (7)	5,000	15,000	15,000	15,000	15,000
Semitropic Water Bank – Newhall Land (12)	4,950	4,950	4,950	4,950	4,950
Total Existing Banking Programs	22,650	19,950	19,950	19,950	19,950
Planned Supplies					
Local Supplies					
Groundwater	*6,500*	*6,500*	*6,500*	*6,500*	*6,500*
Restored wells (Saugus Formation) (4)	6,500	6,500	5,000	5,000	5,000
New Wells (Saugus Formation) (4)	0	0	1,500	1,500	1,500
Recycled Water (5)	0	1,600	6,300	11,000	15,700
Recycled Water - Newhall Ranch	0	1,500	2,500	3,500	5,400
Total Planned Supplies	6,500	9,600	15,300	21,000	27,600

Water Supply Sources	Supply (af)				
	2010	2015	2020	2025	2030
Planned Banking Programs					
Additional Planned Banking (7) (8)	0	5,000	15,000	15,000	15,000
Total Planned Banking Programs	0	5,000	15,000	15,000	15,000
Total Existing and Planned Supplies and Banking	**124,835**	**130,235**	**146,547**	**152,247**	**158,847**
Total Estimated Demand (w/o conservation) (9) (10)	**110,100**	**120,300**	**128,900**	**141,200**	**152,100**
Conservation (11)	(9,500)	(10,700)	(11,700)	(13,100)	(14,200)
Total Adjusted Demand	**100,600**	**109,600**	**117,200**	**128,100**	**137,900**
Net Water Surplus (Deficit)	24,235	20,635	29,347	24,147	20,947

Notes:

1. Supplies shown are annual averages over four consecutive dry years (unless otherwise noted.

2. SWP supplies are calculated by multiplying CLWA's Table A Amount of 95,200 acre-feet by percentages of average deliveries projected to be available during the worst case four-year drought of 1931-1934 as provided in Tables 6-4 and 6-13 of DWR's "The State Water Project Delivery Reliability Report 2009." Year 2030 figure is calculated by multiplying by DWR's 2029 percentage of 35%.

3. Based on total amount of storage available divided by 4 (4-year dry period). Initial term of the Ventura County entities' flexible storage account is ten years (from 2006 to 2015).

4, Total Saugus pumping is the average annual amount that would be pumped under the groundwater operating plan, as summarized in Table 3-6 of the 2005 UWMP ([11,000+15,000+25,000+35,000]/4).

5. Recycled water supplies based on projections provided in CLWA's 2005 UWMP Chapter 4, Recycled Water.

6. CLWA has 64,898 acre-feet of recoverable water as of 12/31/09 in the Rosedale-Rio Bravo Water Banking and Recovery Program.

7. Average dry year period supplies could be up to 20,000 acre-feet for each program depending on storage amounts at the beginning of the dry period.

8. Assumes additional planned banking supplies available by 2014.

9. Assumes increase in total demand of 10 percent during dry years.

10. Demands are for uses within the existing CLWA service area. Demands for any annexations to the CLWA service area are not included.

*11. Assumes 10 percent reduction on urban portion of total normal year demand resulting from conservation best management practices ([urban portion of total normal year demand x 1.10] * 0.10), as discussed in CLWA's 2005 UWMP, Chapter 7.*

12. Delivery of stored water from the Newhall Land Semitropic Groundwater Bank requires further agreements between CLWA and Newhall Land.

Source: Vista Canyon WSA (2010).

b. Santa Clarita Valley 2030 Build-Out Scenario

The Santa Clarita Valley 2030 Build-Out Scenario entails buildout of lands under the current land-use designations indicated in the County's Areawide Plan and the City of Santa Clarita's General Plan by the year 2030, plus the proposed project, plus all known active pending General Plan Amendment requests for additional urban development in the County unincorporated area and the City of Santa Clarita.

Table 4.8-21, **Scenario 2: Santa Clarita Valley 2030 Build-Out Scenario Water Supplies**, and **Table 4.8-22**, **Scenario 2: Santa Clarita Valley 2030 Build-Out Scenario Water Demand and Supply**, summarize the cumulative water demand and supply for this buildout scenario. As shown, the project is not expected to create any significant cumulative water availability impacts in either average or dry years. In addition, under the buildout scenario, there are adequate water supplies for the project, with no

significant cumulative water supply impacts occurring in either average or dry years. In fact, the two tables show that water supplies exceed demand under this scenario in average and dry years in 2030.

Dry year supplies available above demand reflect water supplies that would be called upon by CLWA and the local purveyors in dry years. CLWA and the local purveyors would typically secure water from these supplies only in amounts necessary to meet demand. For a dry year, when reliability of the SWP could be reduced, CLWA would utilize both dry year supplies available from the Saugus aquifer, and water banking and conjunctive use projects as indicated in **Table 4.8-21**, below.

Table 4.8-21
Scenario 2: Santa Clarita Valley 2030 Build-Out Scenario Water Supplies (afy)

	Average Years	Single Dry Year	Multiple Dry Years
Santa Clarita Valley Water Supplies [1]			
Local Supply			
a. Groundwater			
Alluvial Aquifer	35,000	32,500	32,500
Saugus Formation	11,000	15,000	15,000
Restored Impacted Wells		10,000	5,000
Saugus Formation (New Wells)		10,000	1,500
b. Reclaimed Water	17,400	17,400	17,400
Newhall Ranch WRP Supply	5,400	5,400	5,400
Imported Supplies			
a. SWP Table A Amount [2]	57,100	10,500	33,320
b. Newhall Nickel Water	1,607	1,607	1,607
c. Newhall Semitropic Groundwater Bank Storage		4,950	4,950
d. Additional Planned Banking		20,000	15,000
e. Buena Vista-Rosedale Transfer	11,000	11,000	11,000
f. Flexible Storage Account		4,680	1,170
g. Rosedale-Rio Bravo Groundwater Bank		20,000	15,000
Total Supply	138,507	163,037	158,847

*Source: 2005 UWMP and updated information provided by CLWA and retail purveyors (see Draft EIR **Appendix 4.8**).*
[1] SWP maximum allocation reduced in average years to approximately 60% of maximum allocation and in dry years to approximately 11 to 35% of maximum allocation.
[2] In any given year, the actual amount of SWP water deliveries could be above or below these model projections.

As depicted in **Table 4.8-23**, below, purveyors have access to an amount of water supplies that exceed demand during dry conditions. Therefore, no significant cumulative water availability impacts would occur due to buildout of the proposed project.

Because cumulative water supplies exceed demand, cumulative development (including the proposed project) would not result in significant unavoidable cumulative impacts on Santa Clarita Valley water resources. Therefore, cumulative mitigation measures are not required.

Table 4.8-22
Scenario 2: Santa Clarita Valley 2030 Build-Out Scenario Water Demand and Supply
(acre-feet)

	Buildout (Year 2030)		
	Average Years	**Single Dry Years[c]**	**Multi-Dry Years[c]**
Santa Clarita Valley Water Supplies	138,507	163,037	158,847
Total Buildout Demand at 10% Conservation [b]	125,400	137,900	137,900
Total Surplus at 10% Conservation	**13,107**	**25,137**	**20,947**

[a] *Source: 2005 UWMP and updated information provided by CLWA and retail purveyors (see Draft EIR, **Appendix 4.8**).*
[b] *Demand is increased by approximately 10% in dry years. Not shown is a 10 percent per capita reduction in urban demand by 2015 and a 20 percent per capita reduction in urban demand by 2020 now mandated by SB 7X7.*
[c] *Dry year supplies available above demand reflect water supplies that would be called upon by purveyors in dry years. Purveyors would typically secure water from these supplies only in amounts necessary to meet demand.*

8. MITIGATION MEASURES

As indicated above, an adequate supply is available to serve the proposed project and approved, planned and anticipated land uses in the Santa Clarita Valley. Consequently, the proposed project does not contribute to or create significant project or cumulative water resource impacts, and no mitigation beyond the design features of the project proposed by the applicant are required. However, the following measures are provided in order to contribute to a reduction in the proposed project's demand for potable water, and to ensure that adequate water supplies are available to serve the project at the time of construction.

4.8-1 The proposed project shall implement a water recycling system in order to reduce the project's demand for imported potable water. The project shall install a distribution system to deliver recycled water to irrigate land uses suitable to accept reclaimed water, pursuant to Los Angeles County Department of Health Standards. Uses include retail, office, and commercial spaces. Such uses shall be dual-plumbed to receive recycled water for toilet facilities.

4.8-2 Landscape concept plans shall include a palette rich in drought-tolerant and native plants.

4.8-3 Water conservation measures as required by the State of California shall be incorporated into all irrigation systems.

4.8-4 In conjunction with the submittal of applications that permit construction, and prior to approval of any such permits, the City of Santa Clarita shall require the applicant of the permit to obtain written confirmation from the retail water agency identifying the source(s) of water available to serve the project concurrent with need.

4.8-5 Prior to commencement of use, all uses of recycled water shall be reviewed and approved by the State of California Health and Welfare Agency, Department of Health Services.

4.8-6 Prior to the issuance of building permits that allow construction, the applicant of the project shall finance the expansion costs of water service extension to the project through the payment of connection fees to the appropriate water agency(ies).

9. SIGNIFICANT UNAVOIDABLE IMPACTS

a. Project Impacts

With implementation of the project design features and mitigation measures provided above, the proposed project would not result in or contribute to any significant unavoidable impacts on Santa Clarita Valley water resources. No further mitigation measures are required.

b. Cumulative Impacts

Because adequate supplies of water exists to serve the proposed project and other approved, planned and anticipated land uses in the Santa Clarita Valley for the duration of the 2005 UWMP and the build out of local general plans, the proposed project does not result in or contribute to any significant unavoidable cumulative impacts on Santa Clarita Valley water supplies.