INITIAL STUDY

FOR THE

OPERATIONS AND MAINTENANCE OF WATER CONSERVATION FACILITIES

Prepared for:

San Bernardino Valley Water Conservation District
1630 W. Redlands Boulevard
Redlands, California 92373

Prepared by:

Jericho Systems, Inc.
108 Orange Street, Suite 10
Redlands, California 92373
(909) 951-5900

December 2014

SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT
NOTICE OF INTENT TO
ADOPT A MITIGATED NEGATIVE DECLARATION

To:	San Bernardino County Clerk of the Board 385 North Arrowhead Avenue San Bernardino, CA 92415	*and*	Office of Planning and Research State Clearinghouse 1400 Tenth Street Sacramento, CA 95814

From: San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd.
Redlands, CA 92373

Subject: Filing of Notice of Intent to Adopt a Mitigated Negative Declaration in compliance with Section 21092.3 of the Public Resources Code.

Operations and Maintenance of Water Conservation Facilities
Project Title

Not Yet Assigned	Daniel Cozad	(909) 793-2503
State Clearinghouse Number	**Lead Agency Contact Person**	**Telephone Number**

Project Location: Generally Santa Ana River and Mill Creek

Project Description: The San Bernardino Valley Water Conservation District (District) is charged with operating and maintaining facilities for groundwater recharge. In general, the facilities consist of ~3,650 acres of spreading and recharge area. Maintenance of these facilities occurs year-round or as needed to clear storm debris that may block intake structures or become built up on the basin floor, preventing recharge. The Project is the long-term maintenance of the District's facilities and though the District has routinely operated these facilities since the 1930s, the District desires to obtain formal permits from the various regulatory agencies which now have jurisdiction over the facilities. As part of obtaining these permits, the agencies require the District to assess the potential environmental impacts of the operations and maintenance. The environmental impacts of operations and maintenance of the District's Santa Ana facilities were analyzed in the previous environmental documents. The operations and maintenance of the Mill Creek facilities were not included in those CEQA analyses. Therefore, the focus of this Initial Study will be the environmental impacts of the operations and maintenance of the Mill Creek facilities (herein referred to as the Project), within the District's property that comprises the Mill Creek facilities (herein referred to as the Project Area).

Proposed Review Process: This is to advise that the San Bernardino Valley Water Conservation District (SBVWCD) has determined that a Mitigated Negative Declaration is the appropriate CEQA environmental determination for the proposed project. At an undefined date in the future, the SBVWCD proposes to hold a public meeting to discuss and possibly recommend approval of the above project. After public review of the Initial Study is completed, the SBVWCD proposes to adopt a Mitigated Negative Declaration in accordance with CEQA and the State CEQA Guidelines. Copies of the Initial Study are available for review at the SBVWCD's office located at the above referenced location. The proposed Mitigated Negative Declaration will be available for public review and comment from December 19, 2014 to January 19, 2015. Any comments you have must be submitted in writing no later than January 19, 2015.

Signature	Land Resources Mgr.	12/16/14
Signature	Title	Date

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814 — 916/445-0613

SCH # ____________

Project Title: OPERATIONS AND MAINTENANCE OF WATER CONSERVATION FACILITIES

Lead Agency: San Bernardino Valley Water Conservation District
Contact Person: Daniel Cozad
Mailing Address: 1630 W. Redlands Blvd.
Phone: (909) 793-2503
City: Redlands
Zip: 92373
County: San Bernardino County

Project Location: County: San Bernardino County
City/Nearest Community: Redlands
Cross Streets: ____________
Zip Code: 92373
Lat. / Long.: general area 34° 4' 48.81" N / 117° 6' 49.37" W
Total Acres: ~3,650 acres
Assessor's Parcel No: N/A
Sections: Santa Ana: Sections 4-9, T1S, R2W
Sections: Mill Creek: Sections 16,17,20 & 21, T1S, R2W
Within 2 miles: State Hwy #: Hwy 38
Waterways: Santa Ana River and Mill Creek
Airports: N/A
Railways: N/A
Schools: N/A

Document Type:

CEQA:
- ☐ NOP
- ☐ Early Cons
- ☐ Neg Dec
- ■ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) ____________
- ☐ Other ____________

NEPA:
- ☐ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other ____________

Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Development
- ☐ Site Plan
- ☐ Rezone
- ☐ Prezone
- ☐ Use Permit
- ☐ Land Division (Subdivision, etc.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ■ Other: Operations and Maintenance

Development Type:

- ☐ Residential: Units ____ Acres ____
- ☐ Office: *Sq.ft.* ____ *Acres* ____ *Employees* ____
- ☐ Commercial: *Sq.ft.* ____ *Acres* ____ *Employees* ____
- ☐ Industrial: *Sq.ft.* ____ *Acres* ____ *Employees* ____
- ☐ Education ____________
- ☐ Recreational ____________
- ☐ Water Facilities: *Type* ____ *MGD* ____
- ☐ Transportation: *Type* ____________
- ☐ Mining: *Mineral* ____________
- ☐ Power: *Type* ____ *Watts* ____
- ☐ Waste Treatment: *Type* ____ *MGD* ____
- ☐ Hazardous Waste: *Type* ____________
- ■ Other: Operations and Maintenance

Project Issues Discussed in Document:

- ■ Aesthetics / Visual
- ■ Agricultural Land
- ■ Air Quality
- ■ Archaeological / Historical
- ■ Biological Resources
- ■ Coastal Zone
- ☐ Drainage / Absorption
- ☐ Economic / Jobs
- ☐ Fiscal
- ■ Floodplain / Flooding
- ■ Forest Land / Fire Hazard
- ■ Geologic / Seismic
- ☐ Minerals
- ■ Noise
- ☐ Population / Housing Balance
- ■ Public Services / Facilities
- ■ Recreation / Parks
- ☐ Schools / Universities
- ☐ Septic Systems
- ☐ Sewer Capacity
- ■ Soil Erosion / Compaction / Grading
- ☐ Solid Waste
- ■ Toxic / Hazards
- ■ Traffic / Circulation
- ■ Vegetation
- ☐ Water Quality
- ■ Water Supply / Groundwater
- ■ Wetland/Riparian
- ■ Wildlife
- ☐ Growth Inducing
- ■ Land Use
- ☐ Cumulative Effects
- ☐ Other ____________

Present Land Use / Zoning / General Plan Designation: District facilities are generally surrounded by vacant land with a well-defined graded maintenance road network or land that is utilized for agriculture or mining. Residences also exist south of the Mill Creek facilities.

Project Description: The San Bernardino Valley Water Conservation District (District) is charged with operating and maintaining facilities for groundwater recharge. In general, the facilities consist of ~3,650 acres of spreading and recharge area. Maintenance of these facilities occurs year-round or as needed to clear storm debris that may block intake structures or become built up on the basin floor, preventing recharge. The Project is the long-term maintenance of the District's facilities and though the District has routinely operated these facilities since the 1930s, the District desires to obtain formal permits from the various regulatory agencies which now have jurisdiction over the facilities. As part of obtaining these permits, the agencies require the District to assess the potential environmental impacts of the operations and maintenance. The environmental impacts of operations and maintenance of the District's Santa Ana facilities were analyzed in the previous environmental documents. The operations and maintenance of the Mill Creek facilities were not included in those CEQA analyses. Therefore, the focus of this Initial Study will be the environmental impacts of the operations and maintenance of the Mill Creek facilities (herein referred to as the Project), within the District's property that comprises the Mill Creek facilities (herein referred to as the Project Area).

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with an "X".
If you have already sent your document to the agency please denote that with an "S".

X	Air Resources Board		Office of Historic Preservation
	Boating / Waterways, Department of		Office of Public School Construction
	California Highway Patrol		Parks & Recreation
X	Caltrans District # 8		Pesticide Regulation, Department of
	Caltrans Division of Aeronautics		Public Utilities Commission
	Caltrans Planning (Headquarters)		Reclamation Board
	Coachella Valley Mountain Conservancy	X	Regional WQCB, # 8
	Coastal Commission		Resources Agency
	Colorado River Board		S.F. Bay Conservation & Development Commission
	Conservation, Department of		San Gabriel & Lower L.A. Rivers & Mtns Conservancy
	Corrections, Department of		San Joaquin River Conservancy
	Delta Protection Commission		Santa Monica Mountains Conservancy
	Education, Department of		State Lands Commission
	Energy Commission		SWRCB: Clean Water Grants
X	Fish & Wildlife, Region # 6		SWRCB: Water Quality
	Food & Agriculture, Department of		SWRCB: Water Rights
	Forestry & Fire Protection		Tahoe Regional Planning Agency
	General Services, Department of		Toxic Substances Control, Department of
	Health Services, Department of		Water Resources, Department of
	Housing & Community Development		
	Integrated Waste Management Board		Other
	Native American Heritage Commission		Other
	Office of Emergency Services		

Local Public Review Period (to be filled in by lead agency)

Starting Date December 19, 2014 Ending Date January 19, 2014

Lead Agency (complete if applicable)

Consulting Firm: Jericho Systems, Inc.
Address: 108 Orange Street, Suite 10
City/State/Zip: Redlands, CA 92373
Contact: Shay Lawrey
Phone: (909) 915-5900

Applicant: San Bernardino Valley Water Conservation District
Address: 1630 W. Redlands Blvd.
City/State/Zip: Redlands, CA 92373
Contact: Daniel Cozad
Phone: (909) 793-2503

Signature of Lead Agency Representative:

Date: 12-12-14

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT
DRAFT MITIGATED NEGATIVE DECLARATION

Lead Agency: San Bernardino Valley Water Conservation District (SBVWCD)
1630 W. Redlands Blvd.
Redlands, CA 92373

Contact: Daniel Cozad
Phone: (909) 793-2503

Project Title: OPERATIONS AND MAINTENANCE OF WATER CONSERVATION FACILITIES

State Clearinghouse Number: Not yet assigned

Project Location: Generally Santa Ana River and Mill Creek

Project Description: The San Bernardino Valley Water Conservation District (District) is charged with operating and maintaining facilities for groundwater recharge. In general, the facilities consist of ~3,650 acres of spreading and recharge area. Maintenance of these facilities occurs year-round or as needed to clear storm debris that may block intake structures or become built up on the basin floor, preventing recharge. The Project is the long-term maintenance of the District's facilities and though the District has routinely operated these facilities since the 1930s, the District desires to obtain formal permits from the various regulatory agencies which now have jurisdiction over the facilities. As part of obtaining these permits, the agencies require the District to assess the potential environmental impacts of the operations and maintenance. The environmental impacts of operations and maintenance of the District's Santa Ana facilities were analyzed in the previous environmental documents. The operations and maintenance of the Mill Creek facilities were not included in those CEQA analyses. Therefore, the focus of this Initial Study will be the environmental impacts of the operations and maintenance of the Mill Creek facilities (herein referred to as the Project), within the District's property that comprises the Mill Creek facilities (herein referred to as the Project Area).

Finding: San Bernardino Valley Water Conservation District's (SBVWCD) decision to implement this proposed project is a discretionary decision or "project" that requires evaluation under the California Environmental Quality Act (CEQA). Based on the information in the project Initial Study, the SBMWD has made a *preliminary* determination that a Mitigated Negative Declaration will be the appropriate environmental determination for this project to comply with CEQA.

Initial Study: Copies of the Initial Study are available for public review at San Bernardino Valley Water Conservation District office at 1630 W. Redlands Blvd., Redlands, CA 92373. The public review period for the Initial Study begins December 19, 2014 and closes on January 19, 2015.

Mitigation Measures: All mitigation measures identified in the Initial Study are summarized on pages 79-81 and are proposed for adoption as conditions of the project. These measures will be implemented through a mitigation monitoring and reporting program if the Mitigated Negative Declaration is adopted.

DRAFT

Signature	*Title*	*Date*

INITIAL STUDY

FOR THE

OPERATIONS AND MAINTENANCE OF WATER CONSERVATION FACILITIES

Prepared for:

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December 2014

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DETAILED PROJECT DESCRIPTION

Background

In 1910, the Water Conservation Association (WCA) was organized to conserve the water of the Santa Ana River by storing it in the underlying groundwater basin for future use. In 1931, local citizens voted to create the San Bernardino Valley Water Conservation District (SBVWCD) as a public agency to protect against excessive export of the local surface water by downstream agencies. The WCA was dissolved in the early 1940s and all land and water property was transferred to the District. The Water Conservation Act of 1931 provided broad authority to exercise a variety of powers necessary to further the District's primary goal of conserving water, such as making contracts, acquiring property through eminent domain, owning and operating recreational facilities, owning and operating hydroelectric plants, and intervening in the actions of other agencies when those actions interfere with the natural flow of streams that would otherwise be conserved for beneficial use. The District is organized under Division 21 of the California Water Code, and regulated by Sections 74000 to 76501. The District has historically operated water recharge facilities in two areas: along the Santa Ana River and along Mill Creek. Depending on the amount of rain and snow in the mountains, the District recharges the groundwater basin during most months of the year. Imported water has also been recharged in the District's facilities.

In 1993, representatives of numerous agencies - including the District, mining, flood control, wildlife, and municipal interests - formed a Wash Committee to address mining issues local to the upper Santa Ana River wash area. The role of the Committee was subsequently expanded, and it began meeting in 1997 to determine how this area might accommodate all of the important functions represented by the participating agencies. The Wash Committee sought to disregard land ownership lines in favor of a "best use" strategy for land use planning. It is anticipated, for example, that significantly disturbed areas are more favorable for mining while undisturbed lands are more favorable for preservation. This effort produced a Upper Santa Ana River Wash Land Management and Habitat Conservation Plan Document (Wash Plan) for the wash planning area, covering 4,500 acres ranging from the mouth of the Santa Ana River canyon to Alabama Street in the Santa Ana River floodplain (SBVWCD, November 2008). The Wash Plan addressed the District’s operations and maintenance of its water conservation facilities in the Santa Ana River, as well as aggregate mining expansion and land conservation.

The District has several facilities that are contained in the Wash Plan boundary, and which were described and analyzed as part of the Environmental Impact Report (EIR) for the Wash Plan. Water conservation activities are described in Section 3.5.1 of the Final Environmental Impact Report for the Upper Santa Ana River Wash Land Management and Habitat Conservation Plan, #SCH 2004051023, dated November 2008 (LSA, November 2008). Specifically, Section 3.5.1 identified the following: Water conservation on the project site is accomplished by recharging the Bunker Hill Groundwater Basin through the use of 14 percolation basins.[1] There are 1,260 acres currently designated Water Conservation, with a wetted area of 64 acres.[2] The water is conveyed by gravity flow from the Santa Ana River to the percolation basins where it ponds to depths of 3 to 10 feet. The water then percolates into the ground, recharging the Bunker Hill Groundwater Basin that underlie most of the San Bernardino Valley. The District and its predecessors have been operating these and

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[1] Basins are typically areas of shallow excavation where water percolation takes place. Flow of water into these basins brings suspended sediment, which is dropped to the basin floor with percolation of the water. This sediment requires periodic removal for percolation rates to remain efficient.

[2] The wetted area is the surface area of the basin actually covered by water.

other water conservation facilities in the Upper Santa Ana River Wash area since 1911 to "ensure recharge of the Bunker Hill Groundwater Basin in an environmentally and economically responsible way, using local native surface water to the maximum extent practicable to improve the supply and quality of groundwater, balancing such demands with those of land, mineral, and biological resources.[3]

The District also operates and maintains facilities in Mill Creek, south of the Santa Ana wash. The operations and maintenance and associated environmental impacts of the Mill Creek facilities were not included in the Wash Plan EIR prepared for the Santa Ana River facilities. Similar to the Santa Ana River facilities, the Mill Creek facilities have primarily been used for the purpose of groundwater recharge since the 1920s. Between 1920 and 1978, a portion of the property near the current Mill Creek spreading basins had been occupied by a rocket testing company, purchased in the late 1960s by Lockheed Propulsion Company (DWR, 2008). Lockheed and its predecessors had apparently conducted improper disposal of its rocket propellants, causing a detrimental impact to groundwater quality by increased concentrations of trichloroethylene (TCE), Tetrachloroethylene (PCE), and perchlorate (DWR, 2008). As a result of the Company's actions, the District, in cooperation with the local and regional water agencies and the Regional Water Quality Control Board has conducted ongoing water sampling from wells to determine levels of harmful chemicals in the groundwater plume, which has migrated offsite into the Bunker Hill Basin. A number of domestic wells in the Basin have wellhead treatment systems to remove these constituents (SBVWCD, 2012).

Project Purpose and Need

The District is charged with operating and maintaining its existing facilities in the Santa Ana River and Mill Creek for groundwater recharge, as it has since approximately the 1920s. Changes in legislation over the past decade have triggered the need for the District to obtain various regulatory permits to continue to operate its existing facilities. These facilities generally consist of a series of gates and weirs to divert water from the Santa Ana River and Mill Creek into large spreading basins owned by the District where water can percolate into the regional groundwater basin. The District cooperates with all the water entities in the East San Bernardino Valley to move, conserve, and recharge water for the benefit of the Bunker Hill Basin. Maintenance of these facilities occurs year-round or as needed to clear storm debris or sediment deposition that may block intake structures or become built up on the basin floor, preventing recharge. The Project consists of the long-term maintenance of the District's facilities.

Project Location

The District's facilities are located within the watersheds of the Santa Ana River and Mill Creek, which are located in the upper (East) end of the Bunker Hill Basin. The District's facilities are located outside of the main flow channels of the Santa Ana River and Mill Creek, as follows:

Santa Ana River Facilities: Consisting of 14 existing percolation basins with connecting channels, these facilities are located within the Santa Ana River Floodplain, adjacent the north side of the Santa Ana Wash in the City of Highland and the City of Redlands, San Bernardino County, California. The Facilities extend east to west along an approximately 5.75 mile section of the Santa Ana River and encompass an area of approximately 2,085 acres (3.26 square miles). The site of the Facilities is situated between Greenspot Road to the north and the Santa Ana River channel to the south. The site abuts Greenspot Road at its northernmost boundary and the Santa Ana River channel at its southernmost boundary. The westernmost boundary of the site is approximately 0.17 mile west of Orange Street and the easternmost boundary of the site is approximately 0.43 mile

[3] Mission Statement of the San Bernardino Valley Water Conservation District, 2003

southwest (downstream) of Seven Oaks Dam. The Santa Ana River Facility site is depicted on the U.S. Geological Survey (USGS) – Yucaipa and Redlands Quadrangles, 7.5-Minute Series topographic maps within Sections 4, 5, 6, 7, 8, and 9 of Township 1 South, Range 2 West and Sections 10, 11, and 12 of Township 1 South, Range 3 West (Figure 1).

Mill Creek Facilities: Consisting of 57 existing percolation basins and two settling ponds with connecting channels, are located adjacent the south side of Mill Creek, within the City of Redlands, San Bernardino County, California. The Facilities extend along an approximately 2.35 mile section of Mill Creek and encompass an area of approximately 450 acres (0.70 square mile). The site of the Facilities, which has a general east to west orientation, is situated between Mill Creek to the north and Highway – 38 to the south. The site abuts Highway – 38 at its southernmost boundary and Mill Creek at its northernmost boundary. The westernmost boundary of the site is approximately at Crafton Avenue and the easternmost boundary of the site is approximately 0.77 miles east of Garnet Street and 360 feet west of Julian Drive West. The Mill Creek Facilities site is depicted on the U.S. Geological Survey (USGS) – Yucaipa Quadrangle, 7.5-Minute Series topographic map within Sections 16, 17, 20, and 21 of Township 1 South, Range 2 West (Figure 2).

Surrounding Land Use

Part of the site is currently used as water conservation/recharge area for diverted Santa Ana River/Mill Creek surface water, and the remaining area is open space. The District facilities are generally surrounded by vacant land with a well defined graded maintenance road network, or land that is utilized for agriculture or mining. Residences also exist south of the Mill Creek facilities. More specifically:

Santa Ana River Facilities

North:	Agriculture, Single-family medium-density homes, Neighborhood Park, Mountains
Northeast:	Seven Oaks Dam, Mountains
South:	Open space, Santa Ana River, Redlands Municipal Airport
Southeast:	Agricultural, Rural Residential, Open space
East:	Mountains, Open Space
West:	Open Space, Santa Ana River, Water Recharge Ponds

Mill Creek Facilities

North:	Levee, Mill Creek, Agriculture
Northeast:	Levee, Mill Creek, Agriculture
South:	Open Space, Rural Residential
Southeast:	Agricultural, single-family medium-density homes, Open space
East:	Garnet Street, open space, water recharge basins
West:	Recharge basins, agriculture

Facility Maintenance

In September 2012, the District prepared an “Operational Management Manual” that addresses the operations and maintenance of its water recharge facilities in the Santa Ana and Mill Creek facilities. The percolation basins in both the Santa Ana River and Mill Creek facilities vary in size and in their ability to percolate water. These variations are dependent on site-specific characteristics and dynamics such as geology and depth to groundwater. Some basins are simply larger than others and therefore have a larger water storage capacity (District, 2012). The District’s facilities must be maintained routinely to achieve the District's goals of optimum groundwater recharge. Types of routine maintenance activities undertaken by the District for their facilities is described Table 1 and Table 2 lists types of machinery or equipment used by the District to maintain their facilities.

Water Conservation Facilities – Santa Ana River

The District's Santa Ana River facilities are located approximately 1.5 miles southwest of the canyon mouth where the Santa Ana River flows out into the valley. The District's first spreading basins once consisted of parallel contour basins that contained water diverted from the Santa Ana River. The construction of the Seven Oaks Dam between 1993 and 2000 resulted in the creation of an approximate 100-acre borrow pit and altered the original channel and basins dynamics of the spreading facility. The borrow pit removed approximately 9 contour basins from the Santa Ana River facility during construction of the dam, and resulted in one large pit. Three recharge basins were reconstructed in the large pit, but they have reduced percolation capacity due to removal of the surface alluvium. The District has always used a combination of manual weirs and gates at this facility to move water from basin to basin by gravity flow.

More specifically, recharge is primarily performed from the water released from Seven Oaks Dam by the Flood Control District. The river water exits the dam through the outlet tunnel and into the plunge pool before it makes it way out of the canyon by means of the river exit channel. At the mouth of the canyon, the District has two sets of intake structures that divert the water for use by the Bear Valley Mutual Water Company, East Valley Water District, and the District (via the Cuttle Weir). The water passes over the Cuttle Weir intake structure and into the Sandbox. The water can be diverted to Bear Valley Mutual and East Valley Water District by means of the District's Sandbox. Bear Valley Mutual and East Valley Water District have the ability to divert water from the SCE Powerhouse 3 Tail Race pipeline to the District's Santa Ana River recharge facility by means of the Tal Race valves just upstream of the Sandbox, when water volume exceed their needs. Water destined for the Santa Ana facility leaves the Sandbox and enters the District's main channel; prior to entering the spreading basins, the incoming water is measured on a daily basis at the District's Parshall Flume. The District has the ability to divert water into several areas of the Santa Ana River Spreading Facility by means of manual weirs in the main channel. The main channel runs between the Borrow Pit and Greenspot Road before it turns south and meanders between the basins in the western part of the facility. All of these facilities must be maintained routinely to ensure debris and vegetation do not obstruct the flow path of the water.

The environmental impacts of the maintenance of these facilities have been broadly analyzed by previous environmental documents; as such, no further analysis of impacts relative to the Santa Ana facilities is required

The Santa Ana Facilities were analyzed in previous environmental documents: the Final Environmental Impact Report (EIR) Santa Ana River Water Right Application for Supplemental Water Supply (Water Right Application EIR), SCH No. 2002071062; and the Environmental Impact Report for the Upper Santa Ana River Wash Land Management and Habitat Conservation Plan (Wash Plan EIR), SCH No. 2004051023, the Final Administrative Draft, Draft Environmental Impact Statement for the Proposed Santa Ana River Wash Land Use Plan Amendment and Land Exchange and Addendum No. 1 to the Final Environmental Impact Report Santa Ana River Water Right Application for Supplemental Water Supply, SCH No. 2002071062; and to the Environmental Impact Report for the Upper Santa Ana River Wash Land Management and Habitat Conservation Plan, SCH No. 2004051023 for the Enhanced Recharge Facilities Project. The diversion and distribution facilities were evaluated in the Water Right Application EIR and the recharge basins and related facilities were evaluated in the Wash Plan EIR and Draft Land Exchange EIS. The District's Santa

Ana Facilities that were identified and assessed as part of these environmental documents include the following:

Access Roads: Existing and Future Maintenance Activities. The District maintains numerous access or service maintenance roads throughout the project area. Although these roads are on District Property, the District has given consent to several agencies1 to use them for their public service activities. Most are 12-15 feet wide and surfaced with native material such as gravel or compacted soil. Maintenance activities include clearing encroaching vegetation, filling ruts and potholes, grading, resurfacing (with similar materials), and repairing washouts. Vegetation control usually occurs annually and other activities usually occur every 2 to 3 years. Acreage of District maintenance: 177 acres (identified within the Wash Plan EIR and Habitat Conservation Plan).

Canals: Existing and Future Maintenance Activities. Canals may experience sedimentation and are typically dug into the existing topography and are left with their natural earth and rock surface. Depending on the canal, the bottom and sides of the canals may develop natural rock armor over time, as the fine material is washed away. Maintenance activities include clearing encroaching vegetation, removing sedimentation, and repairing washouts or erosion. Washout and erosion repair is typically accomplished by filling in the eroded area with native material, and sometimes grouted rock. Vegetation control usually occurs annually and other activities occur infrequently. Acreage of District maintenance: 3.06 acres (identified within the Wash Plan EIR and Habitat Conservation Plan).

Basins: Existing and Future Maintenance Activities: Basins are typically areas of shallow excavation on the upstream side of dikes, and are where the actual short term storage and water percolation takes place. Flow of water into these basins brings suspended sediment, which is dropped to the basin floor with percolation of the water. This sediment requires periodic removal, which also tills the basin floor, in order for percolation rates to remain efficient. Vegetation control occurs annually and sediment removal occurs every 1-5 years depending on the basin, storm intensity, and other variables. Removed sediment is used for dike, canal, and access road maintenance. In an average year the District processes about 15 tons of sediment. Some is sold and the rest is used for maintenance on site. Sediment is only sold when there is a market, so some may sit for a year or two in the maintenance areas. Materials sifting and rock processing is not part of the District’s operations and maintenance of their facilities. Any materials separation is done on a very small or de minimuis scale. Figure 3 shows the Santa Ana sediment processing/stockpile locations. Acreage of District maintenance: 207 acres (identified within the Wash Plan EIR and Habitat Conservation Plan).

Diversion Structures: Existing and Future Maintenance Activities: These structures divert water from the canals into the basins. The diversion structures typically consist of concrete or cement block with wooden gates and associated hardware. Activities include clearing encroaching vegetation and debris or sediment from the adjacent canal, repair of the nearby canal, and repair of damage to the structure itself. Repair of the nearby canal is due to erosion or washout of the canal sides above, below, or around the structure and such repair is typically accomplished by filling in the eroded area with native material, and sometimes grouted rock. Vegetation control occurs annually; removal of sediment occurs every 2-3 years, and all other activities occur infrequently, or as necessary. District maintenance acreage: 0.5 acres (identified within the Wash Plan EIR and Habitat Conservation Plan)

Site-specific maintenance details for the Santa Ana River facilities are provided in Table 3.

Water Conservation Facilities – Mill Creek

The Mill Creek Facilities are located on the south side of Mill Creek and are primarily used to recharge waters from Mill Creek, although at certain times arrangements can be made with other agencies to percolate their water for them. The Mill Creek Spreading Basin is made up of 3 sand settling basins and 57 percolation basins with a total of 66 acres of wetted basin area. The settling ponds purpose is to remove sediments before the water is distributed through overflow gates into the percolation basins. The facility automatically fills each subsequent basin by overflowing through a series of gates that link the percolations basins together. These spreading facilities are separated from Mill Creek by a levee that stretches along the south side of the Mill Creek active floodplain. Once water enters the basins, it becomes isolated and does not flow back into Mill Creek. To supply water to the Mill Creek spreading facility, the District first diverts water from Mill Creek's main channel using soft plugs (berms) and through a series of manual weirs. The water is then directed to the District's intake channel and diversion box that sends water to either the North or South Canals. The North Canal directly delivers water diverted from Mill Creek to percolation basin number 12. Water that enters the basins from the South Canal must first pass through two settling ponds to remove sediment by allowing them to settle out through gravity before the water moves to percolation basins number 3.

The Mill Creek Facilities occur along a 2.35 mile section of Mill Creek, which originates approximately 14 miles east (upstream) of the site, on southwestern slopes of San Gorgonio Mountain. Approximately 2.2 miles west (downstream) of the diversion structure that diverts flow from Mill Creek to the District's percolation basins, Mill Creek converges with the Santa Ana River. The generally southwestward flowing Santa Ana River originates approximately 27 miles northeast (upstream) of Seven Oaks Dam in the San Bernardino Mountains. The Santa Ana River/Mill Creek confluence is approximately 2.5 miles south (downstream) of Seven Oaks Dam. The Santa Ana River, which discharges into the Pacific Ocean approximately 70 miles southwest (downstream) of the Santa Ana River/Mill Creek confluence, is the major hydrogeomorphic feature within the Santa Ana Watershed. Within the region, Mill Creek is one of the major tributaries to the Santa Ana River, along with Lytle, Cajon, City, and Plunge Creeks.

Precipitation runoff will flow down the steep mountain slopes in numerous small channels, which converge and form larger, well-defined channels or washes. These channels retain their definition until the slopes flatten and the flow changes to rill and braided overland flow within the gently sloping alluvial fan floodplain. There is high absorption in these flood plains due to slow runoff and rapid permeability. The origin of Mill Creek water is runoff from an area within the San Bernardino Mountain that washes into a valley upstream of the Forest Falls area. Mill Creek is an ephemeral stream that has incised a channel into loose alluvium. The banks of the creek are mostly vegetated. The proximity of Mill Creek to the mountains, along with the slope and topography of the Mill Creek wash leads to flashy flows carrying vegetation debris. Sediments that form the bed of Mill Creek are not large enough to resist the flash flows and floods from the upper watershed, and ongoing incision of the creek bed is expected to continue. As a result, it is expected that bed lowering will continue, resulting from the regular but infrequent storms in the mountains; however, deposition of sediment from water flows could potentially balance the removal of sediments.

Water is diverted from Mill Creek's main channel using a soft plug (berm) river intake. Site-specific maintenance details for the Mill Creek facilities are provided in Table 4. The Mill Creek facilities include the following:

Access Roads: Existing and Future Maintenance Activities. The District maintains approximately 10 miles of access or service maintenance roads throughout the Mill Creek facilities area. Although these roads are on District Property, the District has given consent to several agencies to use them for their public service activities. Most roads are 12-15 feet wide and surfaced with either native material such as gravel or compacted soil, or pavement. The access roads that are paved on the old Mill Creek Rocket site will not be repaved. They will be maintained in the future as gravel roads. Maintenance activities include clearing encroaching vegetation (primarily invasive species), using hand tools, mowing equipment, and/or herbicide by trained applicators, filling ruts and potholes, grading, resurfacing (with similar materials), repairing washouts, fencing and gate repairs, and signage maintenance. Vegetation control usually occurs annually and other activities usually occur every 2 to 3 years. Maintenance equipment includes one loader/grader. Acreage of District maintenance: 20 acres. The vegetation removed is typically weedy and invasive species.

Canals: Existing and Future Maintenance Activities. Approximately 4,500 feet of canals exist in the Mill Creek facilities area to distribute water to the spreading basins. These canals range from 8 feet to 25 feet wide in some areas. The channels may experience sedimentation and are typically dug into the existing topography and are left with their natural earth and rock surface. Depending on the canals, the bottom and sides of the canals may develop natural rock armor over time, as the fine material is washed away. Maintenance activities include clearing encroaching vegetation, removing sedimentation, and repairing washouts or erosion. Washout and erosion repair is typically accomplished by filling in the eroded area with native material, and sometimes grouted rock in areas of high erosive activity. Vegetation control usually occurs annually with sediment removal occurring less frequently. Acreage of District maintenance: 2.5 acres.

Basins: Existing and Future Maintenance Activities: Basins are typically areas of shallow excavation on the upstream side of dikes, and are where the actual short term storage and water percolation takes place. Flow of water into these basins brings suspended sediment, which is dropped to the basin floor with percolation of the water. This sediment requires periodic removal, which also tills the basin floor, in order for percolation rates to remain efficient. Vegetation control occurs annually and sediment removal occurs every 1-5 years depending on the basin, storm intensity, and other variables. Removed sediment is used for dike, canal, and access road maintenance. In an average year the District processes about 10 tons of sediment at their Mill Creek Facilities. Some is sold and the rest is used for maintenance on site. Sediment is only sold when there is a market, so some may sit for a year or two in the maintenance areas. Materials sifting and rock processing is not part of the District's operations and maintenance of their facilities. Any materials separation is done on a very small or de minimis scale. Figure 4 shows the Mill Creek sediment processing/stockpile locations. Acreage of District maintenance: approximately 65 acres.

Diversion Structures: Existing and Future Maintenance Activities: These structures divert water from the canals into the basins. This includes the Mill Creek Diversion Structure and the Mill Creek Soft Plug structure. The diversion structures typically consist of concrete or cement block with wooden gates and associated structures and hardware. Activities include clearing encroaching vegetation and debris or sediment conveyed from the nearby canal, and structural repairs. Repair of the connecting canal may be necessary due to erosion or washout of the canal sides above, below, or around the structure and such repair is typically accomplished by filling in the eroded area with native material, and sometimes grouted rock. Vegetation control occurs annually; removal of sediment occurs every 2-3 years, and all other activities occur infrequently, or as necessary. District maintenance acreage: Less than 0.10 acre total.

Project Features for Avoidance and Minimization

Maintenance of the facilities occur within habitat that has been determined to contain sensitive plant communities and sensitive species.

Santa Ana Facilities: The Santa Ana Facilities have been evaluated by previous environmental documents that provide comprehensive biological resources evaluations and address biological resource impacts related to recharge. The following avoidance, minimization and mitigation measures relevant to the maintenance and operation of the Santa Ana Facilities where ground disturbance is required are being implemented:

Restricting Disturbance

- Restriction of staging, construction activities, equipment storage, and personnel to existing disturbed areas (such as roads, pads, or otherwise disturbed areas) to the maximum extent feasible.
- Clearly marking and delineating the limits of the staging areas as well as the maintenance corridors/zones in the field and graphically on all facility as builts/blueprints.
- Personnel and equipment will be prohibited in native habitats outside the maintenance corridors/zones limits.
- Biologically sensitive areas, including individuals or colonies of listed and non-listed sensitive plant species and wildlife species, will be identified and delineated in the field prior to ground disturbance and will be clearly marked graphically so they will be avoided to the maximum extent feasible.
- Using methods to minimize the maintenance corridor width to the maximum extent feasible in sensitive habitats.

Employee Training

- Implementation of an employee training program presented by a qualified biologist familiar with all affected species, habitats, and permit conditions.
- The employee training program will include a discussion of each species, all applicable laws, the permit conditions, and the potential penalties for violating regulations/permits.

Onsite Monitoring

- Biological monitoring of habitat clearing activities and removal of sedentary animals within the maintenance corridors/zones limits prior to clearing. This will require a qualified biologist to be at the location of habitat removal before clearing to attempt to remove animals where visible and, during removal activities, to ensure that no inadvertent impacts to adjacent habitats occur.
- Periodic inspections of the maintenance corridors/zones limits will also reduce the potential for inadvertent impacts to adjacent habitat.

Best Management Practices (BMPs)

- Dust control. All areas of mechanical ground disturbance that may produce a significant amount of dust will be moistened when necessary to reduce the impact of fugitive dust on adjacent habitat. The frequency of watering will be consistent with the desired goal and in accordance with regional standards and BMPs

- Erosion control. Devices such as straw bales and "v" ditches will be installed in areas where maintenance activities may directly or indirectly cause increased erosion or sediment deposition on adjacent habitats.
- Routine removal of trash from maintenance areas.

Listed Species Protection Measures

- Where warranted and appropriate, SBKR exclusionary fencing may be installed to reduce the potential for SBKR entering the maintained areas. Specifications for the fencing will be particular to the goal of SBKR exclusion and will be approved by the USFWS.
- Following the installation of fencing (if it is appropriate to do so), the animals within the maintenance zone will be trapped and released within adjacent suitable habitat outside of the zone. These methods will be approved by the USFWS.
- Construction activities will be limited to daylight hours (~7:00 A.M. to 6:00 P.M.). During night hours, no activities that would unnaturally increase the light or noise within adjacent occupied habitat will occur.
- In areas where the SBKR, CAGN, least Bell's vireo, or southwestern willow flycatcher are present, either within or adjacent to the maintenance zone, the District will avoid or reduce construction activities in the vicinity of occupied habitat during the breeding season. Avoidance will take place from March 1 through June 30. In certain areas, avoidance of southwestern willow flycatcher will continue through July 31. Where complete avoidance is not possible, maintenance activities will be conducted in a manner that attempts to minimize disturbance during early morning hours and avoids the most sensitive breeding months of April and May.
- In areas where preconstruction sensitive species surveys and other seasonally limited activities such as seed collection and plant propagation are needed, the District will prepare a calendar of when such activities need to be accomplished and incorporate this into their maintenance schedule.
- Where impacts to listed plant species are unavoidable, the District will develop and implement, together with the listing agency, a salvage, propagation, replanting, and monitoring program that would use both seed and salvaged plants constituting a representative sample of each colony of the species that would be affected. The program will include measures to perpetuate the genetic lines represented to the maximum extent feasible. The program will be approved by the appropriate resource protection agencies before its implementation. Activities involving handling of state- or federally listed plant species, if necessary, may require permits or a memorandum of understanding from the USFWS or CDFW. The salvage, propagation, replanting, and monitoring program will incorporate provisions for re-creating suitable habitat and measures for reestablishing self-sustaining colonies of listed plant species, should they be affected on the various Project sites. The program will include provisions for monitoring and performance criteria, including an annual assessment of progress, and provisions for remedial action if performance criteria are not being met.
- Obtain an Incidental Take Statement. With an HCP, the District will be able to obtain an incidental take authorization for a variety of endangered species.

Invasive Species Control

- Where appropriate and feasible, the area to be disturbed will be treated to kill invasive exotics species and limit their seed production before initiating any earthmoving activity with the objectives of (1) preventing invasive species from spreading from the disturbance area, and (2) removing weed sources from the salvaged topsoil. Herbicides will be used only by a licensed herbicide applicator and may require notification to property owners or resource agencies. The treatment will be completed before earthmoving in order for this mitigation to have its intended effect (e.g., the treatment would need to occur before target species set seed).

Topsoil Salvage and Replacement

- In areas where vegetation and soil are to be removed, the topsoil will be salvaged and replaced, where practicable. This may be accomplished using two lifts, the first to salvage the seed bank, and the second to salvage soil along with soil biota in the root zone. Soil will be stockpiled in two areas near the Project site, with the seed bank labeled to identify it. Topsoil will be replaced in the proper layers after final reconfiguration of disturbed areas. Where presence of extensive deposits of boulders and cobbles limit the opportunity to salvage topsoil and make the above mentioned procedure infeasible, SBVWCD will salvage available surface material and stockpile it for replacement on the surface of the restored area. Stockpiles will be covered if the soil is to be left for an extended period to prevent losses due to erosion and invasion of weeds.

Habitat Enhancement & Rehabilitation

- Develop and implement plans and specifications for replanting areas (as appropriate). Replanting will be with native species propagated from locally collected seed or cuttings.
- Monitoring procedures and performance criteria will be developed to address revegetation and erosion control. The performance criteria will consider the level of disturbance and the condition of adjacent habitats. Monitoring will continue for 3-5 years, or until performance criteria have been met. Appropriate remedial measures, such as replanting, erosion control or weed control, will be identified and implemented if it is determined that performance criteria are not being met.
- Install fencing around entry points and post signage to control unauthorized trail use by off-road vehicles and garbage/trash dumping.
- Monitor and remove invasive non-native species establishing in the Santa Ana River channel and adjacent RAFSS habitats between Seven Oaks Dam and Mill Creek. Target species include species of tamarisk or salt cedar (*Tamarix* spp.), fountain grass (*Pennisetum setaceum*), and giant reed (*Arundo donax*). These species establish in habitats suitable for SBKR and Santa Ana River woolly-star and have the potential to spread further into adjacent suitable habitat areas. Initial control will be established using a combination of physical removal and herbicide treatment using appropriate environmental safeguards.Two to several follow-up treatments would be anticipated during the first year with follow-up monitoring and treatments at least once annually in ensuing years.
- A program will be developed**,** together with the USFWS and CDFW, to selectively restore SBKR and Santa Ana River woolly-star habitat using an adaptive management approach with input from the USFWS and CDFW.

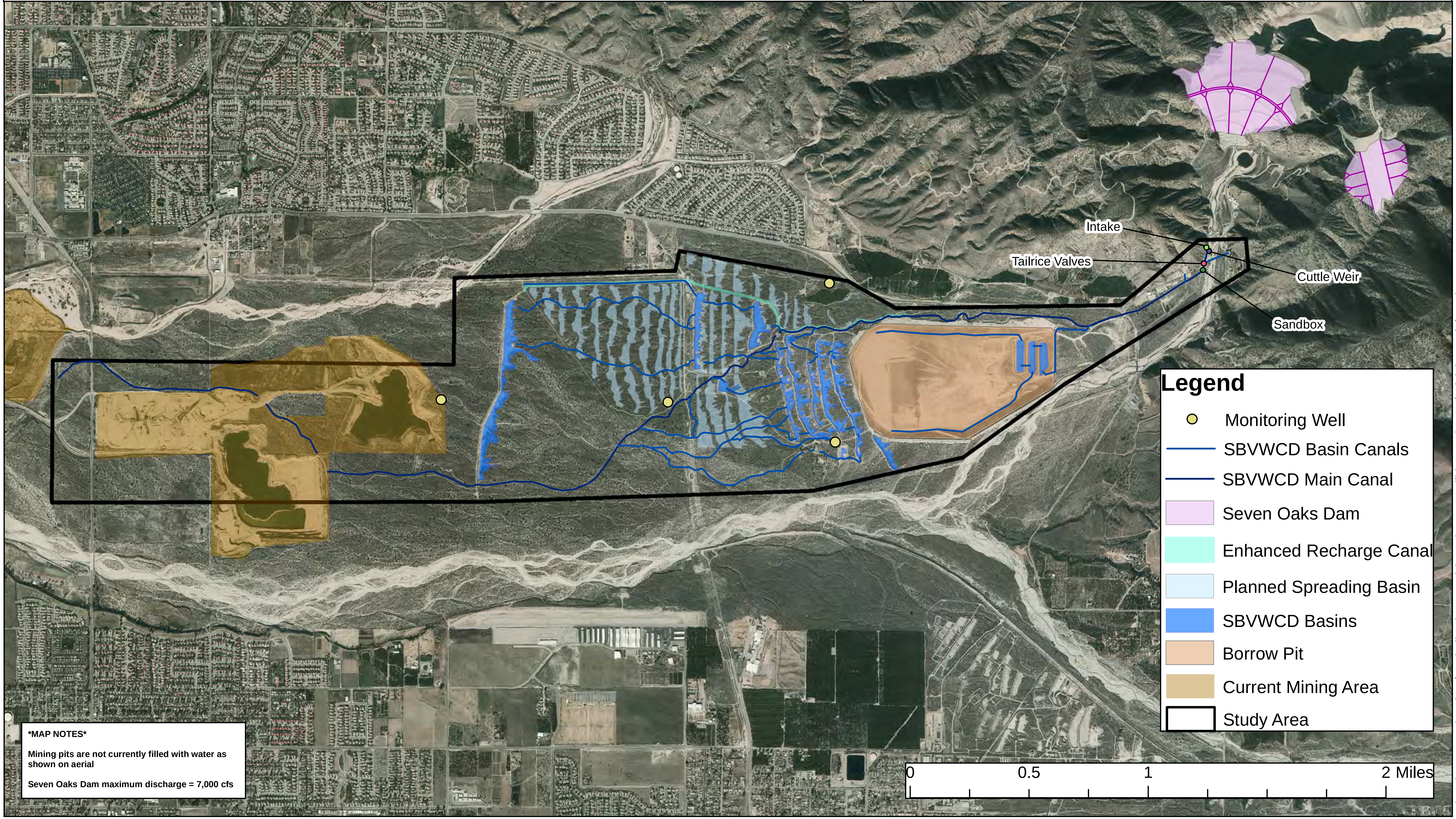
Mill Creek Facilities: Because maintenance of the Mill Creek facilities have not been included in previous environmental documents, the District proposes the same avoidance and minimization measures listed above to protect natural resources.

LOCAL VICINITY (AERIAL BASE)

Coordinate System:
NAD 1983 StatePlane California V FIPS 0405 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Scale: 1:24,100
GIS Contact: Erin Berger

October 8, 2014

SBV WATER CONSERVATION DISTRICT
OUR NAME IS OUR MISSION



Source: San Bernardino County Aerial Imagery 2012, SBVWCD GIS

M:\Projects 2014\Federal Jurisdication Lands\SAR\SAR Facilities and Local Vicinity Aerial.mxd

LOCAL VICINITY (AERIAL BASE)

Coordinate System:
NAD 1983 StatePlane California V FIPS 0405 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Scale: 1:10,000
GIS Contact: Erin Berger

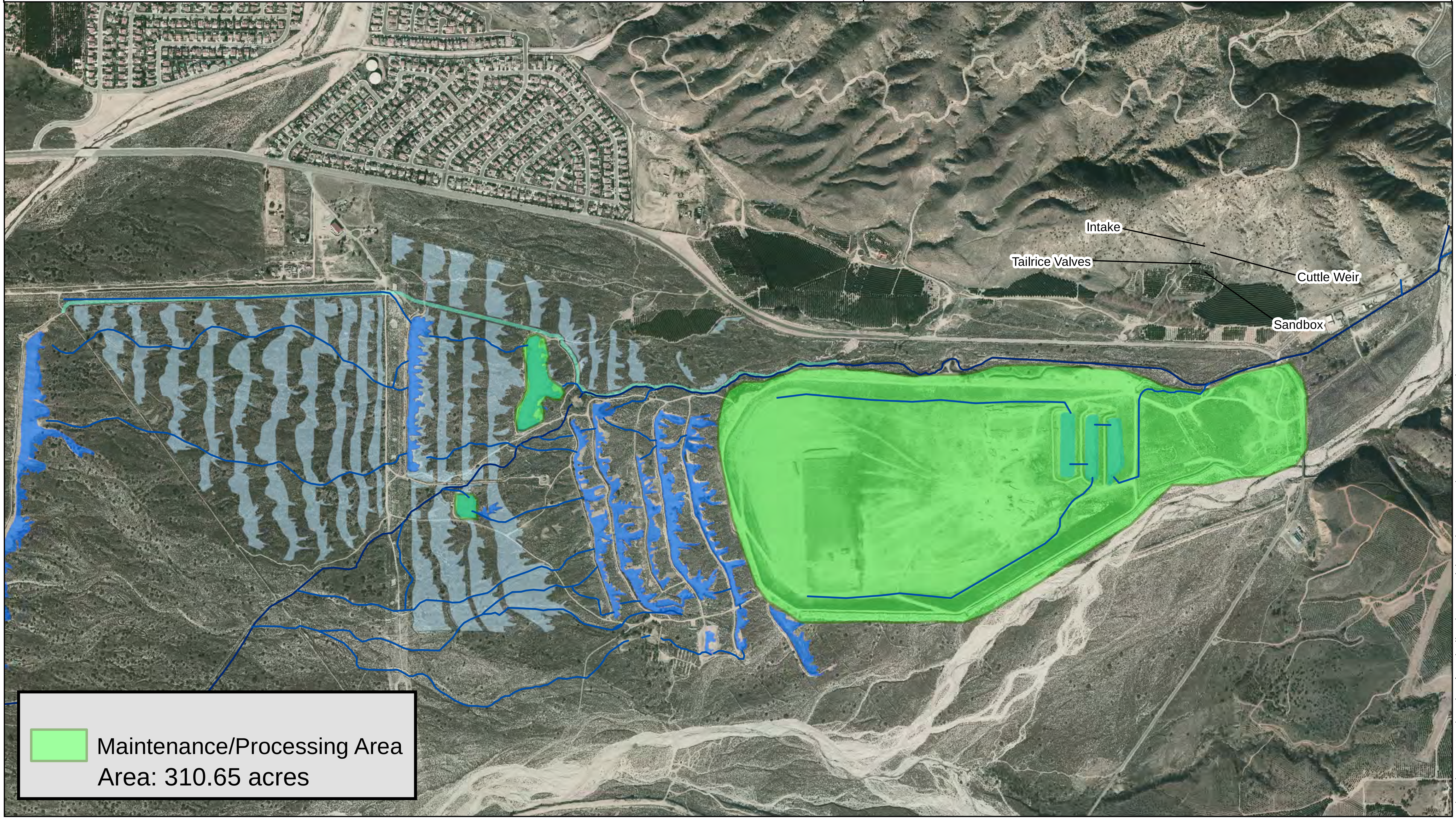
September 29, 2014

Source: San Berardino County Aerial Imagery 2012, SBVWCD GIS

SANTA ANA MAINTENANCE/PROCESSING AREA

Coordinate System:
NAD 1983 StatePlane California V FIPS 0405 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Scale: 1:24,100
GIS Contacts: Erin Berger, Peter Wedell & Robinn Min

December 8, 2014



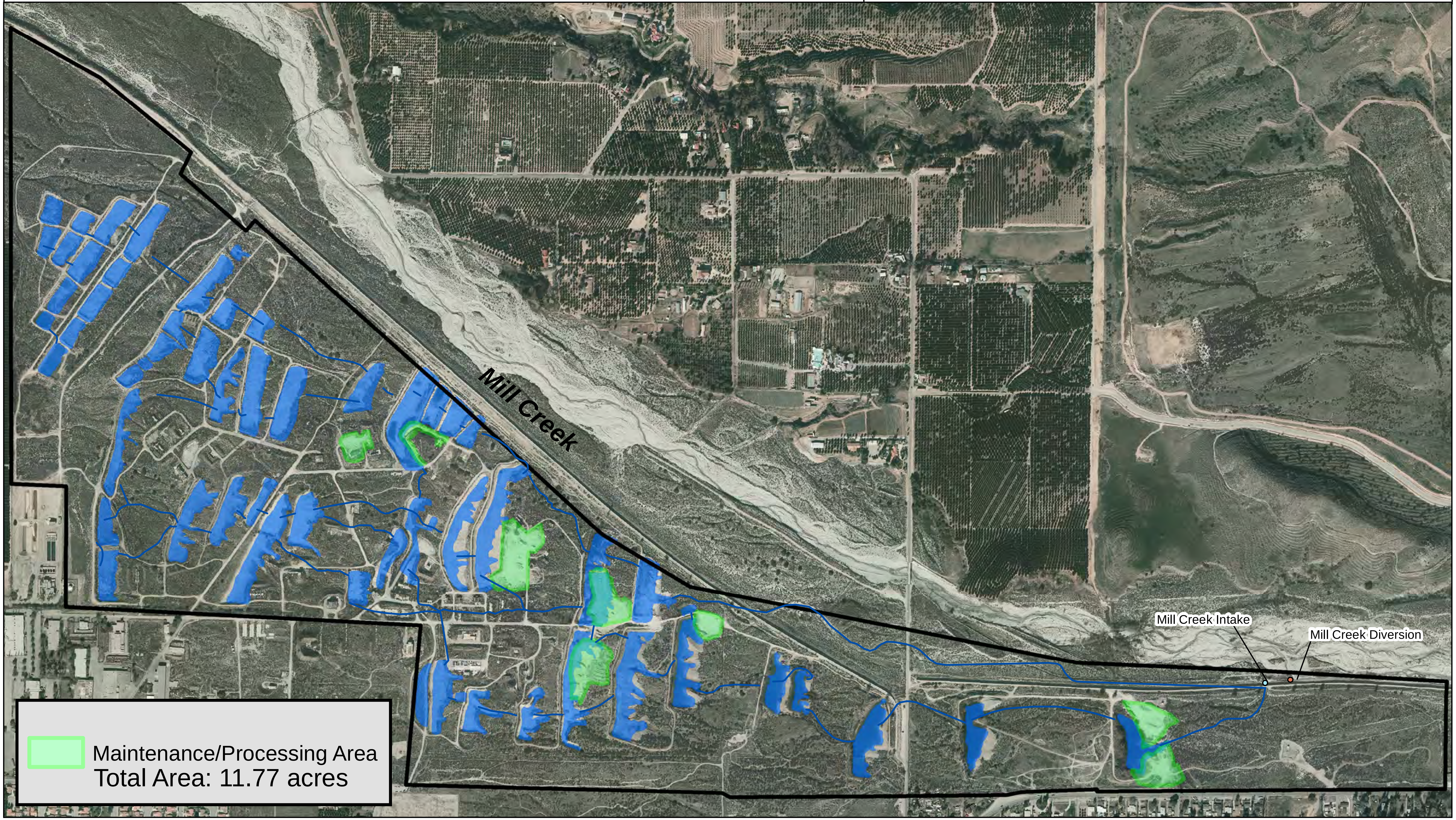
M:\Projects 2014\Federal Jurisdication Lands\SAR\SAR_Maintenance_Processing_Area

Source: San Bernardino County Aerial Imagery 2012, SBVWCD GIS

MILL CREEK MAINTENANCE/PROCESSING AREA

Coordinate System:
NAD 1983 StatePlane California V FIPS 0405 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Scale: 1:10,000
GIS Contacts: Erin Berger,Peter Wedell & Robinn Min

December 8, 2014



Source: San Berardino County Aerial Imagery 2012, SBVWCD GIS

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Table 1. TYPICAL MAINTENANCE ACTIVITIES

Activity	Description
Stockpiling	Maintenance of stockpile locations includes placement of material (i.e debris and sediment from District facilities) at specific locations for use in repairs and temporary storage. Stockpiles are treated to avoid the spread of invasive plants.
Mechanized Land Clearing/Excavation	Mechanized land clearing includes the maintenance of the canals by clearing sediment and vegetation within the center of the canal bottoms, ripping or grading the basin bottoms to properly percolate water and debris removal for water quality control, and groundwater recharge. Debris removal includes removal of sediment, dead vegetation such as fallen boughs and leaves. Material is removed to maintain capacity of each facility as necessary. High priority facilities are maintained at 100% capacity at all times. Basin bottom silt and clays are removed and soil is typically broken up and kept free of vegetation to enhance groundwater recharge. Illegally dumped trash, vehicles and homeless camps are removed from District facilities, and material is taken to a landfill or appropriate recycling facility for disposal. Mechanical vegetation clearing includes the removal of vegetation, such as tamarisk, with equipment such as dozers, graders, loaders, and excavators to remove large areas of growth. Mechanical vegetation clearing is also required for fuel modification purposes per State and local fire codes.
Vegetation Management including Mowing and Hand Clearing	Mechanical and manual vegetation management activities, including mowing, and manual pruning, remove vegetation within facilities that prevent the proper sinking of water into the ground. Mowing and vegetation management activities such as manual removal, result in thinning and involve shallow soil disturbance, which encourages seed germination, soil aeration, and insect populations. Equipment used includes, but is not limited to, tractor mowers and boom mowers. Manual removal includes using power trimmers, weed eaters and manual tools such as pruning loppers, saws, and clippers to trim and thin vegetation.
Herbicide	Herbicide application, sometimes referred to as chemical vegetation clearing, is accomplished by trained and licensed applicators to manage vegetation. Herbicides are used to prevent the spread of invasive species. Equipment used includes sprayers mounted on a service truck, or backpack sprayers.
Ingress/Egress	Maintenance of access roads includes, but is not limited to, fencing and gate repairs, signage, road grading and pavement repair.
Bank Repair	Bank repairs include, but are not limited to: removal of excess sediment and sand from the bottoms of canals or basins or onsite/offsite stockpile and placing it onto the side slopes. Sometimes, additional and incidental rip-rap rock or gabion placement may be required for banks that experience frequent erosion. Rip-Rap repair includes repositioning, replacement or placement of incidental rip-rap to stabilize the slopes. It also includes the repair of grouted and ungrouted sections of rock. Bank repair can also include the repair or replacement of steel revetment with more revetment, or rip-rap rock.
Recharge Structure Repair	Recharge structure repair or in-kind replacement include, but are not limited to, those appurtenant structures such as inlets, outlets, culverts, spillways, bottom controls, water quality structures, including settling basins and rip rap, any irrigation systems, channel invert improvements, and groundwater recharge structures such as berms.
Fuel Modification Maintenance	Fuel modification can be in the form of manual, mechanical, or chemical vegetation control and may already been discussed in the mechanized land clearing, herbicide, and vegetation management categories.
Graffiti Removal	Graffiti is removed by spraying paint on the concrete facility. Graffiti removal also includes cleanup of discarded spray paint cans.
Vector Control	Vector Control primarily involves mosquito control to reduce the spread of disease, including West Nile Virus. Vector control is conducted by the County Environmental Health Department- Mosquito/Vector Control office and includes biopesticides and introduction of mosquito-larvae eating fish.
Stream Gage Maintenance	Maintenance of stream gages and stream gage sites, as well as other scientific measurement devices to measure and record scientific data, including but not limited to, water quality monitoring, wells and sampling stations.

Table 2. ROUTINE MAINTENANCE EQUIPMENT

Equipment	Application
Hand Sprayers/Hand Tools and other non-mechanized Equipment	Hand-sprayers are used to apply herbicide. Hand tools are used by hand crews to remove vegetation from areas that are not accessible or efficient for mechanized equipment and to minimize impacts.
Dozer	The Dozer is a track- type tractor used to move earthen materials. This machine efficiently moves, clears and grades large amounts of earthen materials in muddy and sandy conditions where other rubber tire equipment would be ineffective. Dozers are used to clear material and debris from the bottoms of facilities; or push material onto the slopes of a facility to stabilize eroded slopes. Dozers are also used for center flowing and grading activities.
Dump Truck	Dump trucks are used to move materials from one location to another within a facility. Dump trucks can also be utilized to export materials from a facility or import materials from an off-site location.
Hydraulic Excavator (Excavator)	Excavators are track-type machines that consist of a dual hydraulic arm and a material bucket mounted on a rotating platform. Excavators have the ability to work around waterways and muddy soil by using its long arm and bucket to work at an adequate distance preventing the machine from becoming entrenched in mud or water. Excavators are used to excavate and clear material and debris from facilities. The dual function allows the machine to excavate and load material onto dump trucks if needed. Excavators are also used to backfill erosions and voids on slopes using material from the bottom of facilities.
Motor Grader (Grader)	The Motor Grader is a rubber tired machine with a wide blade attached and is used to maintain and repair earthen facility roads. The Grader is also an efficient method of removing vegetation from levee roads and large areas that involve flat surfaces
Wheel Loader (Loader)	The Wheel Loader is a rubber tired tractor with a hydraulic arm and material bucket attached to the front of the machine. The Loader is used to excavate, load and carry material within facilities. The Loader has the ability to move material cleanly from one area to another and also to stockpile excess material so that the excavation process executes more efficiently. The Loader is used to load Dump Trucks with materials and also for grading and vegetation removal within a facility.
Tractor Mower	The Tractor Mower is a tractor with a fixed mower head attached to the rear or an attached hydraulic boom arm with mower head. Mowing equipment is used to remove / trim vegetation from facilities without removing the root system of the plant. This enables the soil to retain its structure and prevent erosion of the surface.
Service Truck	Service trucks allow manpower to travel within a facility and serve as a means of transportation of hand tools, power tools, hand sprayers, and construction tools. Service trucks are used as support to heavy equipment
Sprayer Trucks / Equipment	Vehicles used to spray herbicides within a facility. These vehicles range from Heavy Spray Trucks to pick-up trucks and all terrain vehicles.
Water Truck	All-wheel drive tanker trucks are used to control dust during construction projects. Water Trucks are also used for compaction purposes such as levee road repair and backfill operations.
Gradall	The Gradall is a highway speed hydraulic excavator. This specialized excavator is versatile in its ability to travel on highways and also function in construction sites. The Gradall is also used to remove vegetation from facility slopes and grade and compact slopes
Skid Steer Loaders	The Skid Steer Loader is a compact wheel or rubber tracked machine that is used to excavate, load and place materials. The Skid Steer is also used for removing or mowing vegetation with its mower attachment. The skid steers small size enables the machine to work in height restricted areas. The light rubber tracked machines are used in earthen facilities and on slopes that rubber tired machines would not have traction in

Table 3. SANTA ANA RIVER FACILITIES

Facility	Facility/Maintenance Information	Size	Habitat	Frequency
Cuttle Weir Intake/Diversion Structure	**Facility Size:** Approx. 50 feet long and 11 feet high. It consists of a 15 foot long concrete wall. **Maintenance:** Visual inspection for leaks, mechanical cleaning of debris, silt, sand and invasive species. **Equipment:** one dozer and one excavator.	0.10 ac	Riparian	A: (Sept.-March), ASN
SBVWCD Diversion Intake/Diversion Structure	**Facility Size:** Approx. 50 feet long and 11 feet high. It consists of a 15 foot long concrete wall. **Maintenance:** Visual inspection for leaks, mechanical cleaning of debris, silt, sand and invasive species. **Equipment:** one dozer and one excavator.	0.10 ac	Weedy; Riparian	A: (Sept.-March), ASN
Parshall Flume Measures water for water spreading	**Facility Size:** An above-ground, concrete structure, 4 feet high, 2 feet wide **Maintenance:** Visual inspection. Remove encroaching vegetation and sediment. **Equipment:** Pickup truck, hand tools, such as weed-eaters, shovels. Dozer only if extreme sediment	N/A	Weeds	A: (Summer)
Connecting Channels/Canals Open, rock lined channels to carry diverted water to basins.	**Facility Size:** Various lengths, between 8 and 25 feet wide, from Diversion Structure to spreading basins. **Maintenance:** Mechanical clearing encroaching vegetation, and clearing of debris or sediment, and grooming channel sideslopes to prevent erosion. Repair erosions via filling with native material or grouted rock as necessary. **Equipment:** One excavator and one dozer. Maintenance usually performed from the top of the channel, reaching down into the channel.	1.5 ac	Rocky with sparse RAFSS on sides. Riparian on bottom	A: (Fall) ASN
Stream Gauges Measuring Devices, various locations	**Facility Size:** Gauges/meters range from 8 inches to 2 feet in size and are placed in various locations of the channels and basins to record water flow and volume. **Maintenance:** Visual inspection for proper function. **Equipment:** Pickup truck to drive to gauge location; visual inspection, hand tools for repair.	Less than 2 feet diameter	Varies, depending on meter location	Q, ASN
Roads and Transportation Travel throughout the area; some roads have culverts, which also need maintenance.	**Facility Size:** About 2 miles of two-lane paved roads (approx 23 feet wide) in the riparian area between Seven Oaks Dam and the Borrow Pit. About 60 miles of dirt/gravel roads exist between the Borrow Pit, Spreading Basins, and Canals, single lane, approx.. 12 feet wide. Roads also serve as the tops of the spreading basins. **Maintenance:** Paved roads: shoulder grading, sign and guardrail replacement, striping and slurry sealing; also street sweeping as necessary. Unpaved roads: road grading, vegetation removal along road shoulders, soil fill of ruts and potholes. Culverts: numerous – clear vegetation 200 feet upstream and downstream of culvert. **Equipment:** Paved roads: repaving machines, dozer, street sweepers. Unpaved roads: road grader.	177 ac.	weeds and riparian RAFSS	B: (Fall, Spring)
Borrow Pit Area of mining, and soil stockpile for District repairs	**Facility Size:** Approx. 150 acres. **Maintenance:** Grade bottom and slopes to remove vegetation, silt; stockpile material in various locations; stockpile is used for repairs of district facilities. **Equipment:** 1 Dozer, 1 loader, 1 excavator	150 ac.	Spotty RAFSS	ASN
Spreading Basins For water percolation	**Facility Size:** Approx. 64 acres of surface area used for percolation. (Basin top covered under Road Maintenance) **Maintenance:** Remove silt/debris, vegetation from basin floor; remove perimeter vegetation in wet conditions. **Equipment:** 1 excavator, 1 dozer, 1 loader	64 ac	Mixed void of vegetation and RAFSS	F – Monthly
Monitoring Wells Monitor groundwater	**Facility Size:** Approx. 4 inches in diameter, depth dependent upon water level; four wells in various locations **Maintenance:** Remove encroaching vegetation; replace by drilling a new well every 5 years. **Equipment:** Pickup truck, hand tools, truck-mounted drill rig (once every 5 years)	Less than 0.10 ac	RAFF and weeds	A

(A) = Annually (ASN) = As Necessary after storms that bring debris that could block flow (Q) = Quarterly (B) = Twice Per Year (F) = Frequently, immediately before and after storms to facilitate purpose.

Table 4. MILL CREEK FACILITIES

Facility	Facility/Maintenance Information	Size	Habitat	Frequency
Mill Creek Soft Plug Intake/Diversion Structure	**Facility Size:** Approx. 120 feet long and 12 feet high, concrete structure. **Maintenance:** Mechanical clearing encroaching vegetation, and clearing of debris or sediment, and grooming channel side slopes to prevent erosion. Repair erosions via filling with native material or grouted rock as necessary. **Equipment:** one dozer and one excavator.	0.10 ac	Weedy; Riparian	A:(Sept.-March), ASN
SBVWCD Mill Creek Diversion Intake/Diversion Structure	**Facility Size:** 20 feet wide and 15 feet tall, connects to the channel for transporting water. **Maintenance:** Visual inspection for leaks, mechanical cleaning of debris, silt, sand and invasive species. **Equipment:** one dozer and one excavator.	0.10 ac	Weedy; Riparian	A: (Sept.-March), ASN
Mill Creek Diversion Gate Controls debris loading	**Facility Size:** Approx. 30 feet long by 30 feet wide and lays over the creek to prevent large debris from entering the diversion structure. **Maintenance:** Remove encroaching vegetation and sediment. **Equipment:** one dozer and one excavator.	N/A	Weeds	A:(Summer)
Connecting Channels Open, rock lined channels corrugated steel pipe culverts to carry diverted water to basins.	**Facility Size:** Various lengths, between 8 and 25 feet wide; approximately 4,500 linear feet of channels. **Maintenance:** Mechanical clearing encroaching vegetation, and clearing of debris or sediment, and grooming channel sideslopes to prevent erosion. Repair erosions via filling with native material or grouted rock as necessary. It should be noted that the use of native materials is the preferred method to repair erosions. Grouted rock would be used only if the repair cannot be effectively completed using native material **Equipment:** One excavator and one dozer. Maintenance usually performed from the top of the channel, reaching down into the channel.	1 ac	Rocky with sparse RAFSS	B: (Summer, Fall) ASN
Roads and Transportation Allow for travel throughout the facilities	**Facility Size:** About 10 miles of dirt/gravel roads in various locations in the Mill Creek facility area providing access to Spreading Basins, and Canals, single lane, approx.. 12 feet wide. Roads also serve as the tops of the spreading basins. **Maintenance:** Road grading, vegetation removal along road shoulders, soil fill of ruts and potholes. **Equipment:** road grader.	20 ac	weeds, RAFSS	B: (Fall, Spring)
Spreading Basins For water percolation	**Facility Size:** Approx. 65 acres of surface area used for percolation. (Basin top covered under Road Maintenance) **Maintenance:** Remove silt/debris, vegetation from basin floor; remove perimeter vegetation in wet conditions. **Equipment:** 1 excavator, 1 dozer, 1 loader	64 ac	Mixed void of vegetation and RAFSS	F – Monthly

(A) = Annually (ASN) = As Necessary after storms that bring debris that could block flow (Q) = Quarterly (B) = Twice Per Year (F) = Frequently, immediately before and after storms to facilitate purpose.

INTRODUCTION

1. Project Title: Operations and Maintenance of Water Conservation Facilities

2. Lead Agency Name: San Bernardino Valley Water Conservation District
Address: 1630 W. Redlands Blvd., Redlands, CA 92373

3. Contact Person: Daniel Cozad
Phone Number: (909) 793-2503

4. Project Location: Generally Santa Ana River and Mill Creek

5. Project Sponsor's Name and Address: San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Redlands, CA 92373

6. General Plan Designation: Floodway

7. Zoning: None

8. Project Description Summary:

The San Bernardino Valley Water Conservation District (District) is charged with operating and maintaining facilities for groundwater recharge. These facilities generally consist of a series of gates and weirs to divert water from the Santa Ana River and Mill Creek into large spreading basins owned by the District where water can percolate into the regional groundwater basin. In general, the facilities consist of approximately 3,650 acres of spreading and recharge area. Maintenance of these facilities occurs year-round or as needed to clear storm debris that may block intake structures or become built up on the basin floor, preventing recharge. The Project is the long-term maintenance of the District's facilities. The operations and maintenance of these facilities are more fully described in the District's *Operational Management Manual* (District, 2012) and Tables 3 and 4. And though the District has routinely operated these facilities since the 1930s, the District desires to obtain formal permits from the various regulatory agencies which now have jurisdiction over the facilities. As part of obtaining these permits, the agencies require the District to assess the potential environmental impacts of the operations and maintenance.

The environmental impacts of operations and maintenance of the District's Santa Ana facilities were analyzed in the following previous environmental documents (available for review electronically on the District's website at http://www.sbvwcd.dst.ca.us) and is herein referred to in the analysis as "the Santa Ana EIRs":

- Final Environmental Impact Report (EIR) Santa Ana River Water Right Application for Supplemental Water Supply (Water Right Application EIR), SCH No. 2002071062;
- Environmental Impact Report for the Upper Santa Ana River Wash Land Management and Habitat Conservation Plan (Wash Plan EIR), SCH No. 2004051023;
- Final Administrative Draft, Draft Environmental Impact Statement for the Proposed Santa Ana River Wash Land Use Plan Amendment and Land Exchange; and
- Addendum No. 1 to the Final Environmental Impact Report Santa Ana River Water Right Application for Supplemental Water Supply, SCH No. 2002071062.

The diversion and distribution facilities were evaluated in the Water Right Application EIR and the recharge basins and related facilities were evaluated in the Wash Plan EIR and Draft Land Exchange EIS.

The operations and maintenance of the Mill Creek facilities were not included in the CEQA analyses. Therefore, the focus of this Initial Study will be the environmental impacts of the operations and maintenance of the Mill Creek facilities (herein referred to as the Project), within the District's property that comprises the Mill Creek facilities (herein referred to as the Project Area). The environmental impacts of maintaining the Santa Ana facilities as identified by previously-referenced environmental documents are incorporated by reference, and no further analysis is required.

9. Surrounding land uses and setting: Generally open space, agriculture, mining.

10. Other agencies whose approval is required:

Work within City/County limits. The Santa Ana River facilities are located partially within the City of Highland and partially within the City of Redlands, in San Bernardino County. The Mill Creek facilities are located entirely within the City of Redlands, in San Bernardino County. However, because the District is also a public agency, not subject to the City jurisdiction, no City permits are required.

Alteration/Discharge into Streambeds – State Jurisdiction. The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. The CDFW has determined that the maintenance of the District's facilities may substantially adversely affect fish and wildlife resources; as such, the CDFW requires that the District enter into a Lake or Streambed Alteration Agreement with the CDFW. The Agreement will include reasonable conditions necessary to protect those resources. The Agreement must comply with the California Environmental Quality Act (CEQA). The entity may proceed with the activity in accordance with the final Agreement. A Streambed Alteration Agreement is required for this project because the work involves maintenance of facilities that affect streambed resources.

Construction Compliance – Stormwater Discharge. Construction projects that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (General Construction Permit), which requires the applicant to file a notice of intent (NOI) to discharge stormwater and to prepare and implement a SWPPP. The SWPPP includes an overview of the Best Management Practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. The District will prepare a SWPPP for basin and borrow pit grading, which is generally the only activity that will exceed 1 acre, that will incorporate BMPs for its maintenance activities.

Alteration/Discharge into Streambeds – Federal Jurisdiction. The federal Clean Water Act (CWA) is the primary federal law promulgated to protect the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The responsible regulating agencies are the U.S. Army Corps of Engineers and the Santa Ana Regional Water Quality Control Board. The Mill Creek percolation basins and settling ponds are completely isolated from Mill Creek's active floodplain. Once water has been diverted into either the first settling pond via the South Canal, or percolation basin number 12 via the North Canal, there is no further nexus to Mill Creek or any other Traditional Navigable Water (TNW). All of the percolation basins are connected by a series of overflow gates, which ultimately terminate at basin number 52, the westernmost (downstream) basin. There is no evidence including definable channels that show water flow leaving the spreading grounds via this basin. The Mill Creek water conservation facilities south of the flood wall levee are not waters of the United States. The Diversion Structure, Mill Creek Intakes, and North Canal are all located within the Mill Creek active floodplain and water can be diverted and/or overflow from these facilities back to Mill Creek until the point at which the North Canal passes under the levee and enters the spreading grounds. These facilities located north of the flood wall are considered Waters of the U.S. Project activities involving the physical alteration or direct discharge into Waters of the U.S. would require Federal Clean Water Act Permits would be required.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Less Than Significant With Mitigation Incorporated" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	■	Air Quality
■	Biological Resources	■	Cultural Resources	☐	Geology / Soils
☐	Greenhouse Gas Emissions	■	Hazards & Hazardous Materials	☐	Hydrology & Water Quality
☐	Land Use / Planning	☐	Mineral Resources	☐	Noise
☐	Population / Housing	☐	Public Services	☐	Recreation
☐	Transportation / Traffic	☐	Utilities / Service Systems	☐	Mandatory Findings of Significance

DETERMINATION
(To be completed by the Lead Agency)

On the basis of this initial evaluation, the following finding is made:

	The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
X	Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Jericho Systems, Inc.
Prepared by

12/10/2014
Date

Signature
San Bernardino Valley Water Conservation District

12/15/2014
Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) “Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
   a) Earlier Analyses Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources. A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.

9) The explanation of each issue should identify:
   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				X
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

Environmental Setting

The surface elevation of the Mill Creek Facilities site ranges from approximately 2,190 feet above mean sea level (AMSL) at the eastern boundary of the site to approximately 1,720 feet AMSL at the western boundary of the site. The site is generally located within the broad, gently sloping, alluvial fan plain of the San Bernardino Mountains. The Facilities are situated at the base of the southern foothills of the San Bernardino Mountains between the San Bernardino Mountains to the north and the Crafton Hills to the south, within the Mill Creek floodplain. The area is primarily characterized as existing open areas, containing existing conservation basins, maintenance access roads, and a flood control levee. The District and its predecessors have been operating and maintaining these water conservation facilities since approximately 1911. The District has been operating and maintaining them since before the 1930's.

The Santa Ana EIRs determined that operation and maintenance of the District's Santa Ana facilities would have no impact on Aesthetic resources. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

a) Have a substantial adverse effect on a scenic vista?

No Impact. The CEQA Guidelines do not provide a definition of what constitutes a "scenic vista" or "scenic resource" or a reference as to from what vantage point(s) the scenic vista and/or resource, if any, should be observed. However, a scenic vista can generally be defined as a viewpoint from a public vantage that provides expansive views of a highly valued landscape for the benefit of the general public. Common examples include undeveloped hillsides, ridgelines, and open space areas that provide a unifying visual backdrop to a developed area. Scenic resources are those landscape patterns and features that are visually or aesthetically pleasing and that contribute affirmatively to the definition of a distinct community or region such as trees, rock outcroppings, and historic buildings.

The Project area is a series of existing water conservation basins which generally cannot be seen from public access points. Additionally, the project will not change the basin landforms in a manner that would alter the existing visual character of the area. None of the proposed activities would have a substantial adverse effect on any scenic vista.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Although State Route 38 (SR 38) is located at the southern boundary of the Project area, this segment of SR 38 is not designated as a scenic highway. This project will not damage any scenic resources viewed by people traveling on SR 38 nor will it damage any scenic resources within or adjacent to the SR 38 traveled corridor. There will be no impact to trees or rock outcroppings, or historic buildings within a state scenic highway.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

No Impact. The project is to maintain the existing water conservation facilities. There will be no change in the quality of the existing visual character or quality of the site and its surroundings.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Impact. The project does not propose to install lighting, and all work will be conducted during the daytime hours. Therefore, there will be no impact to this criterion.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
II. AGRICULTURE AND FORESTRY RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?			X	
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

Environmental Setting

The Project is to maintain existing water conservation basins. There are no farmlands or forest lands within the Project area.

The Santa Ana EIRs determined that operation and maintenance of the District's Santa Ana facilities would have no impact on Agriculture and Forestry Resources. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

a) *Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

No Impact. There are no prime, unique or farmland of statewide importance in the areas of the District's maintenance. Therefore, there is no impact.

b) *Conflict with existing zoning for agricultural use or a Williamson Act contract?*

No Impact. There are no agricultural or Williamson Act contract lands within the project area. Therefore, there is no impact.

c) *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*

Less Than Significant*.* Forest land is defined in Public Resources Code section 12220(g) as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits."

The basins in the project area could support 10-percent native tree cover if left unmaintained. However, the facilities in the Project area have been maintained as water conservation facilities for close to a century. Therefore, no timberland or lands zoned Timberland Production as defined above are crossed by any component of the proposed Project. Therefore, there will be less than significant impacts to this criterion.

d) *Result in the loss of forest land or conversion of forest land to non-forest use?*

No Impact*.* There is no forest land in the Project area. Therefore, there is no impact.

e) *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*

No Impact. The Project Area consists of water conservation basins, canals, access roads, diversion structures, wiers and soft plugs that have existed as this use since before the 1930s and will not result in changes in the existing environment that could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use *.* Therefore, there is no impact to this criterion.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		X		
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
e) Create objectionable odors affecting a substantial number of people?			X	

<u>Environmental Setting</u>

The Project Area is within the South Coast Air Basin (SCAB), which is governed by the South Coast Air Quality Management District (SCAQMD). The Santa Ana EIRs found that the operation and maintenance of the Santa Ana facilities would have a less than significant impact, to no impact and no further analysis is required.

Background Information

<u>Meteorology and Climate</u>
The climate of the Cities of San Bernardino, Highland, and Redlands in the eastern San Bernardino Valley, as with all of Southern California, is governed largely by the strength and location of the semi-permanent high pressure center over the Pacific Ocean and the moderating effects of the nearby vast oceanic heat reservoir. Local climatic conditions are characterized by very warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and comfortable humidity levels. Unfortunately, the same climatic conditions that create such a desirable living climate combine to severely restrict the ability of the local atmosphere to disperse the large volumes of air pollution generated by the population and industry attracted in part by the climate.

The project is situated in an area where the pollutants generated in coastal portions of the Los Angeles basin undergo photochemical reactions and then move inland across the project site during the daily sea breeze cycle. The resulting smog at times gives western San Bernardino County some of the worst air quality in all of California. Fortunately, significant air quality improvement in the last decade suggests that healthful air quality may someday be attained despite the limited regional meteorological dispersion potential.

Winds across the project area are an important meteorological parameter because they control both the initial rate of dilution of locally generated air pollutant emissions as well as controlling their regional trajectory. Winds across the project site display a very unidirectional onshore flow from the southwest-west that is strongest in summer with a weaker offshore return flow from the northeast that is strongest on winter nights when the land is colder than the ocean. The onshore winds during the afternoon average 6-8 mph while the offshore flow is often calm or drifts slowly westward at 1-3 mph.

During the daytime, any locally generated air emissions are thus rapidly transported eastward toward Banning Pass without generating any localized air quality impacts. The nocturnal drainage winds which move slowly across the area have some potential for localized stagnation, but fortunately, these winds have their origin in the adjacent mountains where background pollution levels are low such that any localized contributions do not create any unhealthful impacts.

In conjunction with the two characteristic wind regimes that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. The summer on-shore flow is capped by a massive dome of warm, sinking air which caps a shallow layer of cooler ocean air. These marine/subsidence inversions act like a giant lid over the basin. They allow for local mixing of emissions, but they confine the entire polluted air mass within the basin until it escapes into the desert or along the thermal chimneys formed along heated mountain slopes.

In winter, when the air near the ground cools while the air aloft remains warm, radiation inversions are formed that trap low-level emissions such as automobile exhaust near their source. As background levels of primary vehicular exhaust rise during the seaward return flow, the combination of rising non-local baseline levels plus emissions trapped locally by these radiation inversions can create micro-scale air pollution "hot spots" near freeways, shopping centers and other traffic concentrations in coastal areas of the Los Angeles Basin. Because the nocturnal airflow down the slopes of Mt. San Gorgonio has its origin in very lightly developed areas of the San Bernardino Mountains, background pollution levels at night in winter are very low in the project vicinity. Localized air pollution contributions are insufficient to create a "hot spot" potential when superimposed upon the clean nocturnal baseline. The combination of winds and inversions are thus critical determinants in leading to the degraded air quality in summer, and the generally good air quality in winter in the project area.

<u>Ambient Air Quality Standards</u>
In order to gauge the significance of the air quality impacts of the Project, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors."

National Ambient Air Quality Standards (AAQS) were established in 1971 for six pollution elements with each states retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The AAQS standards currently in effect in California are shown in Table III-1. Sources and health effects of various pollutants are shown in Table III-2.

Evaluation of the most current data on the health effects of inhalation of fine particulate matter prompted the California Air Resources Board (ARB) to recommend adoption of the statewide PM-2.5 standard that is more stringent than the federal standard. This standard was adopted in 2002. The State PM-2.5

Table III-1. AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O3)	1 Hour	0.09 ppm (180 µg/m3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m3)		0.075 ppm (147 µg/m3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m3	Gravimetric or Beta Attenuation	150 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m3		–		
Fine Particulate Matter (PM2.5) [8]	24 Hour	–	–	35 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m3	Gravimetric or Beta Attenuation	15 µg/m3		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m3)	–	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9 ppm (10 mg/m3)		9 ppm (10 mg/m3)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 g/m3)		–	–	
Nitrogen Dioxide (NO2) [9]	1 Hour	0.18 ppm (339 µg/m3)	Gas Phase Chemiluminescence	100 ppb (118 pg/m3)	–	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)		0.053 ppm (100 µg/m3)	Same as Primary Standard	
Sulfur Dioxide (SO2) [10]	1 Hour	0.25 ppm (655 µg/m3)	Ultraviolet Fluorescence	75 ppb (196 pg/m3)	–	Ultraviolet Flourescense; Spectrophotometry (Paraosaniline Method)
	3 Hour	–		–	0.5 ppm (1300 µg/m3)	
	24 Hour	0.04 ppm (105 µg/m3)		0.14 ppm (for certain areas) [9]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas) [9]	–	
Lead 8 [11,12]	30-Day Average	1.5 µg/m3	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 µg/m3 (for certain areas) [11]	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Avg	–		0.15 µg/m3)		
Visibility Reducing Particles [13]	8 Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24 Hour	25 µg/m3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m3)	Ultraviolet Fluorescence			
Vinyl Chloride [11]	24 Hour	0.01 ppm (26 µg/m3)	Gas Chromatography			

Footnotes

1 California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter – PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year, with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25̊C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25̊C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

8 On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained as 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

9 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

10 On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

11 The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

12 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

13 In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board (6/4/2013)

Table III- 2. HEALTH EFFECTS OF MAJOR CRITERIA POLLUTANTS

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Fine Particulate Matter (PM-10)	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardio respiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Fine Particulate Matter (PM-2.5)	• Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.	• Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002.

standard is more of a goal in that it does not have specific attainment planning requirements like a federal clean air standard, but only requires continued progress towards attainment. Similarly, the ARB extensively evaluated health effects of ozone exposure. A new state standard for an 8-hour ozone exposure was adopted in 2005, which aligned with the exposure period for the federal 8-hour standard. The California 8-hour ozone standard of 0.07 ppm is more stringent than the federal 8-hour standard of 0.075 ppm. The state standard, however, does not have a specific attainment deadline. California air quality jurisdictions are required to make steady progress towards attaining state standards, but there are no hard deadlines or any consequences of non-attainment. During the same re-evaluation process, the ARB adopted an annual state standard for nitrogen dioxide ($NO_{2)}$ that is more stringent than the corresponding federal standard, and strengthened the state one-hour NO_2 standard. A new federal one-hour standard for nitrogen dioxide (NO_2) has also recently been adopted which is more stringent than the existing state standard. Despite the additional stringency of the federal NO_2 standard, air quality monitoring data in the South Coast Air Basin (SoCAB) suggests that this standard is met in the region. The federal primary standard for sulfur dioxide (SO_2) were similarly modified in 2010. Because California requires use of lower sulfur fuel and burns negligible amounts of sulfur-bearing coal, SO_2 is not a problem pollutant in the State.

Baseline Air Quality

Existing and probable future levels of air quality in the project area can be best inferred from ambient air quality measurements conducted by the South Coast Air Quality Management District (SCAQMD) at its Central San Bernardino monitoring station. This station measures both regional pollution levels such as dust (particulates) and smog, as well as levels of primary vehicular pollutants such as carbon monoxide. Table III-3 summarizes the last six years of the published data from the Central San Bernardino monitoring station.

Ozone and particulates are seen to be the two most significant air quality concerns. Ozone is the primary ingredient in photochemical smog. About 13 percent of all days of the year experience a violation of the state hourly ozone standard. The 8-hour state ozone standard has been exceeded an average of 20 percent of all days in the past six years while the federal 8-hour standard is exceeded on slightly less than 14 percent of all days. For the last six years, ozone levels have not changed noticeably, but 2010 and 2011 had fewer days with violations of standards than at mid-decade. While ozone levels are still high, they are much lower than 10 to 20 years ago. Attainment of all clean air standards in the project vicinity is not likely to occur soon, but the severity and frequency of violations is expected to continue to slowly decline during the current decade.

In addition to gaseous air pollution concerns, San Bernardino experiences frequent violations of standards for 10-micron diameter respirable particulate matter (PM-10). High dust levels occur during Santa Ana wind conditions, as well as from the trapped accumulation of soot, roadway dust and byproducts of atmospheric chemical reactions during warm season days with poor visibility. Table III-3 shows that almost 23 percent of all days in the last six years in the project area experienced a violation of the State PM-10 standard. However, the three-times less stringent federal standard has been exceeded only once in the past six years during a wild fire event. As with ozone, PM-10 levels and days with violations were noticeably lower in 2010 and 2011than earlier in the decade.

A substantial fraction of PM-10 is comprised of ultra-small diameter particulates capable of being inhaled into deep lung tissue (PM-2.5). Peak annual PM-2.5 levels are sometimes almost as high as PM-10, which includes PM-2.5 as a sub-set. Approximately 5 percent of days experience a violation of the adopted 24-hour standard of 35 $\mu g/m^3$, again with a lower percentage in 2011-2011 than in 2005-2006.

While many of the major ozone precursor emissions (automobiles, solvents, paints, etc.) have been substantially reduced, most major PM-10 sources (construction dust, vehicular turbulence along roadway shoulders, truck exhaust, etc.) have not been as effectively reduced. Prospects of ultimate attainment of ozone standards are better than for particulate matter.

Table III-3. AIR QUALITY MONITORING SUMMARY (2006-2011)
(Days Standards Were Exceeded, and Maximum Observed Levels)

Pollutant/Standard	2006	2007	2008	2009	2010	2011
Ozone						
1-Hour > 0.09 ppm (S)	57	48	62	53	27	40
8-Hour > 0.07 ppm (S)	72	72	87	78	60	66
8- Hour > 0.075 ppm (F)	56	51	62	61	40	39
Max. 1-Hour Conc. (ppm)	0.154	0.153	0.157	0.150	0.129	0.135
Max. 8-Hour Conc. (ppm)	0.127	0.122	0.122	0.127	0.105	0.121
Carbon Monoxide						
1-hour > 20. ppm (S)	0	0	0	0	0	0
8- Hour > 9. ppm (S,F)	0	0	0	0	0	0
Max 1-hour Conc. (ppm)	2.8	3.7	2.4	2.5	2.1	1.9
Max 8-hour Conc. (ppm)	2.2	2.3	1.6	2.2	1.7	1.7
Nitrogen Dioxide						
1-Hour > 0.18 ppm (S)	0	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.088	0.083	0.091	0.084	0.069	0.062
Inhalable Particulates (PM-10)						
24-hour > 50 $\mu g/m^3$ (S)	22/57	26/58	17/60	10/52	2/59	2/60
24-hour > 150 $\mu g/m^3$ (F)	0/57	1/58	0/60	0/52	0/59	0/60
Max. 24-Hr. Conc. ($\mu g/m^3$)	89	211+	73	64	61	61
Ultra-Fine Particulates (PM-2.5)						
24-Hour > 35 $\mu g/m^3$ (F)	9/95	11/97	3/11	2/122	2/119	2/101
Max. 24-Hr. Conc. ($\mu g/m^3$)	55	72.1	43.5	37.8	39.3	65

\+ wildfire event; S = State Standard; F = Federal Standard
Source: South Coast Air Quality Management District;
Central San Bernardino SCAQMD Air Monitoring Station (5203)
data: www.arb.ca.gov/adam/

Air Quality Planning
The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards. The SoCAB could not meet the deadlines for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SoCAB, the agencies designated by the governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times as earlier attainment forecasts were shown to be overly optimistic.

The 1990 Federal Clean Air Act Amendment (CAAA) required that all states with air-sheds with “serious” or worse ozone problems submit a revision to the State Implementation Plan (SIP). Amendments to the SIP have been proposed, revised and approved over the past decade. The most current regional attainment emissions forecast for ozone precursors (ROG and NOx) and for carbon monoxide (CO) and for particulate matter are shown in Table III-4. Substantial reductions in emissions of ROG, NOx and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

Table III-4. SOUTH COAST AIR BASIN EMISSIONS FORECASTS (Emissions in tons/day)

Pollutant	2008[a]	2010[b]	2015[b]	2020[b]
NOx	917	836	667	561
ROG	632	596	545	525
CO	3,344	3,039	2,556	2,281
PM-10	308	314	328	340
PM-2.5	110	110	111	113

[a] 2008 Base Year.
[b] With current emissions reduction programs and adopted growth forecasts.
Source: California Air Resources Board, California Emissions Projection Analysis Model, 2009

The Air Quality Management District (AQMD) adopted an updated clean air "blueprint" in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal one-hour ozone standard which was revoked late in 2005 and replaced by an 8-hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8-hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8-hour standard. As previously noted, the attainment date was to "slip" from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard. Because projected attainment by 2021 requires control technologies that do not exist yet, the SCAQMD requested a voluntary "bump-up" from a "severe non-attainment" area to an "extreme non-attainment" designation for ozone. The extreme designation will allow a longer time period for these technologies to develop. In April 2010, the EPA approved the change in the non-attainment designation from "severe-17" to "extreme." This reclassification sets a later attainment deadline, but also requires the air basin to adopt even more stringent emissions controls. In other air quality attainment plan reviews, EPA has disapproved part of the SCAB PM-2.5 attainment plan included in the AQMP. The 2012 AQMP update that was recently adopted by the SCAQMD focuses heavily on PM-2.5 control and is expected to remedy identified PM-2.5 planning deficiencies.

<u>Air Quality Impacts</u>

Thresholds of Significance
Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Primary Pollutants

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust during project construction.

Secondary Pollutants

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer models. Analysis of significance of such emissions is based upon a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact. Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact significance independent of chemical transformation processes. Projects with daily emissions that exceed any of the following emission thresholds summarized in Table III-5 are recommended by the SCAQMD to be considered significant under CEQA guidelines.

Table III-5. DAILY EMISSIONS THRESHOLDS

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SOx	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

<u>Impact Analysis – Air Quality</u>

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant. Ambient air quality within the Project Area is administered by SCAQMD's Air Quality Management Plan (AQMP). The AQMP provides a program for obtaining attainment status based on existing and future air pollution emissions resulting from employment and residential growth projections. Maintenance of the water recharge facilities are infrequent, and do not increase employment and population standards. On-going operations and maintenance activies will not cause a real change in air emissions. Therefore, the Project will not conflict or obstruct implementation of SCQAMD's AQMP.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less Than Significant with Mitigation Incorporated. Proposed maintenance activities are small in scale, short in duration and infrequent and will not violate an air quality standard or contribute substantially to an air quality violation. The proposed maintenance activities will result in low level and temporary emissions to the local airshed. Emissions could be caused by soil disturbance, dust, combustion pollutants, construction equipment, and vehicles. Oxides of nitrogen (NO_x) and carbon monoxide (CO) emissions would primarily result from the use of maintenance, and construction equipment. Fugitive dust emissions would primarily result from grading, vegetation maintenance, and other maintenance activities.

Daily construction activity emissions will be below SCAQMD CEQA thresholds. However, since control of emissions is required by the AQMP to the extent feasible, the mitigation measures III-1 and III-2 will be implemented during land disturbing maintenance activities. With implementation of these mitigation measures potentially significant adverse construction air quality impacts can be reduced to a less than significant impact level.

c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

Less Than Significant with Mitigation Incorporated. Proposed maintenance activities are small in scale, infrequent in occurrence for short durations and will not result in a cumulatively considerable net increase of criteria pollutants that are in nonattainment under a federal or state standard. Criteria pollutants in nonattainment in the South Coast Air Basin include ozone (O_3) and particulate matter (PM_{10} and $PM_{2.5}$) (SCAQMD 2013). With implementation of the above mitigation measures potentially significant adverse impacts relative to cumulative increases of O_3 and PM_{10} and $PM_{2.5}$ can be reduced to a less than significant impact level.

d) *Expose sensitive receptors to substantial pollutant concentrations?*

Less-Than Significant Impact. Sensitive receptors are those facilities used by a population group that is more susceptible to the effects of air pollutants. Sensitive receptors include residences, schools, playgrounds, child-care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. There are no sensitive receptors located within the vicinity of proposed maintenance activities. None of the proposed maintenance activities are close to residences, schools, medical facilities, and parks.

e) *Create objectionable odors affecting a substantial number of people?*

Less-Than-Significant Impact. It is possible that odors could be released during proposed maintenance activities. Paints used for graffiti removal could release objectionable odors but are used in small quantities that can be transported on a utility vehicle and would not be used in concentrations substantial enough to significantly impact areas surrounding the maintenance areas. In addition, the proposed maintenance locations are in remote areas located away from residences and other occupied facilities, so a limited number of people would be affected. The potential release of odors associated with construction equipment and maintenance and cleaning materials would be minor, temporary, and unlikely to impact a substantial number of people; therefore, impacts are considered less than significant.

Mitigation Measures

III-1 Fugitive Dust Control: if the material produces a significant amount of dust

- ***Suspend the use of all construction equipment during first-stage smog alerts.***
- ***Prepare and implement a high wind dust control plan.***
- ***Apply water as needed to unpaved road surfaces and active maintenance areas.***
- ***Cover all stock piles with tarps at the end of each day or as needed.***
- ***Provide water spray during loading and unloading of earthen materials.***
- ***Cover all trucks hauling dirt, sand, or loose material or require all trucks to maintain at least two feet of freeboard***

III-2 Exhaust Emissions Control

- ***Utilize well-tuned off-road construction equipment; tune-ups shall be provided every 90 days.***
- ***Enforce 5-minute idling limits for both on-road trucks and off-road equipment.***

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?		X		
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Environmental Setting

As stated previously in this document, maintenance of the Santa Ana facilities have been evaluated by previous, Santa Ana EIRs. The analysis below relates to the Mill Creek facilities.

The Mill Creek facilities consisting of 57 existing percolation basins and two settling ponds with connecting channels, are located adjacent the south side of Mill Creek, within the City of Redlands, San Bernardino County, California. The Facilities extend along an approximately 2.35 mile section of Mill Creek and encompass an area of approximately 450 acres, which has a general east to west orientation.

The Project area is bounded by State Highway – 38 at its southernmost boundary and Mill Creek at its northernmost boundary. The westernmost boundary of the Project area is approximately at Crafton Avenue and the easternmost boundary of the site is approximately 0.77 miles east of Garnet Street and 360 feet west of Julian Drive W. The Mill Creek Facilities can be located on the U.S. Geological Survey (USGS) – Yucaipa Quadrangle, 7.5-Minute Series topographic map within Sections 16, 17, 20, and 21 of Township 1 South, Range 2 West. The surface elevation of the Mill Creek Facilities site ranges from approximately 2,190 feet above mean sea level (AMSL) at the eastern boundary of the Project area to approximately 1,720 feet AMSL at the western boundary of the Project area.

The primary plant community occurring within the Mill Creek Facilities and surrounding area is Riversidean Alluvial Fan Sage Scrub ([RAFSS] Holland community code 32720). RAFSS is a rare and sensitive plant community that is adapted to the harsh conditions of flooding. It grows on sandy, rocky alluvium deposited by streams that experience infrequent episodes of flooding. Because RAFSS is characterized by its diversity, it can also be described as an intermediate between chaparral and sage scrub habitats, in that all three vegetation communities share similar floral components. However, the distinguishing factor is that alluvial fan sage scrub undergoes periodic scouring from frequent flooding events, creating three seral stages; pioneer, intermediate, and mature. Native plant species that occur on-site include deer weed (*Acmispon glaber*), California sagebrush (*Artemesia californica*),California croton (*Croton californicus*), California cholla (*Cylindropuntia californica*), brittlebush (*Encelia farinosa*), hairy yerba santa (*Eriodictyon trichocalyx*), California buckwheat (*Eriogonum fasciculatum*), Chaparral yucca (*Hesperoyucca whipplei*), scalebroom (*Lepidospartum squamatum*), Vasey's prickly pear (*Opuntia vaseyi*). Other habitats include riparian and sandy river wash that is found within the active flood plain of Mill Creek.

The analysis that follows this setting, incorporates the findings of nine biological resources surveys conducted previously for other projects proposed for the the vicinity of the Mill Creek facilities. The reports referenced included the following:

1. Aspen Environmental Group (Aspen). 2006 Rare Plant Survey Report for the East Branch Extension Project, Phase II, San Bernardino County, California. Aspen Environmental Group, Agoura Hills, California. Prepared for the Department of Water Resources, Unpublished Report.
2. Chambers Group 2007a. Amended Results of the Biological Reconnaissance for Area 7W (EBX II- Alt 1 /Alt 2), unincorporated community of Mentone, San Bernardino County, California. July 20, 2007.
3. Chambers Group 2007b. Focused Plant Survey Report for Seven W Enterprises. Draft.
4. Chambers Group 2007c. California Gnatcatcher Survey at Seven W Enterprises (preliminary findings).
5. Chambers Group 2007d. Jurisdictional and Wetland Delineation Report for the East Branch Extension Phase II Project.
6. Davenport, Arthur 2007. San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) Presence/ Absence & Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*) Survey, Mentone Pipeline Project. Draft.
7. ERCE1990 Phase I report, Amber Ridge California gnatcatcher study. Unpublished report prepared for Weingarten, Siegel, Fletcher Group, Inc., San Diego, California.
8. Pacific Coast Conservation Alliance (PCCA) 2006. Sensitive Avian Surveys in Support of the California Department of Water Resources East Branch Extension Project Phase II.
9. P&D Consultants (P & D) 2005. Results of the Biological Resources Reconnaissance Survey for the East Branch Extension Phase II Project. Prepared for the California Department of Water Resources, Unpublished Report.

These survey reports documented occurrences of two sensitive plant species: Parry's spineflower and Plummer's mariposa lily (P & D 2005, Aspen 2006, Chambers Group 2007b); two federally listed species, the threatened coastal California gnatcatcher (P & D 2005, PCCA 2006, Chambers Group 2007c) and the endangered San Bernardino kangaroo rat (Davenport 2007); and Critical Habitat for the and the San

Bernardino kangaroo rat within the Project area. In addition, there is also CH for the Santa Ana sucker. Other sensitive wildlife species identified within the project site to date include two-striped garter snake (*Thamnophis hammondii*), American white pelican (*Pelecanus erythrorhynchos*), great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), Cooper's hawk (*Accipiter cooperii*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), Vaux's swift (*Chaetura vaux*i), loggerhead shrike (*Lanius ludovicianus*), yellow warbler (*Dendroica petechia brewsteri*), Brewer's sparrow (*Spizella brewsteri*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), Lawrence's goldfinch (*Carduelis lawrencei*), and northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*) (P & D 2005, PCCA 2006, Chambers Group 2007c, Davenport 2007).

The CNDDB, herbaria and other available literature review resulted in a list of 18 sensitive plant species that have records of occurrence near the project site (Table IVa). Two species Robinson's pepper-grass (*Lepidium virginicum* var. *robinsoni*) and Parish's bush mallow (*Malacothamnus parishii*) have been placed within larger, more wide-spread species or varieties; *Lepidium virginicum* ssp. *menziesii* and *Malacothamnus fasciculatum* (chaparral mallow), respectively.

Table IVa. CNDDB LIST OF SPECIAL STATUS PLANT SPECIES DOCUMENTED IN THE USGS- REDLANDS AND YUCAIPA QUADRANGLES

Common Name	Scientific Name	Federal/ State Status	Occurrence Potential on site
slender-horned spineflower	*Dodecahema leptoceras*	E/E	Moderate
Santa Ana River woollystar	*Eriastrum densifolium ssp. sanctorum*	E/E	Moderate
marsh sandwort	*Arenaria paludicola*	E/E	Low
Nevin's barberry	*Berberis nevinii*	E/E	Low
salt marsh bird's-beak	*Chloropyron maritimum ssp. maritimum*	E/E	Low
Plummer's mariposa-lily	Calochortus plummerae	N/N	Present
Parry's spineflower	Chorizanthe parryi var. parryi	N/N	Present
California satintail	*Imperata brevifolia*	N/N	Moderate
Wild peppergrass	*Lepidium virginicum ssp. meziesii*	N/N	Moderate
smooth tarplant	*Centromadia pungens ssp. laevis*	N/N	Low
white-bracted spineflower	*Chorizanthe xanti var. leucotheca*	N/N	Moderate
Payson's jewel-flower	*Caulanthus simulans*	N/N	Low
Peruvian dodder	*Cuscuta obtusiflora var. glandulosa*	N/N	Low
chaparral mallow	*Malacothamnus fasciculatus*	N/N	Moderate
Hall's monardella	*Monardella macrantha ssp. hallii*	N/N	Low
Parish's gooseberry	*Ribes divaricatum var. parishii*	N/N	Low
southern jewel-flower	*Streptanthus campestris*	N/N	Low
Parish's checkerbloom	*Sidalcea Hickmanii* ssp. *Parishii*	N/R	Presumed Absent

E = Listed as Endangered
T = Listed as Threatened
N = None
R = Rare

Previous focused botanical surveys determined presence of Plummer's mariposa-lily and Parry's spineflower. The 16 other special status plants listed above were determined to be absent in those previous surveys.

The CNDDB and other available literature review resulted in a list of 31 sensitive animal species that have records of occurrence within or near the Project site (Table IVb).

Table IVb. CNDDB LIST OF SPECIAL STATUS ANIMAL SPECIES DOCUMENTED IN THE USGS- REDLANDS AND YUCAIPA QUADRANGLES

Common Name	Scientific Name	Federal/State Status	Occurrence Potential on site
Birds:			
southwestern willow flycatcher	*Empidonax traillii extimus*	E/E	Moderate
least Bell's vireo	*Vireo bellii pusillus*	E/E	Present
coastal California gnatcatcher	*Polioptila californica californica*	N/T	Present
western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	C/E	Low
burrowing owl	*Athene cunicularia*	N/SC	Moderate
yellow warbler	*Dendroica petechia brewsteri*	N/SC	Present
yellow-breasted chat	*Icteria virens*	N/SC	Low
loggerhead shrike	*Lanius ludovicianus*	N/SC	Present
Cooper's hawk	*Accipiter cooperii*	N/N	Present
California rufous-crowned sparrow	*Aimophila ruficeps canescens*	N/N	Present
Busck's gallmoth	*Carolella busckana*	N/N	Low
white-tailed kite	*Elanus leucurus*	N/N	Present
California horned lark	*Eremophila alpestris actia*	N/N	Present
Mammals:			
pallid bat	*Antrozous pallidus*	N/SC	Low
western mastiff bat	*Eumops perotis californicus*	N/SC	Low
western yellow bat	*Lasiurus xanthinus*	N/SC	Low
pocketed free-tailed bat	*Nyctinomops femorosaccus*	N/SC	Low
San Bernardino kangaroo rat	*Dipodomys merriami parvus*	E/N	Present
Stephens' kangaroo rat	*Dipodomys stephensi*	E/T	Low
NW San Diego pocket mouse	*Chaetodipus fallax fallax*	N/SC	Present
San Diego desert woodrat	*Neotoma lepida intermedia*	N/SC	Present
Los Angeles pocket mouse	*Perognathus longimembris brevinasus*	N/SC	High
American badger	*Taxidea taxus*	N/SC	High
Reptiles:			
silvery legless lizard	*Anniella pulchra pulchra*	N/SC	Present
orange-throat whiptail	*Aspidoscelis hyperythra*	N/SC	High
coast horned lizard	*Phrynosoma blainvillii*	N/SC	High
California mountain kingsnake	*Lampropeltis zonata (parvirubra)*	N/SC	Low
two-striped garter snake	*Thamnophis hammondii*	N/SC	Present
San Bernardino ringneck snake	*Diadophis punctatus modestus*	N/N	High
Amphibians:			
Sierra Madre yellow-legged frog	*Rana muscosa*	E/N	Low
Fish:			
Santa Ana speckled dace	*Rhinichthys osculus* ssp. *3*	N/SC	Low

E = Listed as Endangered
T = Listed as Threatened
C = Candidate for Federal Listing
N = None
SC = Species of Special Concern

Previous focused wildlife surveys determined presence of 13 species listed above. The Project area is not within the range or completely lacks suitable habitat for 11 species listed above. The remaining seven species have a moderate to high potential for occurrence on site.

<u>Impact Analysis – Biological Resources</u>

a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Less Than Significant with Mitigation Incorporated. Biologically sensitive areas, including USFWS-designated critical habitat and areas occupied by federally and/or state-listed threatened and endangered species, exist within the local area and immediate vicinity and within or adjacent to some of the proposed maintenance areas. This analysis focuses on the potential project-related effects on the following regulated resources:

- Non-wetland Waters of the U.S. and State streambed
- San Bernardino kangaroo rat
- San Bernardino kangaroo rat – critical habitat
- Santa Ana sucker (*Catostomus santaannae*) critical habitat
- Slender-horned spineflower
- Santa Ana River woollystar
- Coastal California gnatcatcher
- Least Bell's Vireo

As stated in the environmental setting, Critical habitat (CH) has been designated over parts of the project area for the federally listed Bernardino kangaroo rat [SBKR] and Santa Ana sucker [SASU], and according to the survey information gathered for various projects in the vicinity, SBKR and CAGN occur in the Project area. In addition, the project site is within the Mill Creek floodplain and is mostly adjacent to the active Mill Creek channel. Mill Creek is a jurisdictional river with a largely modified geomorphological and hydrological process where water is and has been diverted for over a century. Certain project components may result in alteration of jurisdictional streambed. Impacts to jurisdictional waters usually require regulatory approvals from the one or more of the following regulatory agencies: U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or California Department of Fish and Wildlife (CDFW).

This project is the continued maintenance of existing facilities that have been maintained as proposed since before the 1930's. Maintenance activities include vegetation maintenance, access road grading, and erosion control. Vegetation maintenance involves the removal of vegetation that is directly obstructing access around basins and along access roads, as well as activities such as mowing, trimming, and the periodic removal of trees or large shrubs, grasses, or other vegetation. Proposed activities would include soil stabilization/sediment control, and erosion-control measures, which intuitively could directly impact special status species and/or their habitat. But when put into historical and existing context, the maintenance activities have not prevented sensitive species from occupying the site. In fact SBKR, CAGN, Plummer's Mariposa lily and Parry's spineflower are present. With that said, maintenance is performed in a manner that minimizes impacts.

This project will not change the existing condition and thus will not adversely modify SASU or SBKR CH. This project will not affect species that have been determined absent such as the slender-horned spineflower or Santa Ana River woollystar. But, since there is a potential to affect SBKR, CAGN and other sensitive species, measures IV-1 through 8 will be implemented to reduce that potential impact to less than significant.

c) *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

No Impact. There are no wetland vegetation, or federally protected wetlands as defined by Section 404 of the Clean Water Act in the Project area. Therefore, there is no impact to these resources.

d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Less Than Significant Impact. Continued maintenance activities would affect only small, geographically-dispersed areas at any one time; these activities would not interfere substantially with the movement of wildlife species, although maintenance activities may interfere with the movement of individual animals. Maintenance activities would not substantially alter the physical characteristics of the Project area, and would not introduce new permanent uses that could interfere with an established wildlife corridor. This project does not introduce a new activity or disturb a new area. Maintenance has been on-going for nearly a century and will not impede the use of native wildlife nursery sites. Project operations would include routine maintenance. Given the periodic but infrequent nature of operational activities, less than significant impacts would occur.

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Less than Significant. The District would comply with applicable ordinances protecting biological resources. However, there are no special trees (i.e. heritage oaks) or other biological resources protected by local ordinances currently identified within the Project area.

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

No Impact. There is no impact to this criterion because there are no adopted Habitat Conservation Plans, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan in the Project area.

Mitigation Measures

IV-1 **Restricting Disturbance:** **Restriction of staging, construction activities, equipment storage, and personnel to existing disturbed areas (such as roads, pads, or otherwise disturbed areas) to the maximum extent feasible. Clearly marking and delineating the limits of the staging areas as well as the maintenance corridors/zones in the field and graphically on all facility as builts / blueprints. Personnel and equipment will be prohibited in native habitats outside the maintenance corridors/zones limits. Biologically sensitive areas, including individuals or colonies of listed and non-listed sensitive plant species and wildlife species, will be identified and delineated in the field prior to ground disturbance and will be clearly marked graphically so they will be avoided to the maximum extent feasible. The Districts will minimize the maintenance corridor width to the maximum extent feasible in sensitive habitats.**

IV-2 ***Employee Training: Implementation of an employee training program presented by a qualified biologist familiar with all affected species, habitats, and permit conditions. The***

employee training program will include a discussion of each species, all applicable laws, the permit conditions, and the potential penalties for violating regulations/permits.

IV-3 Onsite Monitoring: Biological monitoring of habitat clearing activities and removal of sedentary animals, both common and sensitive, within the maintenance corridors/zones limits prior to clearing. This will require a qualified biologist to be at the location of habitat removal before clearing to attempt to remove animals where visible and, during removal activities, to ensure that no inadvertent impacts to adjacent habitats occur. Periodic inspections of the maintenance corridors/zones limits will also reduce the potential for inadvertent impacts to adjacent habitat.

IV-4 Listed Species Protection Measures: SBKR exclusionary may be installed where warranted and appropriate to reduce the potential for SBKR entering the maintenance area. Specifications for the fencing will be particular to the goal of SBKR exclusion and will be approved by the USFWS. Following the installation of fencing (if it is appropriate to do so), the animals within the maintenance zone will be trapped and released within adjacent suitable habitat outside of the zone. These methods will be approved by the USFWS. Construction activities will be limited to daylight hours (~7:00 A.M. to 6:00 P.M.). During night hours, no activities that would unnaturally increase the light or noise within adjacent occupied habitat will occur.

IV-5 Listed Species Avoidance Measures: In areas where the SBKR, CAGN, or least Bell's vireo are present, either within or adjacent to the maintenance zone, the District will avoid or reduce construction activities in the vicinity of occupied habitat during the breeding season. Avoidance will take place from March 14 through July 30. In areas where preconstruction sensitive species surveys and other seasonally limited activities, the District will prepare a calendar of when such activities need to be accomplished and incorporate this into their maintenance schedule. Additionally, a Nesting Bird Management Plan will be prepared to address survey requirements, buffers, etc. to ensure compliance with applicable regulations. With respect to SBKR, preconstruction surveys will be performed prior to each maintenance event, irrespective of the time of year.

IV-6 Invasive Species Control: Where appropriate and feasible, the area to be disturbed will be treated to kill invasive exotics species and limit their seed production before initiating any earthmoving activity with the objectives of (1) preventing invasive species from spreading from the disturbance area, and (2) removing weed sources from the salvaged topsoil. Herbicides will be used only by a licensed herbicide applicator and may require notification to property owners or resource agencies. The treatment will be completed before earthmoving in order for this mitigation to have its intended effect (e.g., the treatment would need to occur before target species set seed). Target species include species of tamarisk or salt cedar (Tamarix spp.), fountain grass (Pennisetum setaceum), and giant reed (Arundo donax). These species establish in habitats suitable for SBKR and have the potential to spread further into adjacent suitable habitat areas. Initial control will be established using a combination of physical removal and herbicide treatment using appropriate environmental safeguards. After Initial treatment follow-up monitoring and treatments will occur annually or as needed in ensuing years.

IV-7 Topsoil Salvage and Replacement: In areas where vegetation and soil are to be removed, the topsoil will be salvaged and replaced, where practicable. This may be accomplished using two lifts, the first to salvage the seed bank, and the second to salvage soil along with soil biota in the root zone. Soil will be stockpiled in two areas near the Project site, with the seed bank labeled to identify it. Topsoil will be replaced in the proper layers after final reconfiguration of disturbed areas. Where presence of extensive deposits of boulders and cobbles limit the opportunity to salvage topsoil and make the abovementioned

procedure infeasible, Muni/Western will salvage available surface material and stockpile it for replacement on the surface of the restored area. Stockpiles will be covered if the soil is to be left for an extended period to prevent losses due to erosion and invasion of weeds.

IV-8 Habitat Enhancement & Rehabilitation: Monitoring procedures and performance criteria will be developed to address revegetation (where it is appropriate) and erosion control. The performance criteria will consider the level of disturbance and the condition of adjacent habitats. Monitoring will continue for 3-5 years, or until performance criteria have been met. Appropriate remedial measures, such as replanting, erosion control or weed control, will be identified and implemented if it is determined that performance criteria are not being met. Install fencing around entry points and post signage to control unauthorized trail use by off-road vehicles and garbage/trash dumping.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?		X		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?		X		
c) Directly or indirectly destroy a unique paleon-tological resource or site or unique geologic feature?		X		
d) Disturb any human remains, including those interred outside of formal cemeteries?		X		

Environmental Setting

CRM Tech conducted a site specific cultural records search for this project to identify any historical, cultural, archaeological and paleontological resources located within or immediately adjacent to the project area. The scope of the study included a historical/archaeological resources records search, historical background research, and consultations with Native American and local community representatives

A search of the soil types on-site was conducted using the U.S. Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS), Web Soil Survey. Soils on-site consisted primarily of Soboba Stony Loamy Sand, with Psamments and Fluvents in the riverbed. The Soboba series consists of deep soils formed in alluvium from predominantly granitic rock sources. Sobaba soils are on alluvial fans and flood plains and have slopes of 0 to 30 percent. The Soboba series is described as excessively drained with very slow runoff and very rapid permeability. Psamment and Fluvents: Psamments and Fluvents are entisols with sandy parent material with the texture of fine sand or coarser to depths of two meters or more. Psamments and Fluvents are typically found on flood plains and are characterized as excessively drained with very slow runoff and very rapid permeability.

The Project area in both the Santa Ana River and Mill Creek have the potential to contain historic and/or cultural resources. However, the water recharge basins have been maintained in place for several decades.

The Santa Ana EIRs included mitigation measures that would reduce the impacts to less than significant.

Impact Analysis – Cultural Resources

a) *Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?*

Less Than Significant With Mitigation. Historic resources have been noted in the Project area, based on various studies performed for the Santa Ana wash plan and other projects in the area. However, resources are not likely to be found in the Project area due to the nature of the area having been historically used as water conservation facilities. However, to ensure that there will no impact in the event of an unanticipated discovery of a resource, mitigation measure V-1 is required.

b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?*

Less Than Significant With Mitigation. Archaeological resources have been noted in the Project area, based on various studies performed for the Santa Ana wash plan and other projects in the area. However, resources are not likely to be found in the Project area due to the nature of the area having been historically used as water conservation facilities. However, mitigation measure V-1 will be implemented to address the accidental discovery of archaeological resources during ground disturbing activities. This is a contingency measure to address such discoveries during maintenance activities.

c) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Less Than Significant With Mitigation. The project area is located near Mill Creek on a floodplain consisting primarily of Quaternary recent alluvium (Qal) (Campbell and Jennings, 1969). Such deposits are approximately less than 11,000 years old and are not generally conducive to the formation and/or preservation of fossils. Fossils are not typically found in the uppermost layers of the deposits found on site, surface grading or very shallow excavations in the project area are unlikely to encounter significant paleontological resources. No further paleontological resources investigation is necessary for the proposed project. Mitigation measure V-1 will be implemented to address the accidental discovery of paleontological resources during ground disturbing activities. This is a contingency measure to address such discoveries during maintenance activities.

d) *Disturb any human remains, including those interred outside of formal cemeteries?*

Less Than Significant With Mitigation. Due to the project area being within a historic floodplain, the potential for discovery of human remains is considered extremely low. There are no known human remains within the vicinity of the project site, and no conditions exist that suggest human remains are likely to be found on the project site. It is not anticipated that implementation of the project would disturb human remains, including those interred outside of formal cemeteries. However, ground-disturbing activities, such as grading or excavation, have the potential to disturb human remains. If human remains are found, those remains would require proper treatment, in accordance with applicable laws. The Native American Graves Protection and Repatriation Act (NAGPRA) includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking. State of California Public Resources Health and Safety Code Section 7050.5-7055 describes the general provisions regarding human remains, including the requirements if any human remains are accidentally discovered during excavation of a site. As required by state law, the requirements and procedures set forth in Section 5097.98 of the California Public Resources Code would be implemented, including notification of the local police, County Coroner, notification of the Native American Heritage Commission and consultation with the by the Native American Heritage Commission to be the “most likely descendant.” If human remains are found during excavation, excavation must stop in the vicinity of the find and any area that is reasonably suspected to overlie adjacent remains until the County Coroner has been called out by local law enforcement, and the remains have been investigated and appropriate recommendations have been made for the treatment and disposition of the remains. As this is existing law and a mandatory measure to manage an accidental exposure of human remains, no mitigation is required to ensure human remains can be properly managed if encountered on this project site.

Mitigation Measures

V-1 ***If buried cultural material are discovered during any earth-moving operations associated with the Project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Any cultural resources accidentally exposed shall be properly evaluated; curated; and documented.***

V-2 ***If buried fossil remains are discovered during any earth-moving operations associated with the Project, all work in that area should be halted or diverted until a qualified paleontologist can evaluate the nature and significance of the finds. Any fossils recovered shall be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.***

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
• Strong seismic ground shaking?			X	
• Seismic-related ground failure, including liquefaction?			X	
• Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

Environmental Setting

The Project Area is located within the Bunker Hill-San Timoteo Basin portion of the San Bernardino Valley in the transition area between the Peninsular Ranges Geomorphic Province and Transverse Range Geomorphic Province. This geomorphic province is typified by northwest to southeast trending mountain ridges, valleys, and faults parallel and sub-parallel to the San Andreas Fault. The surficial geologic material of the Peninsular Ranges Geomorphic Province generally consists of igneous and metamorphic rocks. The Mill Creek area, in the upper Santa Ana Valley, California, is bounded on the north by the Santa Ana River, on the east by the San Bernardino Mountains, on the south by the Crafton Hills, and on the west by the west edge of the city of Redlands. Large alluvial fans underlie most of the area, but other landforms include alluvial benches, dissected alluvial hills, plains, terraces, and bedrock hills which locally protrude above the floor of the valley (L. C. Butcher and W. L. Burnham, 1959).

In southwestern San Bernardino County there are least four major active or potentially active fault zones, including the San Jacinto Fault; the Chino-Corona segment of the Elsinore Fault; the Cucamonga Fault, and the San Andreas Fault. In addition there are numerous minor faults associated with these larger faults. Combined, these fault systems represent substantial seismic hazards (Muni/Western, 2004). As such, the Project Area is located in a seismically active area between the San Andreas and San Jacinto fault systems. Motion on both faults is transferred laterally from one fault to another and then back again. The San Bernardino County General Plan Geologic Hazard maps identify the Mill Creek area as generally susceptible to liquefaction.

The Santa Ana EIRs determined that operation and maintenance of the District's Santa Ana facilities would have no impact on Geology and Soils. Therefore, no further analysis of the Santa Ana facilities is required

Impact Analysis – Geology and Soils

a) *Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*

- *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*
- *Strong seismic ground shaking?*
- *Seismic-related ground failure, including liquefaction?*
- *Landslides?*

Less Than Significant. Several faults exist within the region that have the capability of producing a magnitude 6.7 or higher earthquake. The site is not located along an Alquist-Priolo earthquake fault. The site is underlain by young unconsolidated alluvium, and groundwater is approximately 200 feet below ground surface (bgs). The County of San Bernardino has designated the Project Area as being subject to liquefaction. The project area has not been identified as being subject to landslides.

The Santa Ana and Mill Creek facilities have been operated as groundwater recharge basins and facilities for the past several decades. No changes in the operation of the facilities are proposed. The nature of the facilities does not create exposure to seismic hazards. Therefore, there is a less than a significant impact to continuing routine maintenance and operations.

b) *Result in substantial soil erosion or the loss of topsoil?*

Less Than Significant. Maintenance of the facilities will require the removal of sediment that has built up in the basins and diversion facilities that reduces the function of the water diversion and recharge facilities. The District monitors the water inflow and water recharge, and performs maintenance to achieve the optimum level. The soil is generally re-used for bank stabilization or for road maintenance. Therefore, there is no net loss of the topsoil, nor does the maintenance result in substantial soil erosion.

c) *Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?*

Less Than Significant. The water recharge facilities are located within very young alluvium where groundwater is anticipated to be approximately 200 feet bgs, and the potential for liquefaction has been identified. However, the project is to continue to maintain existing water recharge facilities as they have been maintained since the 1930's. Therefore, the impact of this criterion is less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

No Impact. The young alluvium found within the project area has low to no shrink-swell potential (expansive soils). The City of Redlands or San Bernardino County General Plans do not identify the Project area as having expansive soil. The Project is not designed for human habitation; therefore, there is no impact.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The project does not propose the use of septic tanks or alternative wastewater disposal systems. Therefore, there is no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Background

"Greenhouse gases" (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." These greenhouse gases contribute to an increase in the temperature of the earth's atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation in some parts of the infrared spectrum. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. GHG statues and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California's reputation as a "national and international leader on energy conservation and environmental stewardship." It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Requires the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40%, from business as usual practices by 2020.
- Dictates that any local initiatives must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and from increased structural energy efficiency.

Greenhouse Gas Emissions Significance Thresholds

In response to the requirements of SB97, the State Resources Agency developed guidelines for the treatment of GHG emissions under CEQA. These new guidelines became state laws as part of Title 14 of the California Code of Regulations in March, 2010. The CEQA Appendix G guidelines were modified to include GHG as a required analysis element. A project would have a potentially significant impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or

- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility. Emissions identification may be quantitative, qualitative or based on performance standards. CEQA guidelines allow the lead agency to “select the model or methodology it considers most appropriate”. The most common practice for transportation/combustion GHG emissions quantification is to use a computer model such as CalEEMod, as was used in the ensuing analysis. The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise. The California Air Resources Board (ARB) has developed an interim significance guideline for industrial projects or 7,000 metric tons of CO_2-equivalent annual emissions.

Greenhouse gas emissions from the District’s operations come from the use of various machines and vehicles. The vehicles and machines are used to maintain the ponds and to ensure adequate operations of the District’s facilities. The district currently uses the following operating vehicles/machines:

- 2008 Ford F150
- 2003 Chevrolet Suburban
- 2014 Ford F150
- John Deere 60
- Case 570N XT

The District occasionally contracts other miscellaneous vehicles for its maintenance and operations. The CO_2 use by the District’s operations is summarized in the following table. It is also compared a theoretical CO_2 use, which consists of a scenario in which water infiltrated through the District’s spreading basin alternatively obtained through the State Water Project (SWP) system. The comparison displays that a total of 3077 lb of CO_2 is saved per acre-ft of water by maintaining the current District’s operation over obtaining water from the SWP.

Table VII-1. CO_2 USE BY THE DISTRICT'S OPERATIONS

Inputs:			
Vehicle Type	**2008 Ford F150**		
Fuel Economy	14	gpm	
Type of Fuel	Gasoline		
Conversion Factor	19.64	lb CO_2/gal of fuel	← from U.S. Energy Information Administration
Mileage	12000	mi/yr	
Annual Water Recharge	15722	ac-ft/yr	← Yearly Average Recharge
Outputs:			
Carbon Footprint Rate	275	lb CO_2/mi	
Yearly Carbon Footprint	3299520	lb CO_2/yr	
Inputs:			
Vehicle Type	**2003 Chevrolet Suburban**		
Fuel Economy	12	gpm	
Type of Fuel	Gasoline		
Conversion Factor	19.64	lb CO_2/gal of fuel	← from U.S. Energy Information Administration
Mileage	2000	mi/yr	
Annual Water Recharge	15722	ac-ft/yr	← Yearly Average Recharge
Outputs:			
Carbon Footprint Rate	236	lb CO_2/mi	
Yearly Carbon Footprint	471360	lb CO_2/yr	
Inputs:			
Vehicle Type	**2014 Ford F150**		
Fuel Economy	17	gpm	
Type of Fuel	Gasoline		
Conversion Factor	19.64	lb CO_2/gal of fuel	← from U.S. Energy Information Administration
Mileage	10000	mi/yr	
Annual Water Recharge	15722	ac-ft/yr	← Yearly Average Recharge
Outputs:			
Carbon Footprint Rate	334	lb CO_2/mi	
Yearly Carbon Footprint	3338800	lb CO_2/yr	

Impact Analysis

a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

b) *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

Less Than Significant. The proposed project will generate a small volume of GHG emissions, but the proposed project's emissions will not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing emissions of greenhouse gases. Thus, the proposed project will have a less than significant conflict with any such plans, policy or regulation. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?		X		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			X	
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?		X		

Environmental Setting

The Department of Water Resources (DWR) conducted a Phase I Environmental Site Assessment (ESA) for the East Branch Extension Phase II (EBX-II) project in 2008, which addressed hazards located in the vicinity of the Mill Creek facilities.

The EBX-II project proposed to construct approximately six miles of 72 and 78-inch pipeline between the District's Foothill Pumping Station, located at Cone Camp and Greenspot roads, to the proposed Citrus

Reservoir located at San Bernardino and Opal avenues. The DWR identified four potential routes, of which all of the proposed routes would traverse the immediate vicinity of the Mill Creek spreading basins. The Phase I report addressed potential hazards that existed along the proposed EBXII routes in and around the Mill Creek area. (DWR, 2008).

The Redlands Municipal Airport, a small craft public airport, is located approximately 1.5 mile east of the Mill Creek facilities and approximately 1.5 miles south of the Santa Ana River facilities.

The Santa Ana EIRs identified that maintenance of the District's facilities would have less than significant to no impact with respect to this category. And though the potential for hazardous material impacts is low, mitigation measures were identified to protect the watershed in the event of an accidental spill during maintenance activities. No further analysis of the Santa Ana facilities is required.

Impact Analysis

a) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

Less Than Significant. Some hazardous materials that could be used during operation and maintenance activities may include gasoline, diesel fuel, oil, solvents, and lubricants associated with havey equipment and other vehicles used for operations and maintenance activities. These materials will be transported, used, and disposed of in accordance with applicable laws, regulations, and state and local protocols designed to protect the environment, workers, and the public. No acutely hazardous materials (as defined in Title 22 Cal. Code Regs. § 66260.10) will be used for the project.

b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

Less Than Significant. Limited quantities of hazardous materials will be used during operation and maintenance activities including gasoline, diesel fuel, oil, solvents, and lubricants associated with the heavy equipment and vehicles and used for operation and maintenance activities. Reasonably foreseeable upset and accident conditions may include minor spills and/or drips. However, District employees are trained to properly prevent and clean up minor spills, as well as familiar with protocols to manage larger spills should they occur. Therefore, the impact of risk of upset by a potential release of hazardous waste is less than significant due to the limited quantities used.

c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

No Impact. There is no existing or proposed school within one-quarter mile of the Project site. Therefore, there is no impact.

d) *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

Less Than Significant with Mitigation. The Project area has been utilized for water conservation/water spreading for nearly four decades. The DWR Phase I report identified potential hazards that existed along the proposed EBXII routes in and around the Mill Creek area. (DWR, 2008).

The Phase I ESA revealed issues of concern in regards to the past usage of the District property, which had previously been a portion of the former Lockheed Propulsion Company (LPC). The Santa Ana Regional Water Quality Control Board (SARWQCB), under Investigation Order 94-1 1 and Clean up and Abatement Orders 94-37, 97-58 and 01-56, requires Lockheed Martin Corporation to test and monitor the groundwater for Trichloroethylene (TCE) and perchlorate, byproducts from chemicals used to make rocket motors and fireworks. The report also identified five petroleum/chemical tanks within the Mentone Citrus Orchard, east of the Mill Creek basins that require proper disposal by the landowner. The District monitors water quality in the area as part of its routine operations and maintenance activities. Therefore, because the project is to operate the water conservation basins within the existing facility footprint, it is unlikely that this activity would expose hazardous materials from these identified sites and areas of concern.

However, due to the known presence of sites that are subject to Cleanup and Abatement Orders, mitigation is required to reduce the potential impacts to less than significant (VIII-1 through VIII-3). These mitigation measures are the same as or similar to those found in the Wash Plan EIR (LSA, 2008) for consistency and ease of the District's implementation.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?*

Less Than Significant. The Redlands Municipal Airport exists within 2 miles of the District's facilities. Maintenance activities will not result in a safety hazard for those working or residing in the project area.

f) *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*

No Impact. There are no private airstrips in the project area. Therefore, there is no impact.

g) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

No Impact. The District's facilities are located in undeveloped areas, and do not involve roads or other infrastructure that would impair implementation of, or physically interfere with, and adopted emergency response evacuation plan. Therefore, there is no impact.

h) *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

Less Than Significant With Mitigation Incorporated. The facilities are located in areas where low-lying coastal sage scrub and ruderal vegetation exists, and sparks from equipment may ignite vegetation. However, the project areas are not identified as being within a high fire area as designated by Cal Fire. Additionally, the basins are generally kept free of vegetation, and the network of bladed roads act as a fire break in the event of a fire. The closest residential areas to the District's facilities lie approximately one-quarter of a mile south of the District's Mill Creek facilities. The District's equipment maintenance program includes the use and inspection of spark arrestors on all equipment, maintains fire suppression equipment in vehicles, and has trained operations personnel on the proper use of the fire suppression equipment. And though the District has operated these facilities for decades mitigation measure VIII-5 is incorporated to reduce the potential risk to less than significant;

<u>Mitigation Measures</u>

VIII-1 The Department of Toxic Substances Control (DTSC)and San Bernardino County Fire Department Hazardous Materials Division shall be immediately notified in the event malodorous or discolored soils, liquids, containers, or other materials known or suspected to contain hazardous materials and/or contaminants are encountered during activities associated with the proposed project. Earthmoving activities in the vicinity of

said material shall be halted until the extent and nature of the suspect material is determined by qualified personnel (as determined by the DTSC). The removal and/or disposal of any such contaminants shall be in accordance with all applicable local, State, and Federal standards

VIII-2 ***The Department of Conservation, Division of Oil, Gas, & Geothermal Resources shall be immediately notified in the event that a previously unrecorded well is discovered during the course of activities associated with the proposed project. Earthmoving activities in the vicinity of said material shall be halted until the extent and nature of the suspect material is determined by qualified personnel (as determined by the Department of Conservation, Division of Oil, Gas, & Geothermal Resources) and any necessary remedial action is completed. The removal and/or disposal of any such contaminants shall be in accordance with all applicable local, State, and Federal standards.***

VIII-3 ***In the event of any identification of or spill of hazardous materials and/or contaminants in the Planning Area, the party whose activity resulted in the spill or release shall notify the District of the location, extent, and nature of the spill or release. The District shall thereupon assess the depth to groundwater in the area of the release, and if it appears that groundwater tables are high enough to create a potential for exposure of the groundwater table to the spill or release, will modify its recharge operations as much as feasible to prevent groundwater table intersection with the identified spill or release.***

VIII-4 ***When Red Flag Warnings are issued by the National Weather Service, the District will not operate equipment, or allow smoking within the District's water conservation facilities.***

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?			X	
b) 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)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite?			X	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?			X	
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
f) Otherwise substantially degrade water quality?			X	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			X	
j) Inundation by seiche, tsunami, or mudflow?			X	

Environmental Setting

The District's facilities are located within the Santa Ana River Hydrologic Unit, within the hydrological boundary of the South Coast Hydrologic Region. The Santa Ana River watershed encompasses more than 2,800 square miles in northwestern Riverside County, Orange County, southwestern portion of San Bernardino County, and a small portion of Los Angeles County. The watershed originates on the San Gorgonio Peak in San Bernardino County, drains southwesterly towards northwestern Riverside County and Orange County into the coastal plain and finally into the Pacific Ocean at Newport Beach. The principal tributaries include the San Timoteo, Reche, Mill, Plunge, City, East Twin, Waterman Canyon, Devil Canyon, and Cajon Creeks and University Wash from the San Bernardino Mountains. The Santa Ana River Hydrologic Unit is under the jurisdiction of the Santa Ana Regional Water Quality Control Board, Region 8. Generally the water quality from Mill Creek and the Santa Ana River are the highest in the Santa Ana Watershed because they are low in TDS and there is minimal development in the watershed above the District's diversions. The District routinely monitors water quality.

Lockheed Propulsion Company, a division of Lockheed Martin Corporation, was located in the vicinity of the Mill Creek facilities in the 1970s. Lockheed operated, produced, tested, and disposed of solid rocket propellants. As a result, trichloroethylene (TCE) and ammonium perchlorate were detected in groundwater, and have negatively affected groundwater quality. The District routinely monitors the extent of the groundwater plume.

The City of Redlands receives some of its water from the Mill Creek watershed, which is treated at the Henry Tate Water Treatment Plant (WTP) located on Highway 38 east of Mentone, and the Santa Ana River watershed, which is treated at the Hinckley WTP located north of Mentone.

The Seven Oaks Dam, a 500-foot earthen dam across the Santa Ana River, was constructed between 1993 and 2000 in response to major floods in the mid 20th century. Fill for the dam was excavated directly from the Santa Ana River canyon directly below the dam, which now is part of the District's water conservation facilities. The Dam protects the Santa Ana watershed from the massive flood events such as those that occurred in the 1960s. The quality of water released from the Dam varies. During high flows, especially as flows are increasing, water quality is reduced as turbidity levels increase. Once the flows have stabilized, the water tends to clear. The District adjusts its operations and maintenance of the facilities, based on the water quality testing. For example, it does not divert water for spreading when turbidity levels are high.

The Santa Ana EIRs determined that maintenance activities in the Santa Ana facilities have less than significant to no impact to hydrology issues. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

a) Violate any water quality standards or waste discharge requirements?

Less Than Significant. The California State Water Resources Control Board (SWRCB) requires that entities whose construction projects disturb 1 acre of soil or more obtain coverage under the National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit [CGP]; Water Quality Order 2009-0009-DWQ). Construction activities include clearing, grading, and ground disturbances such as trenching, stockpiling, or excavation. However, the CGP specifically exempts routine maintenance activities performed to restore the original line, grade, or capacity of the facility. So although the District's activities will disturb more than 1 acre of soil as defined by the CGP, the District's routine maintenance is exempt from obtaining coverage under the CGP, per the maintenance exemption allowed by the CGP.

Routine maintenance primarily includes short-term grading and localized excavation of basins and road networks, vegetation removal, and the use of limited quantities of herbicides. Potential water quality impacts during maintenance activities include potential erosion/sedimentation and accidental hazardous material discharge during equipment and vehicle refueling, cleaning and repairs. If not properly controlled, sedimentation or spilled hazardous substances could potentially be washed off-site during a rainstorm, blown off during high winds, or could possibly percolate into the subsurface, where it could eventually reach the water table. If loose soils, litter, vegetation debris or hazardous substances are allowed to flow off-site, nearby drainage inlets and storm drains could become clogged and could carry contaminated runoff into downstream waters, potentially resulting in adverse or significant water quality impacts.

The District's water conservation facilities along the Santa Ana River and Mill Creek are situated off the main flow course of both channels, thus creating a "closed" system for the purpose of water conservation. With the exception of the diversions, intakes and soft plugs, the Mill Creek facilities are also situated on the on the "dry side" of the southern Mill Creek levee. Because the facilities are situated off of the main flow course, there is little to no impact that sediment could be released into the downstream waters.

b) 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)?

No Impact. The purpose of the project is to divert surface water runoff to promote and maintain groundwater recharge. Therefore, the effect would be to maintain or increase groundwater supplies. Therefore, there is no adverse effect to this criterion.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite?

Less Than Significant. Since the 1930's maintenance of the facilities has included water diversion into the water recharge facilities and continued maintenance will not alter the drainage pattern of the area. .

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?

Less Than Significant. The District's existing facilities contain a series of diversion structures such as weirs and "soft plugs" that divert flow from the active main channels into a series of engineered water conservation/groundwater recharge basins, each designed to control and/or retain specific water flows. These structures have existed and been operated by the District for nearly a century. The purpose of the project is to continue the proper maintenance of these systems, to reduce a chance of a malfunction that could pose risk of surface runoff in a manner that could result in flooding onsite or offsite. Therefore, the impact is less than significant.

e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Less Than Significant. The District's existing facilities are self-contained and do not rely on municipal storm water drainage systems. Road grading and/or re-paving does not appreciably increase impermeable surface area such that it would cause runoff to exceed capacity of the existing storm water drainage system.

f) Otherwise substantially degrade water quality?

Less Than Significant Impact. This Project is to maintain existing water conservation facilities for groundwater recharge. Recharge is accomplished by diverting surface water into holding basins where it naturally seeps into the ground. A portion of the groundwater basin has tested positive for TCE and perchlorate originating from a nearby, former land use. Additionally, the District monitors water that is released from Seven Oaks Dam, which can contain higher total dissolved solids, and adjusts its maintenance activities as necessary to promote groundwater recharge and reduce the quantity of undesirable constituents from entering the groundwater. There is a less than significant impact because the groundwater basin contains undesirable constituents of concern, for which the District monitors and adjusts its operations to ensure that there are no further impacts to groundwater from the water received for recharge.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The Project does not propose to construct housing.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No Impact. No structures are proposed as part of the Project.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less Than Significant. There are no structures proposed to be constructed or maintained. The Santa Ana River facilities are located downstream of the Seven Oaks Dam. The Mill Creek facilities are located on the south side of Mill Creek, behind the levee. The proposed maintenance would occur in facilities that are near the dam and the levee. However, the types of activities proposed, and their short duration, would not increase the risk of loss, injury, or death as a result of flooding, including as a result of the failure of the levee or the dam.

j) Inundation by seiche, tsunami, or mudflow?

Less Than Significant. The potential for the failure of the Seven Oaks Dam could create inundation by ground failure. Although the District's facilities are already exposed to hazards created by the dam, maintenance of the facilities would have a less than significant impact. Proposed maintenance activities include sediment removal from water conservation basins which, if not removed, could increase the chances for mudflow from basin overflow. Therefore, the impact would be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?			X	

Environmental Setting

The Santa Ana facilities are generally located within the City of Highland; the Mill Creek facilities are located in the City of Redlands.

The Santa Ana EIRs identified that maintenance of the Santa Ana facilities resulted in less than significant and no impacts to Land Use and Planning Criterion. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

a) Physically divide an established community?

No Impact. The project involves the maintenance of existing water conservation facilities. Material excavated from the basins are utilized for facility repair or mining, and stockpiles are physically not large enough to divide any community. Therefore, there is no impact.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The project is maintenance of existing water conservation facilities, as they have been maintained for the past several decades. The facilities are compatible with the land use and zoning of both the City of Highland and the City of Redlands. Therefore, there is no impact.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

Less Than Significant. There are no habitat conservation plans or natural community conservation plans that are applicable to the Mill Creek facilities. Maintenance of the Santa Ana facilities are addressed in the Upper Santa Ana Wash Land Management and Habitat Conservation Plan. Therefore, maintenance of the existing facilities do not conflict with any applicable habitat conservation plan or natural community conservation plan.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			X	
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?			X	

Environmental Setting

The project area of Santa Ana and Mill Creek are known for some of the highest aggregate values in the State of California (City of Redlands, 1995). The Upper Santa Ana Wash Land Management and Habitat Conservation Plan was designed to accommodate the extraction of mineral resources, maintenance of water conservation and flood control facilities, and the preservation of endangered species.

The historical frequent flooding of the Santa Ana River has created a high quality aggregate resource in the Planning Area. In 1987, the California Department of Conservation, Division of Mines and Geology, issued Special Report 143, Part VII, Classification of Sand and Gravel Resource Areas, San Bernardino Production-Consumption Region in which virtually all of the Santa Ana and Mill Creek areas are designated as a Class 2 Mineral Resource Zone (MRZ-2), (LSA, 2008).

The Santa Ana EIRs identified that there were less than significant to no impacts related to mineral resources. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

a) *Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

Less Than Significant. Maintenance of the water conservation basins includes the removal of sediment that has built up within the existing basins. Removal of the aggregate resources are generally performed by the mining companies. The District supports the mining operations through cooperative agreements for the mining companies to assist with the removal of the sediment, if the sediment is determined to have value. Otherwise, the sediment is either stockpiled for use by construction contractors, or re-used to make repairs on basins and roads.

b) *Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

Less Than Significant. The resources in the Santa Ana and Mill Creek facilities are identified as having a high value. For the removal of sediment, the District routinely works with mining contractors to ensure the highest and best use of any aggregate and material found within the water conservation basins. Furthermore, the use as water conservation basins does not preclude the future mining of the aggregate.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			X	
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

Environmental Setting

Sound is a physical disturbance in a medium, such as air, that is capable of being detected by the human ear. Sound waves in air are caused by variations in pressure above and below the static value of atmospheric pressure. Sound is measured in units of decibels (dB) on a logarithmic scale. The “pitch” (high or low) of the sound is a description of frequency, which is measured in Hertz (Hz). Most common environmental sounds are a composite of frequencies. A normal human ear can usually detect sounds within frequencies from 20 to 20,000 Hz. However, humans are most sensitive to frequencies in the range of 500 to 4,000 Hz.

Certain frequencies are given more “weight” during assessment because human hearing is not equally sensitive to all frequencies of sound. The A-weighted decibel (dBA) scale corresponds to the sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA. A noise level change of 3 dBA or less is barely perceptible to average human hearing. However, a 5 dBA change in noise level is clearly noticeable. A 10 dBA change is perceived as a doubling or halving of noise loudness, while a 20 dBA change is considered a “dramatic change” in loudness.

Sound from a source spreads out as it travels away from the source, and the sound pressure level diminishes with distance. Individual sound sources are considered “point sources” when the distance from the source is large compared to the size of the source (e.g., construction equipment, and turbines).

Sound from a point source radiates hemispherically, which yields a 6 dB sound level reduction for each doubling of the distance from the source. If the sound source is long in one dimension, the source is considered a "line source," (i.e., roadways and railroads). Sound from a line source radiates cylindrically, which typically yields a 3 dB sound level reduction for each doubling of the distance from the source.

The metrics for evaluating the community noise environment are based on measurements of the noise levels over a period of time. These metrics are used in order to characterize and evaluate the cumulative noise impacts. The Community Noise Equivalent Level (CNEL) represents a 24-hour A-weighted sound level average from midnight to midnight, where sound levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting.

The nearest residences exist approximately 0.5 mile south of the Mill Creek water recharge facilities.

The Santa Ana EIRs identified that there were less than significant to no impacts related to noise resources. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

a) *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Less Than Significant. The nearest residence is nearly one-half mile from the Mill Creek water spreading basins. In compliance with Section 8.06.090(F) of the City of Redlands's Noise ordinance, all grading and maintenance-related activities will be undertaken in between the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and will not be undertaken anytime on Sundays or holidays. Therefore, noise generated by the heavy equipment will not violate City ordinances standards or requirements.

b) *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

Less Than Significant. The maintenance activities would not expose persons to or generate excessive groundborne vibration or groundborne noise levels. The noise related to operations and maintenance would include those generated from the use of heavy equipment at the site or vehicles transporting materials. Examples of activities that could generate groundborne vibration include pile-driving and demolition, but these activities are not proposed as part of routine maintenance. Therefore, excessive groundborne vibrations will not occur, and the impacts will be less than significant.

c) *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

Less Than Significant. The Project is to maintain existing facilities in the manner as they have been maintained since the 1930's. The project will not introduce new noise levels or generate a substantial increase in permanent noise. Noise associated with maintenance activities would be short-term and not represent an increase in permanent noise.

d) *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

Less Than Significant. The Project is to maintain existing facilities in the manner as they have been maintained for several decades. There will be short-term generation of noise during periodic maintenance activities. The short-term noise is not substantial and reflects on-going maintenance activities, i.e. not a new noise source, and the nearest sensitive receptor is approximately than 0.5 mile from the Mill Creek spreading grounds. Therefore, the impact is less than significant.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

Less Than Significant. The Redlands Municipal Airport, a small craft public airport, is located approximately 1.5 mile east of the Mill Creek facilities and approximately 1.5 miles south of the Santa Ana River facilities. The airport operations will not expose maintenance employees to unacceptable noise levels.

f) *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

No Impact. There are no private airstrips in the vicinity of the Project. Therefore, there is no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

Environmental Setting

The project is to maintain existing water conservation facilities. The project does not involve housing, or the construction of structures for housing.

The Santa Ana EIRs identified that there maintaining the District's Santa Ana facilities had no impacts to Population and Housing criterion. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The purpose of the Project is to maintain existing water conservation facilities. The District is exercising its purpose and right to recharge the groundwater, which does not induce growth. Therefore, the Project does not indirectly induce an increase in population.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The facilities to be maintained have existed for several decades. Maintenance will occur within the footprint of the existing District facilities, and does not require new or existing housing. Therefore, the proposed project will not displace any housing, or require the construction of replacement housing.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. Maintenance is performed with workers who live in the area and does not require the construction of new or replacement housing.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIV. PUBLIC SERVICES: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?			X	
b) Police protection?			X	
c) Schools?				X
d) Recreation/Parks?				X
e) Other public facilities?			X	

Environmental Setting

The project facilities will be served by the City of Highland (Santa Ana River), and the City of Redlands (Mill Creek). The project is to maintain the existing water conservation facilities.

The Santa Ana EIRs identified that there maintaining the District's Santa Ana facilities had no impacts on Public Services. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

a) Fire protection?

Less Than Significant. The proposed project is not located within an area designated as high fire. The area contains large expanses of sage scrub habitat that has adapted it's ecology to periodic wildfires. Generally, the roads and basins are devoid of vegetation, or contain sparse vegetation, which act as natural fire breaks throughout the area. Routine maintenance activities will continue to control vegetation overgrowth and invasive species. The facilities will be served by the City of Highland and the City of Redlands fire protection services. The City of Highland also contracts with Cal Fire. The cities also participate in mutual aide in the event of a wildfire. Additionally, District equipment, such as dozers and loaders, offer fire-fighting capability. District staff are trained in how to respond to a potential fire.

The closest fire station to the Santa Ana River facilities is Station 541, located approximately 1.5 miles, at 26974 Base Line Street. The closest fire station to the Mill Creek facilities is City of Redlands Fire Department Station 263 located 2 miles east at 10 W Pennsylvania Ave. In addition to fire protection and rescue services, paramedic services are also available. No significant routine demand for fire protection or other emergency service will be necessary. The possibility exists for a work-related injury, but this type of occurrence is considered to be rare, and therefore, not create a substantial need for fire protection in the area. Therefore, the impact is less than significant.

b) Police Protection?

Less Than Significant. Maintenance of the existing facilities is not anticipated to create a significant demand, or increase the need for, police services. The general area of the facilities is part of routine patrols from the City of Highland and the City of Redlands. The potential for an incident occurring at the proposed Project site that requires police intervention is considered low based on the type of facilities and limited maintenance activities. Therefore, the impact is less than significant.

c) Schools?

No Impact. The project does not involve the use, or need for, schools. Operation and maintenance personnel are anticipated to be local residents, where their school-aged children are already utilizing the existing schools. Therefore, there will be no impact to schools.

d) Recreation/Parks?

No Impact. There are no parks or recreational facilities in the area of the facility maintenance. The proposed project does not require the use of, or interfere with, recreation and parks services. Therefore, there is no impact.

e) Other Services?

Less Than Significant. Operations and maintenance of these new facilities may involve work-related accident that would require the use of area hospitals or helicopters. On occasion, a contractor may be utilized to perform some routine maintenance activities. However, this occurrence is expected to be rare, and involve very few personnel. Public services exist in the area that can serve these types of incidents. Therefore, there is a less than significant impact to this criterion.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

Environmental Setting

The Project is to maintain existing water conservation facilities. The facilities are located in areas that are not suitable for recreation of the general public. Occasional users include hikers and equestrian.

The Santa Ana EIRs identified that there maintaining the District's Santa Ana facilities had no impacts on Recreational facilities. Therefore, no further analysis of the Santa Ana facilities is required.

Impact Analysis

a) *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

No Impact. Maintenance of water recharge facilities does not require the use of neighborhood or regional parks. Additionally, there are no recreational facilities near the Project Area. .

b) *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

No Impact. Maintenance of water recharge facilities does not require the construction or expansion of recreational facilities.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVI. TRANSPORTATION / TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			X	
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			X	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?			X	
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X

Environmental Setting

The project is to maintain existing water conservation facilities are located in areas where public access is restricted. The facilities are generally accessed via dirt roads off of Greenspot Road and Santa Ana Canyon Road, in the City of Highland and the City of Redlands.

The Santa Ana EIRs identified primarily that water conservation activities primarily involve the routing of water to percolation basins and would not generate an increase in traffic levels on the surrounding street system. Periodic use of streets to transport equipment to and from the District to the water conservation areas would not increase the traffic. Therefore, the impacts to maintenance of the Santa Ana facilities were determined to be less than significant or no impact. Therefore, no further analysis is required.

Impact Analysis

a) *Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?*

Less Than Significant. The facilities are not located on major roadways. The main access to both facilities is via Greenspot Road, and then onto local dirt access roads. Therefore, the project will not conflict with any applicable plan, ordinance, or policy that establishes the performance of the system. Since the Project does not create any inconsistency with applicable plans, ordinance or policy that establishes measures of effectiveness, there is a less than significant impact.

b) *Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?*

Less Than Significant. Maintenance activities may require that heavy equipment periodically use Greenspot Road to access the facilities. However, this will be periodic and not conflict with the congestion management program or significantly add to the existing traffic levels as maintenance crews and equipment already access the mill Creek facilities.. Therefore, the project will not conflict with an applicable congestion management program. The impact is less than significant.

c) *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*

No Impact. The Redlands Municipal Airport, a small craft public airport, is located approximately 1.5 mile east of the Mill Creek facilities and approximately 1.5 miles south of the Santa Ana River facilities. The project is to maintain the existing spreading basins and water diversion structures at grade, as they have been for the past several decades. The project will not result in a change of air traffic patterns, or increase traffic levels or create a change in location that results in safety risk.

d) *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous inter-sections) or incompatible uses (e.g., farm equipment)?*

No Impact. The project maintains existing water conservation facilities that are not located on main roads or trails. Public access is restricted to the facilities. The project does not involve creating new roads or maintaining existing roads where there would be public access. Therefore, there is no impact.

e) *Result in inadequate emergency access?*

Less Than Significant. Maintenance equipment may on occasion utilize Greenspot Road to travel to and from the facilities. However, the equipment travels short distances, and therefore does not block or create inadequate emergency access.

f) *Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?*

No Impact. Project activities would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. Therefore, there is no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f) Be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
g) Comply with federal, state, and local statutes and regulations related to solid waste?				X

Environmental Setting

The purpose of the project is to maintain existing water conservation facilities. The District utilizes existing staff, or contractors, to accomplish the maintenance activities.

The Santa Ana EIRs identified less than significant to no impact to this criterion. Therefore, no further analysis is required.

Impact Analysis

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

No Impact. The Project will not result in the generation of wastewater that will require treatment.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The Proposed Project will not result in the generation of wastewater that will require treatment. Therefore, there is no impact to this criterion.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant. The Project is to maintain existing water conservation facilities. No new impervious surfaces will be constructed as part of the maintenance. Therefore, there will be a less than significant impact.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less Than Significant. The maintenance of the existing facilities would not require additional water supplies. Maintenance activities may require water for some activities, including dust suppression. However, the District's existing entitlements and resources would be adequate to support potential demand as it has historically. The Project would have sufficient water supplies, and no new or expanded entitlements would be needed.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. The Project will not result in the generation of wastewater that will require treatment. Therefore, there will be no impact to the waste water treatment system and therefore, will not require a service determination from the wastewater treatment provider.

f) Be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less Than Significant. Maintenance activities may generate small amounts of solid waste, inert materials, and green waste. All waste would be properly disposed of in accordance with federal, state, and local statutes and regulations. Maintenance activities are not anticipated to have a significant impact on solid waste disposal needs; therefore, the proposed activities would not involve major demolition that could generate a significant amount of solid waste.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. All solid waste generated by the Project during operation and maintenance activities would be handled in accordance with all applicable Federal, State, and local statutes and regulations. No impacts would occur under this criterion. The operation of the Project consists of routine maintenance, which does not typically generate solid waste. If however, solid waste was generated by the Project during operations, it would be handled in accordance with all applicable Federal, State, and local statutes and regulations. Therefore, no impacts from operations would occur under this criterion as a result of the Project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE:				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
b) Does the project have impacts that are individually limited, but cumulatively con-siderable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?		X		
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X		

SUBSTANTIATION:

a) *Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

Based on the native habitat components and known occurrence and persistence of sensitive species within or adjacent to the Project area, this project will result in impacts to these resources. Further, tis project has potential to impact federally listed threatened or endangered species and its habitat. The purpose this initial study is to provide data in support of securing the required regulatory permits for such impacts to State or federally protected species, sensitive habitats, streambeds, natural drainages, wetlands, waters of the U.S. or waters of the State. Mitigation measures are included in this document to address the potential impacts and reduce them to a less than significant impact level. With imple-mentation of these measures, no significant adverse impacts to biological resources will result from project implementation. Similarly, no cultural resources with significant values were found in the project footprint. However, a potential exists to accidentally expose subsurface cultural resources during construction. Contingency mitigation measures are included in this document to address this potential impact and reduce it to a less than significant impact level. With implementation of the cultural resources mitigation measures (including paleontological impacts), no significant adverse impacts to cultural resources will result from project implementation.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

The evaluation contained in this document determined that potential impacts to the environment can be reduced to a less than significant level with implementation of the identified mitigation measures. The cumulative issues for which mitigation has been provided are air quality, biological resources, hazards and hazardous materials, and hydrology and water quality. Based on data provided in this document, including the type of project proposed and its location, it is concluded that implementation of the proposed project will not result in impacts that are either individually or cumulatively considerable or significant when viewed in relation to past, present or probable future projects.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The proposed project will not result in any identifiable substantial adverse effects on humans either directly or indirectly. The goal of the proposed project is to keep existing water conservation facilities reliable. The issues for which mitigation has been provided to control potential harm to humans are air quality, hazards and hazardous materials, and hydrology and water quality. With implementation of the required mitigation no substantial adverse effect to humans will result from carrying out the proposed project.

Therefore, based on the findings in this Initial Study, the District, acting as the CEQA lead agency for this proposed project, will process a Mitigated Negative Declaration (MND) as the appropriate CEQA environmental determination for the proposed project. The District will issue a Notice of Intent to Adopt a Mitigated Negative Declaration and circulate the MND package for review for the required 30-day period. Following receipt of comments, the District will compile responses to any comments and prepare a final MND package for consideration by District. Based on the final MND package, the District will consider whether implementation of the proposed project as defined in this document can proceed as determined by the District at the completion of the review process. If you or your agency comments on this proposed MND, you or your agency will be provided responses to comments and notified of the date of the District's final review and decision. A decision by the District to approve the MND would be based on all of the information available in the whole of the record before the District at the conclusion of the CEQA environmental review process for this proposed project. Completion of the CEQA review process would allow implementation of the proposed project in accordance with any approved mitigation measures and conditions of approval for the project.

SUMMARY OF MITIGATION MEASURES

Air Quality

III-1 Fugitive Dust Control - if the material produces a significant amount of dust

- Suspend the use of all construction equipment during first-stage smog alerts.
- Prepare and implement a high wind dust control plan.
- Apply water as needed to unpaved road surfaces and active maintenance areas.
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Cover all trucks hauling dirt, sand, or loose material or require all trucks to maintain at least two feet of freeboard

III-2 Exhaust Emissions Control

- Utilize well-tuned off-road construction equipment; tune-ups shall be provided every 90 days.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.

Biological Resources:

IV-1 Restricting Disturbance: Restriction of staging, construction activities, equipment storage, and personnel to existing disturbed areas (such as roads, pads, or otherwise disturbed areas) to the maximum extent feasible. Clearly marking and delineating the limits of the staging areas as well as the maintenance corridors/zones in the field and graphically on all facility as builts / blueprints. Personnel and equipment will be prohibited in native habitats outside the maintenance corridors/zones limits. Biologically sensitive areas, including individuals or colonies of listed and non-listed sensitive plant species and wildlife species, will be identified and delineated in the field prior to ground disturbance and will be clearly marked graphically so they will be avoided to the maximum extent feasible. The Districts will minimize the maintenance corridor width to the maximum extent feasible in sensitive habitats.

IV-2 Employee Training: Implementation of an employee training program presented by a qualified biologist familiar with all affected species, habitats, and permit conditions. The employee training program will include a discussion of each species, all applicable laws, the permit conditions, and the potential penalties for violating regulations/permits.

IV-3 Onsite Monitoring: Biological monitoring of habitat clearing activities and removal of sedentary animals, both common and sensitive, within the maintenance corridors/zones limits prior to clearing. This will require a qualified biologist to be at the location of habitat removal before clearing to attempt to remove animals where visible and, during removal activities, to ensure that no inadvertent impacts to adjacent habitats occur. Periodic inspections of the maintenance corridors/zones limits will also reduce the potential for inadvertent impacts to adjacent habitat.

IV-4 Listed Species Protection Measures: SBKR exclusionary may be installed where warranted and appropriate to reduce the potential for SBKR entering the maintenance area. Specifications for the fencing will be particular to the goal of SBKR exclusion and will be approved by the USFWS. Following the installation of fencing (if it is appropriate to do so), the animals within the maintenance zone will be trapped and released within adjacent suitable habitat outside of the zone. These methods will be approved by the USFWS. Construction activities will be limited to daylight hours (~7:00 A.M. to 6:00 P.M.). During night hours, no activities that would unnaturally increase the light or noise within adjacent occupied habitat will occur.

IV-5 Listed Species Avoidance Measures: In areas where the SBKR, CAGN, or least Bell's vireo are present, either within or adjacent to the maintenance zone, the District will avoid or reduce construction activities in the vicinity of occupied habitat during the breeding season. Avoidance will take place from March 14 through July 30. In areas where preconstruction sensitive species surveys and other seasonally limited activities, the District will prepare a calendar of when such activities need to be accomplished and incorporate this into their maintenance schedule. Additionally, a Nesting Bird Management Plan will be prepared to address survey requirements, buffers, etc. to ensure compliance with applicable regulations. With respect to SBKR, preconstruction surveys will be performed prior to each maintenance event, irrespective of the time of year.

IV-6 Invasive Species Control: Where appropriate and feasible, the area to be disturbed will be treated to kill invasive exotics species and limit their seed production before initiating any earthmoving activity with the objectives of (1) preventing invasive species from spreading from the disturbance area, and (2) removing weed sources from the salvaged topsoil. Herbicides will be used only by a licensed herbicide applicator and may require notification to property owners or resource agencies. The treatment will be completed before earthmoving in order for this mitigation to have its intended effect (e.g., the treatment would need to occur before target species set seed). Target species include species of tamarisk or salt cedar (Tamarix spp.), fountain grass (Pennisetum setaceum), and giant reed (Arundo donax). These species establish in habitats suitable for SBKR and have the potential to spread further into adjacent suitable habitat areas. Initial control will be established using a combination of physical removal and herbicide treatment using appropriate environmental safeguards. After Initial treatment follow-up monitoring and treatments will occur annually or as needed in ensuing years.

IV-7 Topsoil Salvage and Replacement: In areas where vegetation and soil are to be removed, the topsoil will be salvaged and replaced, where practicable. This may be accomplished using two lifts, the first to salvage the seed bank, and the second to salvage soil along with soil biota in the root zone. Soil will be stockpiled in two areas near the Project site, with the seed bank labeled to identify it. Topsoil will be replaced in the proper layers after final reconfiguration of disturbed areas. Where presence of extensive deposits of boulders and cobbles limit the opportunity to salvage topsoil and make the abovementioned procedure infeasible, Muni/Western will salvage available surface material and stockpile it for replacement on the surface of the restored area. Stockpiles will be covered if the soil is to be left for an extended period to prevent losses due to erosion and invasion of weeds.

IV-8 Habitat Enhancement & Rehabilitation: Monitoring procedures and performance criteria will be developed to address revegetation (where it is appropriate) and erosion control. The performance criteria will consider the level of disturbance and the condition of adjacent habitats. Monitoring will continue for 3-5 years, or until performance criteria have been met. Appropriate remedial measures, such as replanting, erosion control or weed control, will be identified and implemented if it is determined that performance criteria are not being met. Install fencing around entry points and post signage to control unauthorized trail use by off-road vehicles and garbage/trash dumping.

Cultural Resources

V-1 If buried cultural material are discovered during any earth-moving operations associated with the Project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Any cultural resources accidentally exposed shall be properly evaluated; curated; and documented.

V-2 If buried fossil remains are discovered during any earth-moving operations associated with the Project, all work in that area should be halted or diverted until a qualified paleontologist can evaluate the nature and significance of the finds. Any fossils recovered shall be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

Hazardous Materials

VIII-1 The Department of Toxic Substances Control (DTSC)and San Bernardino County Fire Department Hazardous Materials Division shall be immediately notified in the event malodorous or discolored soils, liquids, containers, or other materials known or suspected to contain hazardous materials and/or contaminants are encountered during activities associated with the proposed project. Earthmoving activities in the vicinity of said material shall be halted until the extent and nature of the suspect material is determined by qualified personnel (as determined by the DTSC). The removal and/or disposal of any such contaminants shall be in accordance with all applicable local, State, and Federal standards

VIII-2 The Department of Conservation, Division of Oil, Gas, & Geothermal Resources shall be immediately notified in the event that a previously unrecorded well is discovered during the course of activities associated with the proposed project. Earthmoving activities in the vicinity of said material shall be halted until the extent and nature of the suspect material is determined by qualified personnel (as determined by the Department of Conservation, Division of Oil, Gas, & Geothermal Resources) and any necessary remedial action is completed. The removal and/or disposal of any such contaminants shall be in accordance with all applicable local, State, and Federal standards.

VIII-3 In the event of any identification of or spill of hazardous materials and/or contaminants in the Planning Area, the party whose activity resulted in the spill or release shall notify the District of the location, extent, and nature of the spill or release. The District shall thereupon assess the depth to groundwater in the area of the release, and if it appears that groundwater tables are high enough to create a potential for exposure of the groundwater table to the spill or release, will modify its recharge operations as much as feasible to prevent groundwater table intersection with the identified spill or release.

VIII-5 When Red Flag Warnings are issued by the National Weather Service, the District will not operate equipment, or allow smoking within the District’s water conservation facilities.

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City of Redlands, 1995. *General Plan*.

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APPENDIX A

OPERATIONAL MANAGEMENT MANUAL

OF THE

SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT

SEPTEMBER 2012

OPERATIONAL MANAGEMENT MANUAL

WATER RECHARGE OPERATION AND MAINTENANCE
PROCEDURES

SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT
1630 W. REDLANDS BLVD. SUITE A
POST OFFICE BOX 1839
REDLANDS, CALIFORNIA 92373-2593
(909) 793-2503

SEPTEMBER 2012

History of Revisions

Summary of Revision/ Additions	Date
Initial Adoption by Board of Directors	July 8, 1992
Revised Operational Management Manual to conform of the State of California Water Code, Division 21, Water Conservation Districts, Sections 75500 To 75624, Ground Water Charge	March 1994
Revised Operational Management Manual to update procedures and methods to reflect those that are currently used. To note changes in operations with the completion of the Seven Oaks Dam and current projects.	September 2012

Acknowledgements

The 2012 OMM was prepared by Ryan Hejka with review by Daniel Cozad, Randy Carlisle and Richard Corneille. The assistance of Craig Brudin, Athena Medina, and Manuel Colunga is also acknowledged in the preparation and the production of this Manual.

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Table of Appendices

Section 1- Introduction, Background, and Plan Purpose

The District and Its Operations

The San Bernardino Valley Water Conservation District (the 'District') was formed by the San Bernardino County Board of Supervisors on January 4, 1932 to obtain water for conservation purposes (originally primarily for agriculture and more recently for all users).[1] The District has fee title ownership, water recharge easements, and/or limited use of the Bureau of Land Management lands on a total of approximately 3,650 acres. The District, as an agency, encompasses a total of 50,000 ± acres within its boundary, including these 3,650 acres.

The District has historically operated water recharge facilities in two areas -- the Santa Ana River and Mill Creek. A summary of the District's recharge facilities is provided in Section 2 of this Manual. At present, the District recharges water primarily during the rainy season in winter and spring and when water is released from the Seven Oaks Dam. Imported water has occasionally been provided by other entities for recharge by the District. The District's historical groundwater recharge is shown in Appendix 7 and Figures 4-3 through 4-5 in Section 4 of this report.

Figure 1-1 shows the regional context of the overall District Boundaries and the Bunker Hill Groundwater Basin. Figure 1-2 shows the land owned by or under easement of the District (shaded area) in the Santa Ana and Mill Creek Recharge Basins areas.

Water Conservation Districts in California are granted broad authority to exercise a variety of powers necessary to further the District's primary goal of conserving and recharging groundwater (see Water Code Appendix 1). These powers include:

- Making contracts
- Employing necessary personnel and consultants
- Acquiring property through eminent domain
- Bonds and assessments
- Constructing facilities to provide for the conservation of water
- Taking legal action where necessary to carry out its authority
- Groundwater charges
- Owning and operating related facilities in connection with the District's recharge facilities
- Operating and maintaining hydroelectric power plants
- Constructing and operating recreational facilities in connection with other District facilities
  Adopting ordinances to regulate activities within the District

The District operates and monitors various facilities as part of the Cooperative Water Project and monitors and maintains surface water and groundwater records for the upper watershed and basin. The District is also a court appointed member of the Big Bear Watermaster.

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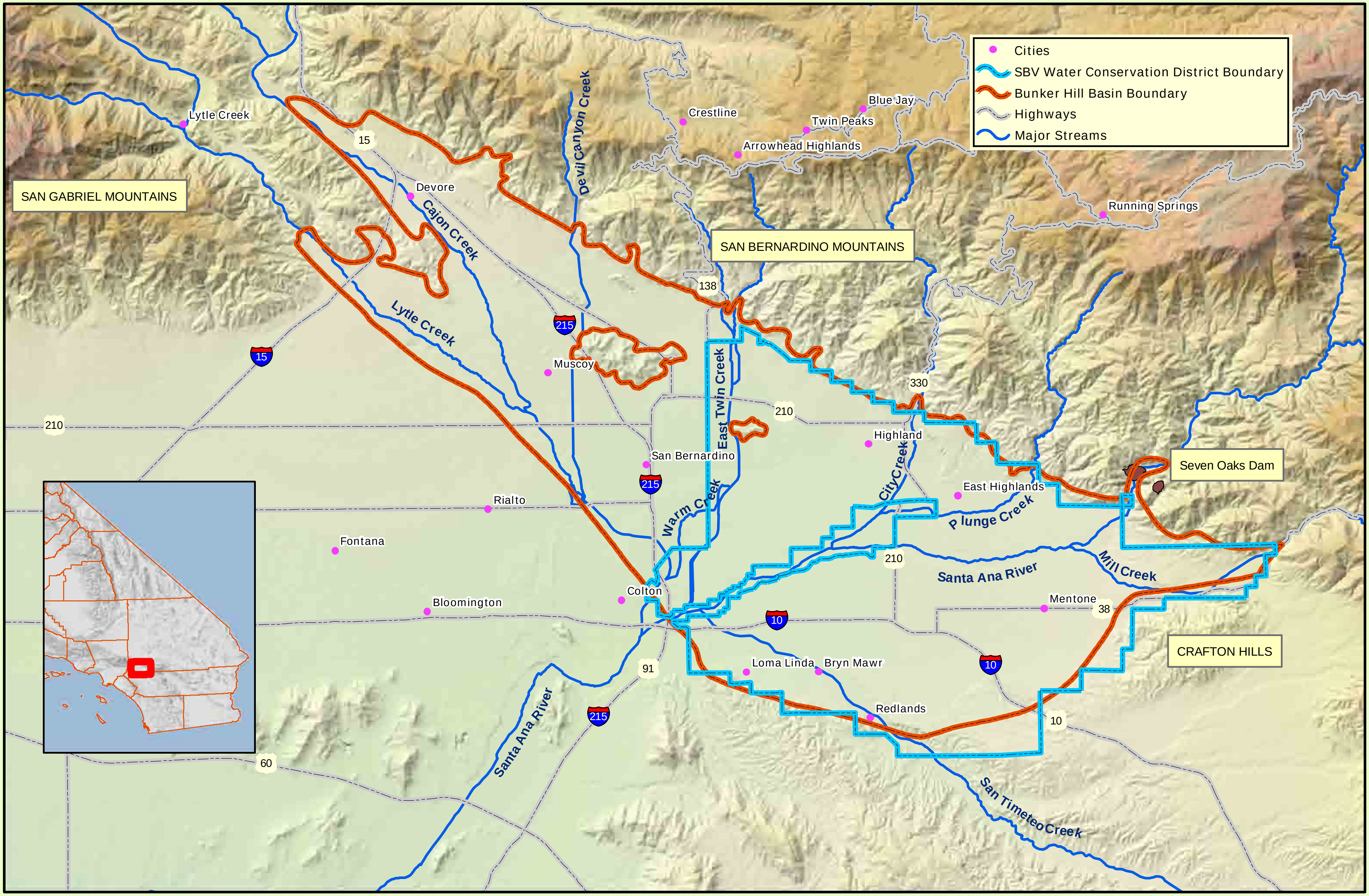
[1] A predecessor to the District, the Water Conservation Association (WCA), was formed on January 28, 1910. The WCA was dissolved in the early 1940s.



State Plane
NAD 83, Zone V, feet
10M DEM - DWR 2008
Data Sources: 2010 -11
SBVWCD, SBVMWD

0 0.5 1 2 3 Miles

Regional Context
2012
Operational Management Manual

Operational Management Manual
February 2012

Map Creation: SBVWCD GIS
L. Pierce, M. O'Carroll, R M. Hejka

Figure 1-1

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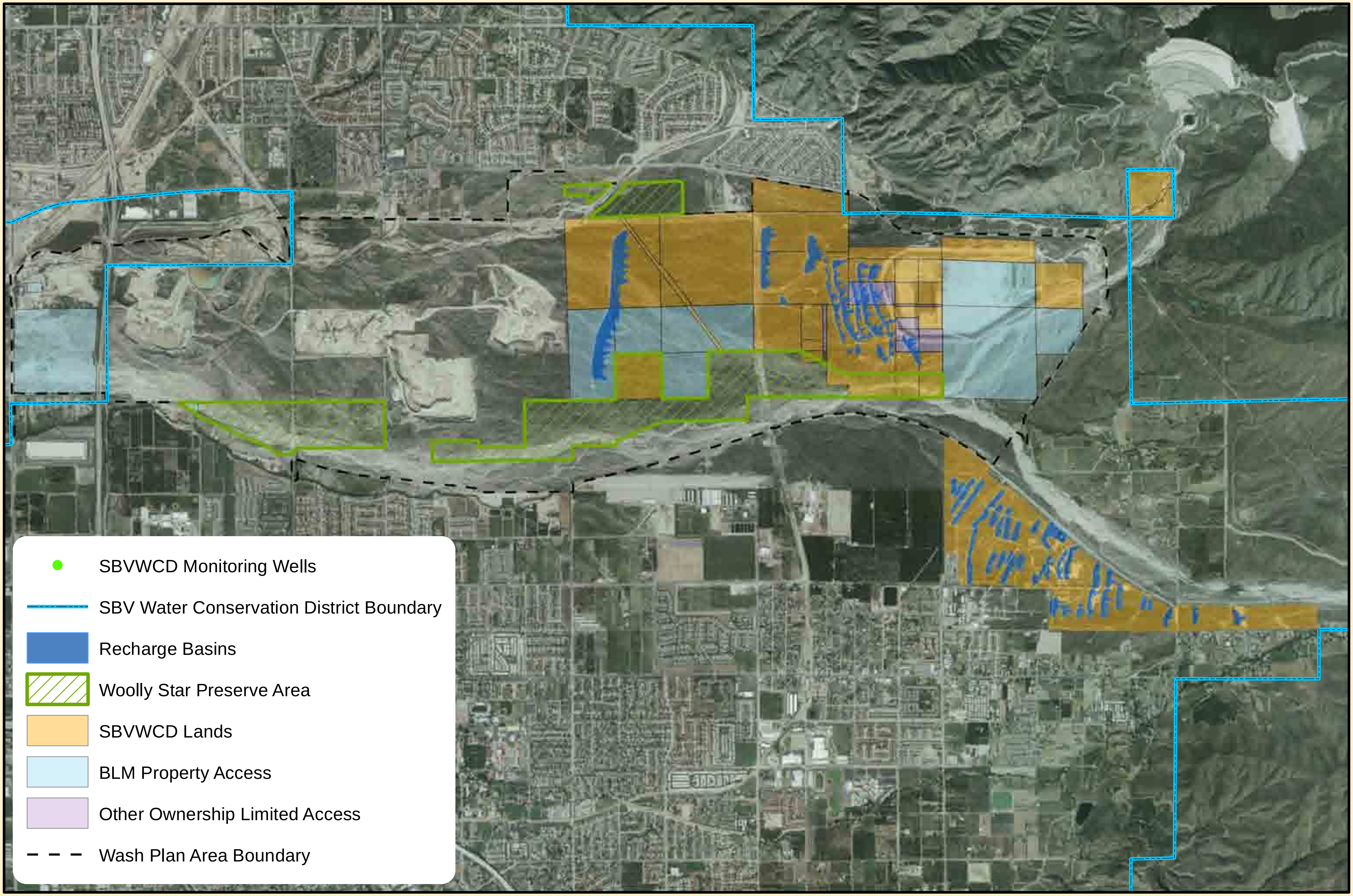

Data Sources:
SBVWCD Channels 2008
ESRI World Imagery 2006
Land Ownership (2007) SB County
USGS Geology Newest Alluvium Deposits

SBVWCD Land Ownership
2012
Operational Management Manual

Operational Management Manual
Febrauary 2012

Map Creation: SBVWCD GIS
L. Pierce, M. O'Carroll, R. Hejka

Figure 1-2

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To date, the District has not constructed or operated any recreational or hydroelectric facilities, although it retains the option to do so at a future time.

In addition, the District has a variety of powers and duties specifically related to water resources, generally providing for the construction and use of facilities to recharge water, the distribution and sale of water, and the generation and sale of hydroelectric energy (Appendix 1).

Bunker Hill Groundwater Basin

The “Bunker Hill Basin” is the term commonly used to describe the distinct groundwater basin in the San Bernardino Valley. This basin, whose boundaries are generally defined by earthquake faults (which effectively act as subsurface ‘dams,’ trapping groundwater) is bounded within the District on the north by the San Bernardino Mountains, on the southeast by the Crafton Hills and the Badlands, and on the west by the San Jacinto fault. An illustration of the Bunker Hill Basin and its sub-basins are shown in Figure 1-4. Note the District boundary does not include the entire Bunker Hill Basin.

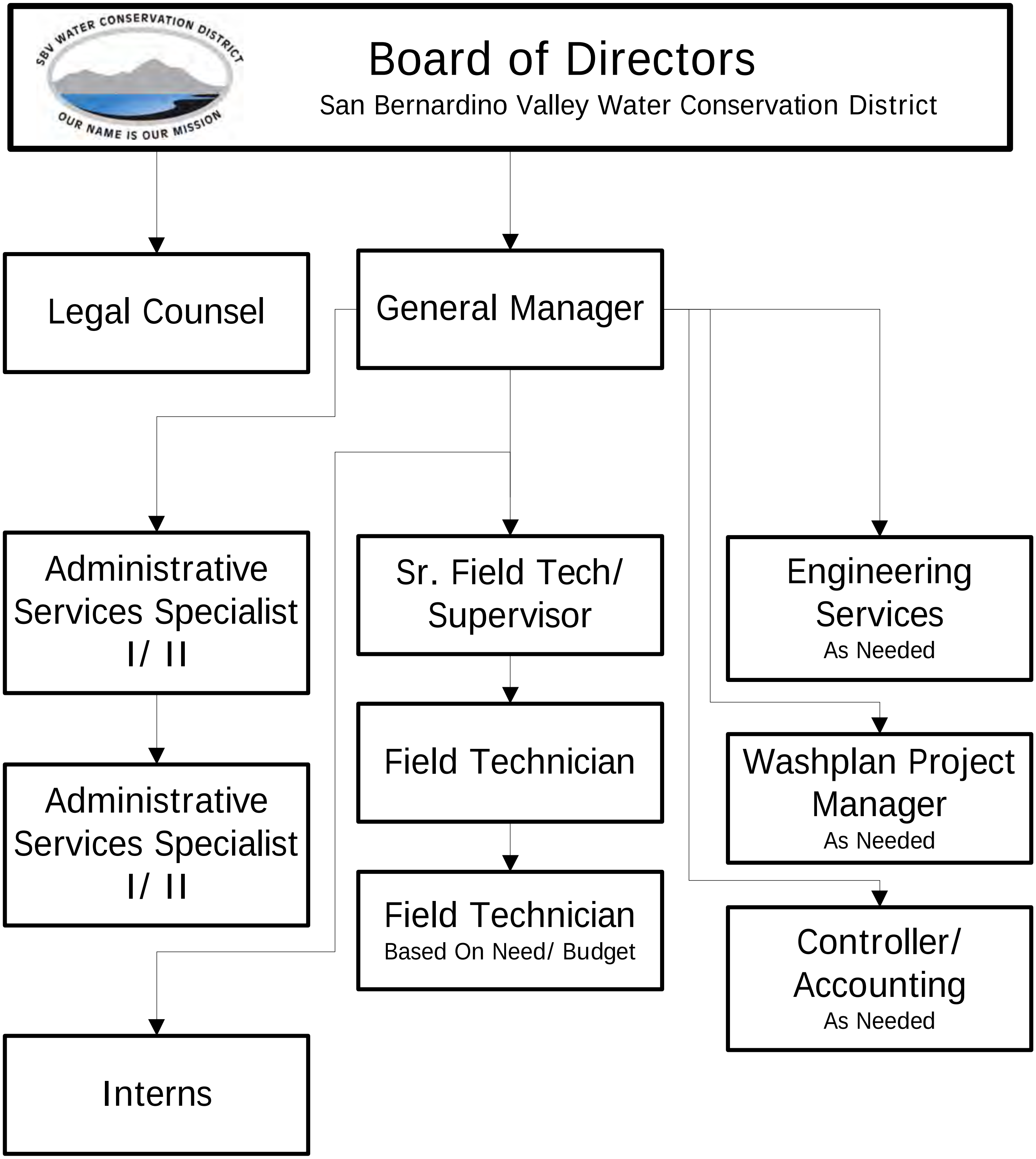
Figure 1-5 illustrates the system of earthquake faults in and around the Bunker Hill Basin. As noted above, these faults can act as barriers to the movement of groundwater; the faults in the vicinity of the District’s Mill Creek recharge facilities may restrict the movement of water into the larger Bunker Hill Basin.

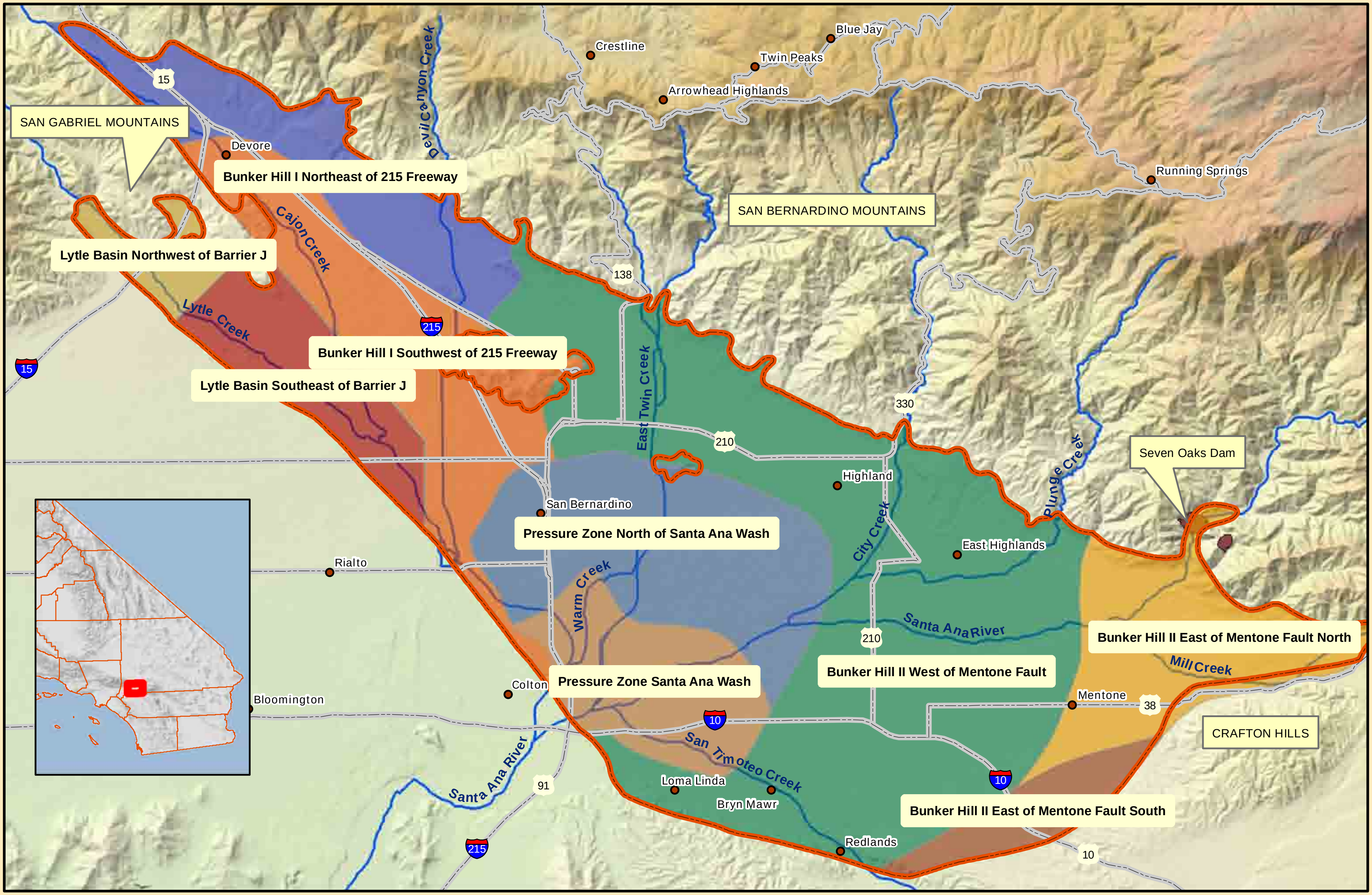
As shown in Figure 1-4, three subareas within the District boundaries and the Bunker Hill Basin have been identified. These are commonly referred to as “Bunker Hill I,” “Bunker Hill II,” and the “Pressure Zone.” The Pressure Zone is the area (discussed below) in which high groundwater levels have historically existed.

Due to a combination of factors, which include the confinement of groundwater by the earthquake faults and bedrock and annual rainfall and snowpack levels, the Bunker Hill Basin is one of a small number of such basins in California which has recently or historically had high groundwater levels. According to the U.S. Geological Survey, the “Pressure Zone” area of the Bunker Hill Basin (near the San Jacinto fault) was a marshland throughout most of history. Water levels in the Pressure Zone were above ground surface, creating a shallow marsh. In the 1870s, many wells near present-day downtown San Bernardino were artesian.

The historic pattern of high groundwater levels was changed, however, in the 1930s when farming and groundwater pumping increased at the same time that the local area experienced lower-than-normal precipitation (historical rainfall records are shown in Figure 1-6). The net result was groundwater levels declined and marshland diminished.

District Organization Chart





State Plane
NAD 83, Zone V, feet
10M DEM - DWR 2008
Data Sources: 2010 -11
SBVWCD, SBVMWD

0 0.4 0.8 1.6 2.4 Miles

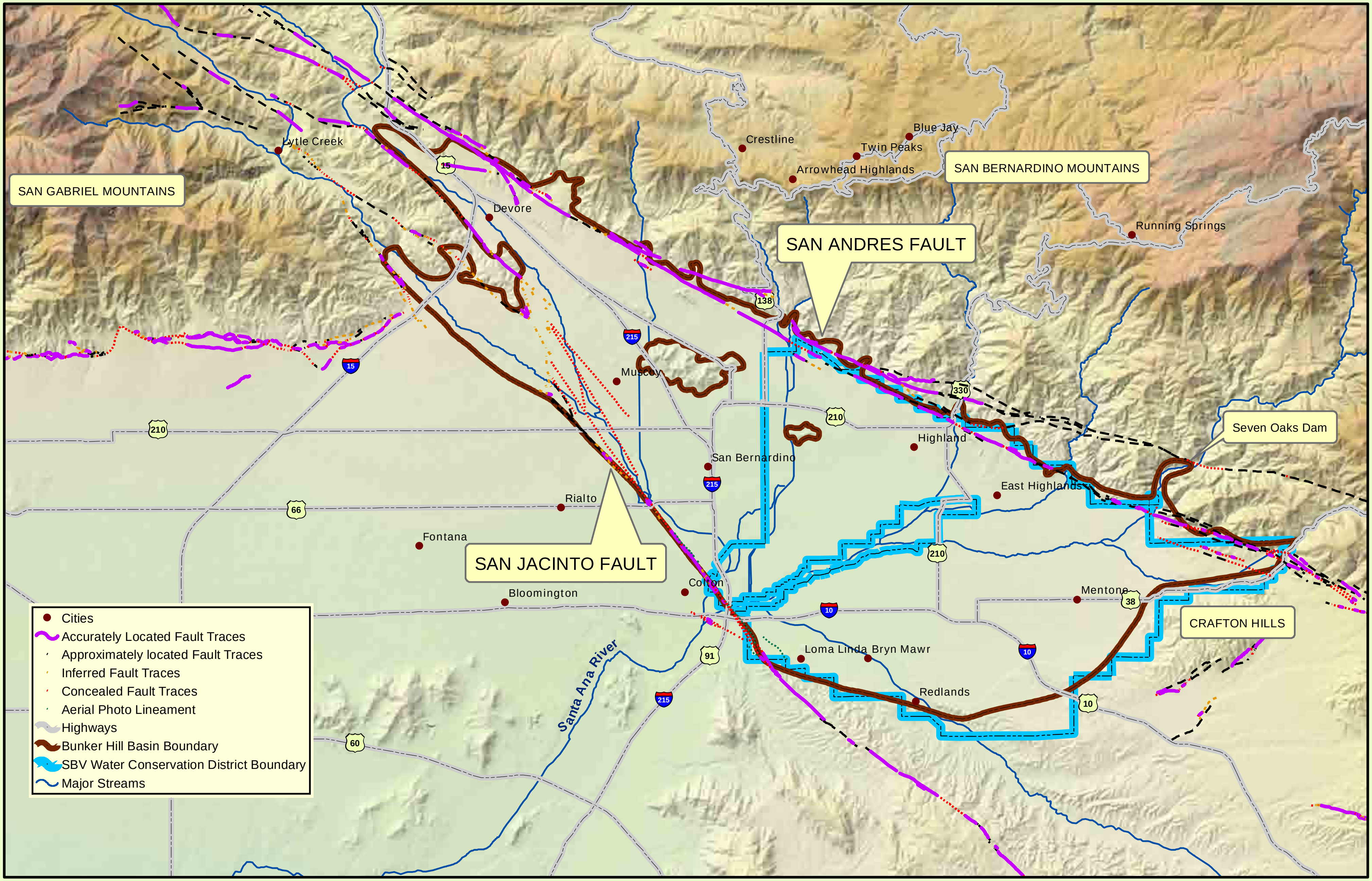
Bunker Hill SubBasins
2012
Operational Management Manual

Operational Management Manual
February 2012

Map Creation: SBVWCD GIS
L. Pierce, M. O'Carroll, R M. Hejka

Figure 1-4

X:\Operational Management Manual 2011\GIS\BunkerHillSubBasinsFig1-3



State Plane NAD 83, Zone V, feet
10M DEM DWR
SBVWCD Water Elevation
2009- 2010 - 340 Wells
IDW Interpolation Method
Watermaster Services,
All City Water Agencies
and SBVMWD

0 0.5 1 2 3 Miles

Seismic Faults
2012
Operational Management Manual

Operational Management Manual
February 2012

Source: SBVWCD GIS
L. Pierce, M. O'Carroll, R. Hejka

Figure 1-5

X:\Operational Management Manual 2011\GIS\SeismicFaultsFig1-4

Beginning in the 1960s, a change in the pattern of groundwater use and recharge occurred. In the place of the high groundwater use of the second quarter of the century, a pattern of decreased pumping and decreased evaporative loss due to plants (which had once been the largest source of groundwater loss) began and continued throughout 1960 – 70s and into the 1980s. In the 1980s this declining use of groundwater supplies coincided with increased recharge from natural and imported sources.

By the early 1980s the water level in the historic marsh area had again risen to near or above the surface. These high water levels have led to a number of problems, as described in a report prepared by the U.S. Geological Survey.[2]

"Streets have buckled, basements have been flooded, and concrete-lined flood control channels have been damaged."

As the U.S. Geological Survey report points out, high groundwater levels combined with the presence of two major earthquake faults, also raises the potential for liquefaction of soils in the downtown area of San Bernardino during an earthquake. When soils liquefy, they become somewhat like quicksand -- more liquid than solid -- with the result that buildings and other structures built on the soil can suffer extensive damage. This type of soil liquefaction caused much of the damage in San Francisco's Marina District during the 1990 Loma Prieta earthquake.[3] An illustration of how one entity has planned for earthquake damage is the recent installation by the California Department of Transportation of pier improvements at the Guthrie interchange of the I-10 and I-215 freeways which straddles the San Jacinto fault. The pier improvements are intended to help the interchange withstand earthquake damage. In addition, some of the footings of the interchange's supporting piers have been specially built to provide sufficient lateral stability if an earthquake occurs and liquefies the soils in which they rest.

Management of high groundwater levels in the Pressure Zone area of the basin is done collectively through guidance and the groundwater model prepared for the 2007 Integrated Regional Water Management Plan (IRWMP), and constant oversight by the Basin Technical Advisory Committee (BTAC), including District staff participation. This body and its Engineering Committee use tools and information provided by the members and stakeholders to forecast the water levels and maintain the basin in balance through a variety of management alternatives. Management may take several forms including reducing recharge in basins closer to the Pressure Zone, reducing overall recharge or by increasing well pumping in the Pressure Zone area to reduce water levels. Recharge targets are set by the BTAC each year in the fall or early winter based on the overall status of the basin, the modeled hydrologic conditions and expected weather conditions. The targets are for all recharge in the basin. The District contributes its information on recharge, well levels and other data to assist with this collaborative BTAC recommendation.

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[2] Ground-Water-Flow Modeling and Optimization Techniques Applied to High-Ground-Water Problems in San Bernardino, California, 1989.
[3] Ibid.

In 2009 the District prepared with San Bernardino Valley Municipal Water District (SBVMWD) the Santa Ana River Recharge Optimization Study (see the study's Executive Summary in Appendix 16). The purpose of the study was to evaluate the District's Santa Ana recharge facilities to assess their current capabilities for diversion, conveyance, and recharge. The study included extensive field work and forms the basis for the major design criteria for the enhanced recharge facilities, which are currently being designed by the SBVMWD and Western Municipal Water District (WMWD). The phased enhanced recharge facilities construction project will expand the District's facilities to divert and convey up to 500 cfs of flow from the Santa Ana River and recharge up to 80,000 AF per year. These facilities will be built by SBVMWD and WMWD and operated and maintained by the District.

In December 2011 a collaborative principles agreement was approved by the District and SBVMWD and WMWD to allow the District to make land available to SBVMWD and WMWD to build facilities and to compensate the District for the lease and for the operations and maintenance of the new facilities. A comprehensive agreement in under preparation called the Agreement to Develop and Operate Enhanced Recharge Facilities, which should be approved by the three Boards of Directors in the fall of 2012. The initial design document is shown in Appendix 3.

Development History

The District's Santa Ana River Spreading Facility is located 1.5 miles southwest of the canyon mouth where the Santa Ana River flows out into the Valley. From the initial development of the spreading facilities to its current extent today, the District's Santa Ana Facility has always encompassed this chaparral environment for the purpose of sinking water and recharging the groundwater basin. The District's first spreading basins consisted of parallel contour basins that contained water diverted from the Santa Ana River. The construction of the Seven Oaks Dam resulted in the creation of a 100 acre Borrow Pit approximately 12 to 35 feet deep and altered the original channel and basins dynamics of the spreading facility. The Borrow Pit removed approximately 9 contour basins from the Santa Ana River Facility during the construction of the dam, and resulted in one large pit where three basins were reconstructed, but with reduced percolation capacity due to removal of the alluvium.. The District has always used a combination of manual weirs and gates at this facility to move water from basin to basin.

Similar to the Santa Ana River Spreading Facility, the Mill Creek Facility has been primarily used for the purpose of groundwater recharge with the exception of when the Lockheed Propulsion Company occupied the land. The detrimental impacts to the groundwater quality (TCE, PCE and perchlorate) by Lockheed Propulsion were a result of their improper disposal of rocket propellants. As a result of the company's actions, the District in cooperation with local and regional water agencies, and the Regional Water Quality Control Board has conducted ongoing water quality sampling from wells to determine levels of harmful chemicals in the groundwater and a groundwater contaminant plume, which has migrated offsite into the Bunker Hill Basin. A number of domestic wells in the Basin have wellhead treatment system to remove the contaminants.

See Section 2 for a detailed description of both the District's Santa Ana and Mill Creek spreading facilities.

Santa Ana River

The "Water Conservation Association" (WCA) was first organized in Riverside, California on June 2, 1909. The WCA was formed with the purpose of organizing a permanent agency for the spreading of the flood waters from the Santa Ana River. WCA members were chosen from three counties, San Bernardino, Riverside and Orange. The WCA first recorded the spreading of water in 1911 at the mouth of the Santa Ana River. On October 6, 1911, they published a notice to appropriate a flow of 300 Cubic Feet per second from winter flood waters of the Santa Ana River for the purpose of conserving said waters by spreading it over certain lands near the mouth of Santa Ana Canyon near Mentone.

The early construction of the Santa Ana River Spreading Facilities first included a crude boulder dam in the Santa Ana River which was then followed by the Pratt Dam made of iron and wire. In 1930, the WCA replaced the previous dams with a more permanent structure; a diversion weir made of low rubble-concrete was built across the entire river channel. The weir was located at the canyon mouth near Southern California Edison's Santa Ana Power House No. 3 and diverted water into a concrete channel and opened unlined canal; these canals delivered water to the contour ditches of the spreading grounds that were located southwest of the power house. The largest recorded spreading of water by the WCA took place in the winter of 1921-1922 in which 80,000 acre feet of water was diverted. The WCA continued to spread water until the drought, which lasted from 1922-1936, in which they did not spread water during that time span. In combination with the drought, limitations on water spreading that were imposed by the Irvine Suit prevented the WCA from recharging enough water to meet the demands of the residents in the San Bernardino Valley.

In response to water level concerns from property owners in the San Bernardino Valley, a public water conservation district (the San Bernardino Valley Water Conservation District) was organized and held their first meeting on January 19, 1932, The District originally included 12,600 acres located in the valley east of the City of San Bernardino but quickly expanded in 1935 to encompass the 46,950 acres. Although the District's duties originally included observing, measuring and recording water and well levels within its boundaries, it eventually took an active part in spreading water and conserving any runoff not necessary for irrigation in 1935. In 1937 the District worked closely with the WCA and their spreading operations at the Santa Ana River before taking over all responsibility and work of spreading water when the WCA withdrew from all activity.

With the District in charge of spreading and monitoring water from both the Santa Ana River and Mill Creek, the District had the ability to provide for the recharge of the San Bernardino Basin (also known as the Bunker Hill Basin). The District's new land ownership and operations were not welcomed by all downstream of the Santa Ana River, especially the Irvine representatives who now felt their water supply was threatened by the District. The Water Masters as well as the Orange County Water District assisted in developing studies of the watershed to determine appropriate regulations regarding spreading and allotments to downstream water agencies.

The San Bernardino Valley Water Conservation District, with support of major water companies in the Redlands-Highlands area, decided to stand firm in protecting its rights to spread all normal flows of the Santa Ana River. This angered the representatives of Orange County, and in 1942 an agreement was called for a stipulated judgment. The 1942 judgment placed limitations regarding the spreading of water from the Santa Ana River. The District applied to the State for water rights licenses for the diversion of water, and received two licenses (see Appendix 2) for the diversion of a total of 10,400 AF per year of Santa Ana River water in 1945.

Mill Creek

In 1935 the District took over the spreading of the water on the Mill Creek debris cone (what is presently the Mill Creek Spreading Facilities) from the East Lugonia Mutual Water Company and the City of Redlands. In January of 1940, East Lugonia Mutual Water Company purchased 31 more acres to expand the spreading facility from private owner John Williams. The following year all the land was leased to the City of Redlands for a term of 10 years and 3 months for a total price of $10,000. The City of Redlands acquired the land on May 19th of 1941 as noted by the deed. In 1961, The City of Redlands then leased 400 acres of the facility in Mentone, California to the Lockheed Propulsion Company, a defunct division of the Lockheed Aircraft Corporation. Previously the Grand Central Rocket Company, Lockheed Propulsion occupied the Mill Creek Spreading Facility from 1961 to 1975. The Lockheed Propulsion Company used the facility for the testing, production and disposal of solid rocket motors and propellant that were used in commercial, military and National Aeronautics and Space Administration (NASA) applications. In 1975 the company ceased all operations. On October 16, 1979, the Redlands City Council unanimously voted to give the land ownership rights to the Conservation District, and on December 10th of the same year, Resolution No. 270 authorized the purchase for $1.00 to accept the deed.

Current Use

Both the Santa Ana River and Mill Creek spreading facilities are solely used for the purpose of groundwater recharge. The District's facilities are managed throughout the year to ensure that the Bunker Hill Ground Water Basin is efficiently recharged when water is available to the District for spreading. However, the District's land resources are also used for aggregate mining, habitat conservation, and limited recreational activities.

Purpose and Functions of This Operational Management Manual

The purpose of this Operational Management Manual is to document and provide guidelines regarding operation and maintenance procedures for District facilities. This Manual seeks to provide information useful not only to the District, but to the public and other entities. It is organized into eight sections with 14 Appendices. This Manual is intended to be a "living document" with a formal review and updating every year.

Historic Rainfall Levels

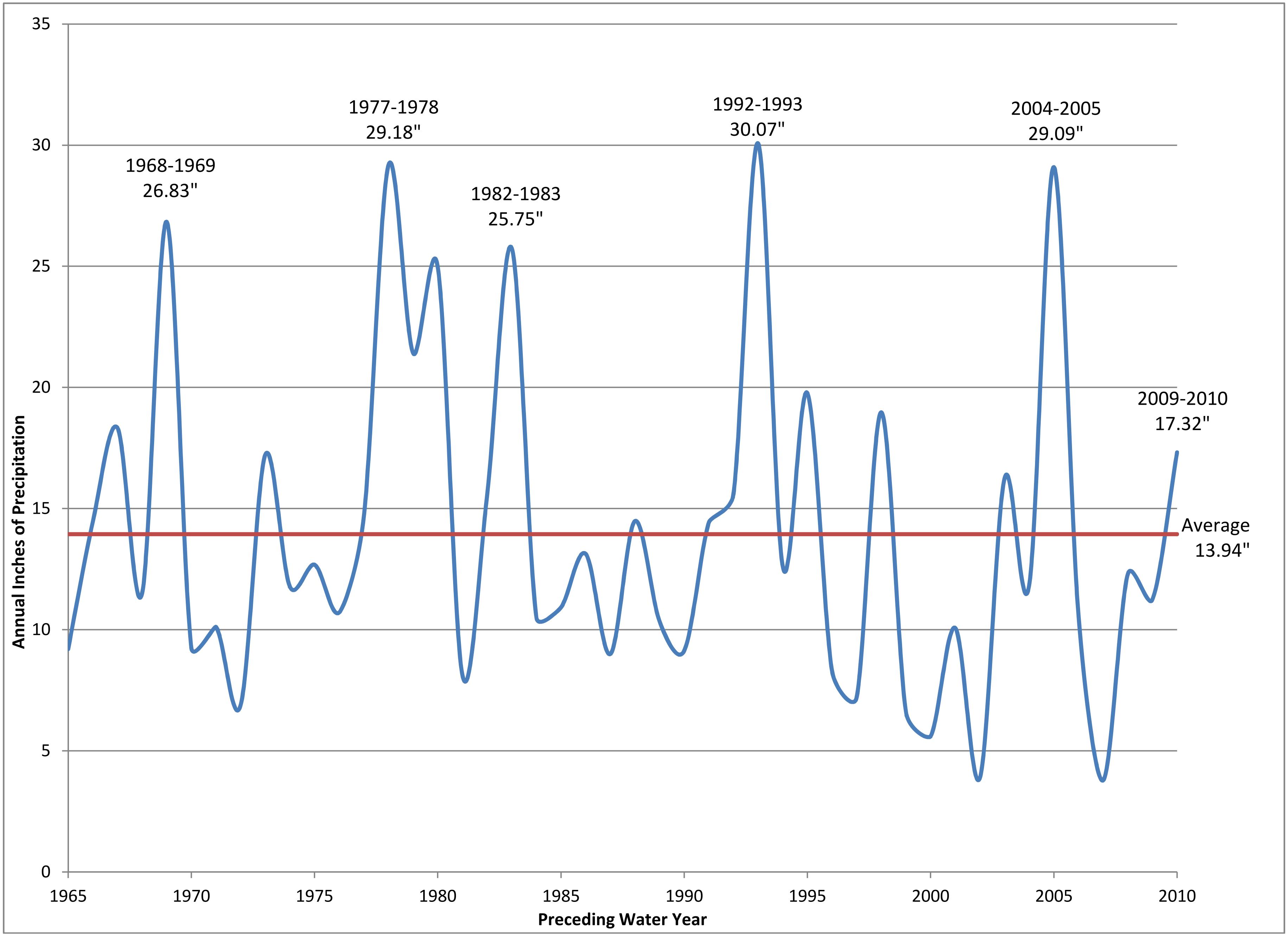


Figure 1-6

Section 2- Existing Facilities Description

Conceptual Description

The District currently operates two recharge areas. The primary recharge area is adjacent to and on the north side of the Santa Ana River, the Santa Ana Spreading Facility (Figure 2-1). After the Santa Ana River passes through the Seven Oaks Dam or from the Afterbay of SCE Power House No.3, water is diverted from the river channel through the District's Cuttle Weir intake structure to the spreading basins. River water that is not captured and diverted percolates into the River channel downstream of the District's facilities. In addition State Project Water from the SBVMWD can be recharged at these facilities.

The Santa Ana Spreading Facilities consist of 14 percolation basins, including the Borrow Pit (Basins 1 to 3 are located in the Borrow Pit). The percolation basins vary in size and are connected through manually adjustable weirs where the District can control the volume of water distributed to each basins with overflow gates. The area of each basin and its calculated volume is shown in Table 2-1. The Santa Ana basins total wet area is 64 acres. The Borrow Pit was created by the U.S. Army Corps of Engineers for the construction of the Seven Oaks Dam. Earthen material was excavated and transported to the construction site at the Dam, a process that led to the creation of The Borrow Pit.

The other recharge area, the Mill Creek Spreading Facility, is on the south side of Mill Creek and is primarily used to recharge waters from Mill Creek, although at certain times arrangements can be made with other agencies to sink their water for them. The Mill Creek Spreading Basin is made up of 2 settling ponds (1 & 2) and 57 percolation basins with a total of 66 acres of wetted basin area. The settling ponds purpose is to remove sediments before the water is distributed through overflow gates into the percolation basins (Figure 2-2).

The location of both the Santa Ana and Mill Creek facilities is show on Figure 2-3, including regional water conveyance pipelines operated by SBVMWD, Bear Valley Mutual Water Company, SCE, and others, and major locations where water is delivered. There is a great degree of flexibility of water that can be diverted to both spreading facilities.

Figures 2-4 and 2-5 show a Process Flow Diagram of Santa Ana and Mill Creek Facilities respectively. These Figures present a schematic of the diversions, channels, gate structures, pipelines, and basins, including the direction of flow from one structure or basin to another. Figure 2-4 also shows the hydraulic capacity of the each channel or structure determined during ongoing studies and designs. These are the most detailed figures of the system.

The canals and channels that divert water to the Districts recharge facilities vary in size and characteristics (line or unlined). The Main Channel that feeds the Santa Ana River facility makes its way to the spreading grounds via a diversion at the Cuttle Weir intake. The Main Channel varies in width and depth. The channel is not concrete lined except from the Cuttle Weir intake to the Sand Box and at the Parshall Flume, where flow measurements are taken by the District.

In the Mill Creek facility, the District's soft plug river intake directs flow to a concrete lined channel and to a gated diversion structure that has the ability to divert water to the District's basins or back into Mill Creek's natural river channel. Located about 200 ft below this Diversion Structure, the District's basin diversion structure directs water to the North and South Main Canals that feed the Mill Creek Spreading Facility.

The percolation basins in both the Santa Ana River and Mill Creek facilities vary in size and in their ability to spread water. These variations are dependent on site specific characteristics and dynamics such as geology and depth to groundwater. Some basins are simply larger than others and therefore have a larger water storage capacity.

Table 2-1

Summary of District Recharge Facilities

Santa Ana River Facilities

Percolation Basin Number	Footprint Area (in Acres)	Average Depth (Feet)	Volume (Acre-Feet)
1	2.46	7.00	17.20
2	2.29	8.00	16.02
3	2.53	9.00	17.69
9*	2.39	6.50	16.76
10	6.28	5.00	43.99
11	6.84	5.00	47.85
12	2.23	4.25	15.60
13	6.84	7.00	47.91
14	4.26	5.50	29.84
15	4.68	14.00	32.75
16	1.51	8.00	10.56
17	4.77	5.00	33.37
D	16.88	6.80	118.15
Subtotal	**63.96 Acres**		**447.69 Acre-Feet**

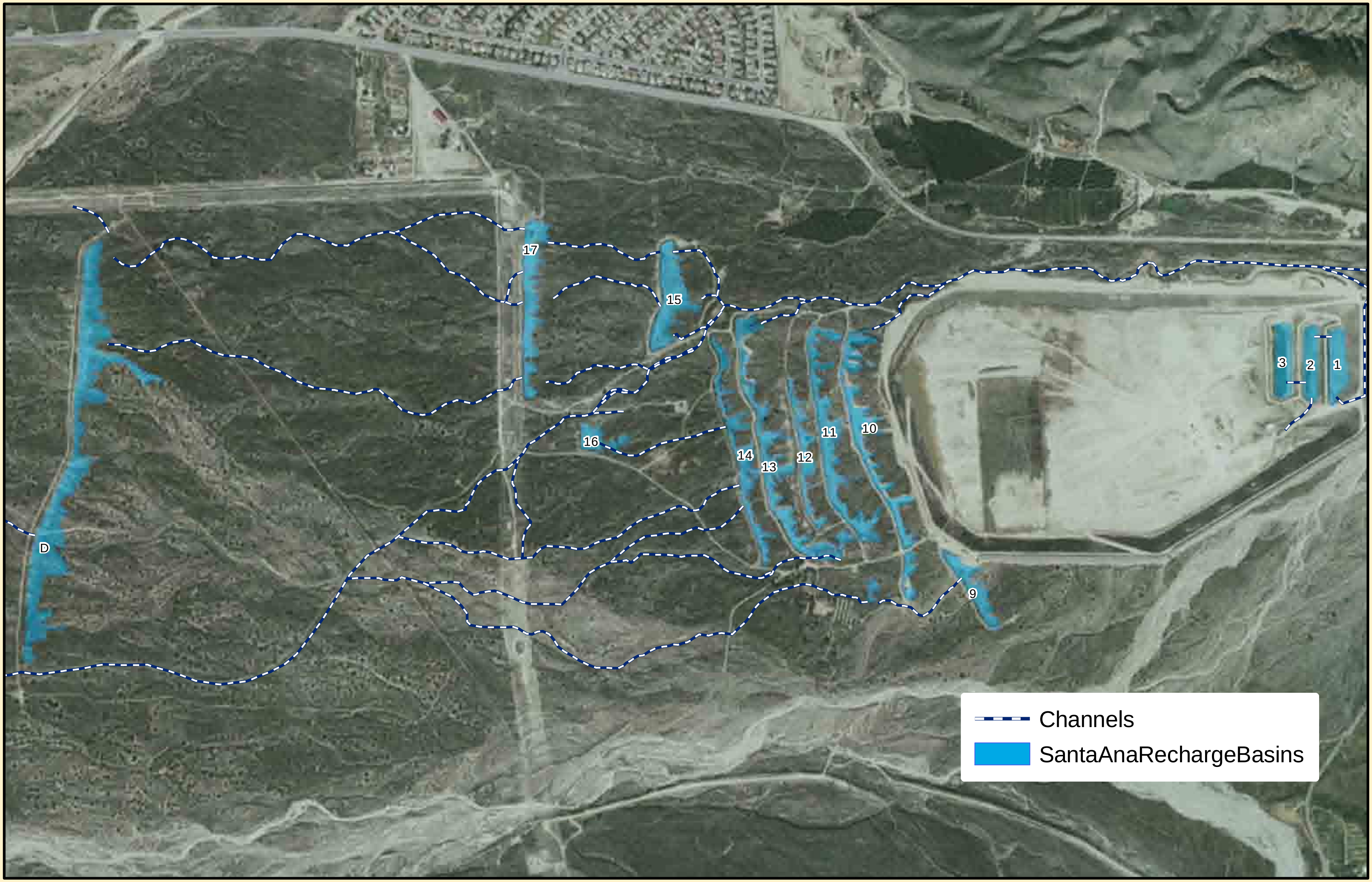
Mill Creek Facilities

Percolation Basin Number	Footprint Area (in Acres)	Average Depth (Feet)	Volume (Acre-Feet)
1	1.44	4.50	6.48
2	1.09	6.00	4.90
3	1.57	4.75	7.06
4	0.56	6.50	2.52
5	0.96	6.00	4.32
6-N	0.13	6.00	0.58
6S	1.63	8.33	7.33
7	2.78	7.67	12.51
8	2.01	6.50	9.04
9	0.86	8.25	3.87
10	1.01	7.25	4.54
10-W	0.12	5.00	0.54
11	1.38	6.00	6.21
11-W	0.82	4.50	3.69
12	1.77	7.00	7.96
13	2.53	6.50	11.38
14	2.49	6.00	11.20
15	1.79	5.75	8.05
15-W	1.33	4.00	5.98
16-N	0.85	4.00	3.82
16-S	0.84	4.50	3.78
17	1.47	7.00	6.61
18	2.59	5.50	11.65
19	0.60	6.75	2.70
20	1.39	7.00	6.25
21	1.68	8.17	7.56
22	1.41	7.00	6.34
23	0.83	5.50	3.73
24	1.08	8.00	4.86

Mill Creek Facilities

Percolation Basin Number	Footprint Area (in Acres)	Average Depth (Feet)	Volume (Acre-Feet)
25	0.52	4.00	2.34
26	0.94	6.00	4.23
27	0.82	5.00	3.69
28	2.88	6.00	12.96
29	1.21	4.00	5.44
30	1.91	5.50	8.59
31	2.02	6.33	9.09
32	0.62	5.00	2.79
33	1.16	4.50	5.22
34	1.52	5.50	6.84
35	0.65	4.00	2.92
36	1.44	6.00	6.48
36-N	0.19	6.00	0.85
37	0.54	6.50	2.43
38	0.63	5.50	2.83
39	0.16	3.50	0.72
40	0.46	3.50	2.07
41	0.61	5.00	2.74
42	0.51	5.00	2.29
43	0.83	4.50	3.73
44	0.60	2.50	2.70
45	1.27	4.00	5.71
46	1.01	4.50	4.54
47	0.99	4.50	4.45
48	0.66	5.50	2.97
49	0.29	6.00	1.30
50	0.66	4.50	2.97
51	0.42	4.50	1.89
52	0.59	4.50	2.65
53	0.59	4.50	2.65
Subtotal	**65.71 Acres**		**295.69 Acre-Feet**

* Not in use (no way to convey water)



Data Sources:
SBVWCD GIS
ESRI Bing Imagery 2010
L. Pierce February 2011

0 0.050.1 0.2 0.3
Miles

Santa Ana Spreading Facilities
2012
Operational Management Manual

Operation Management Manuel
February 2012

Map Creation: SBVWCD GIS
L. Pierce M. O'Carroll R. Hejka

Figure 2-1

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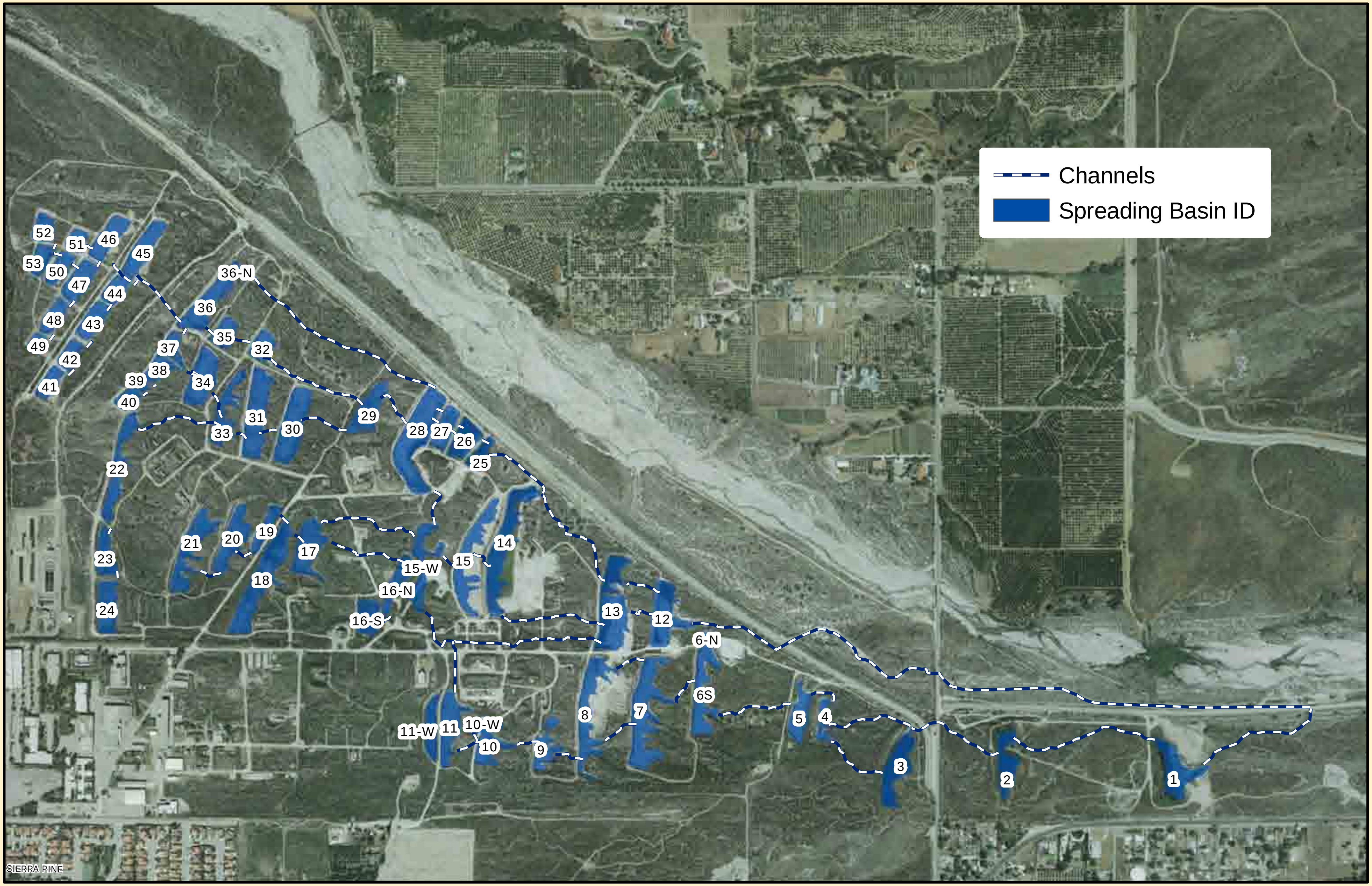

Data Sources:
SBVWCD GIS
ESRI Bing Imagery 2010
L. Pierce February 2011

0 0.05 0.1 0.2 0.3 Miles

Mill Creek Spreading Facilities
2012
Operational Management Manual

Operational Management Manual
February 2012

Map Creation: SBVWCD GIS
L. Pierce, M. O'Carroll, R. Hejka

Figure 2-2

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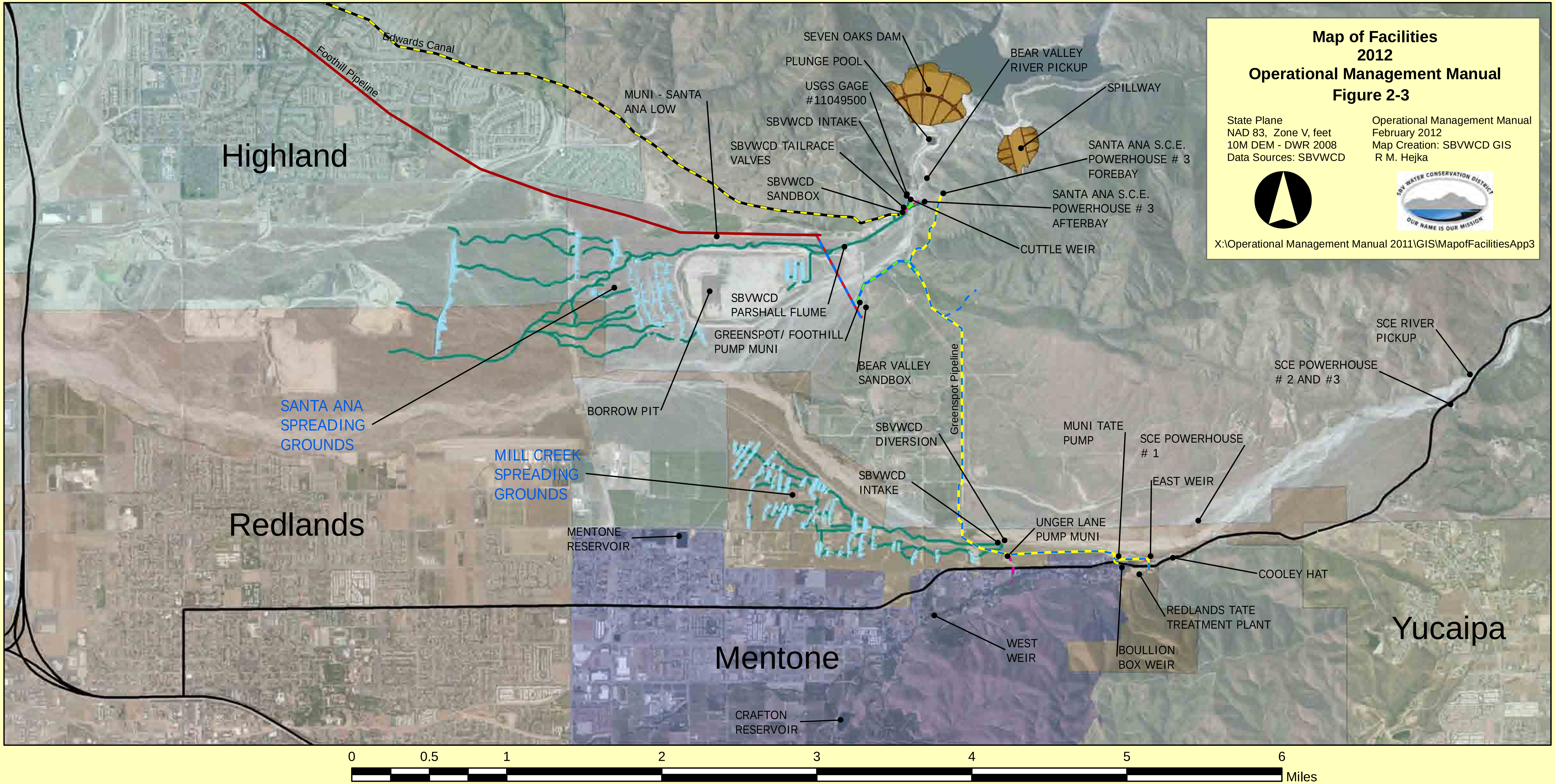
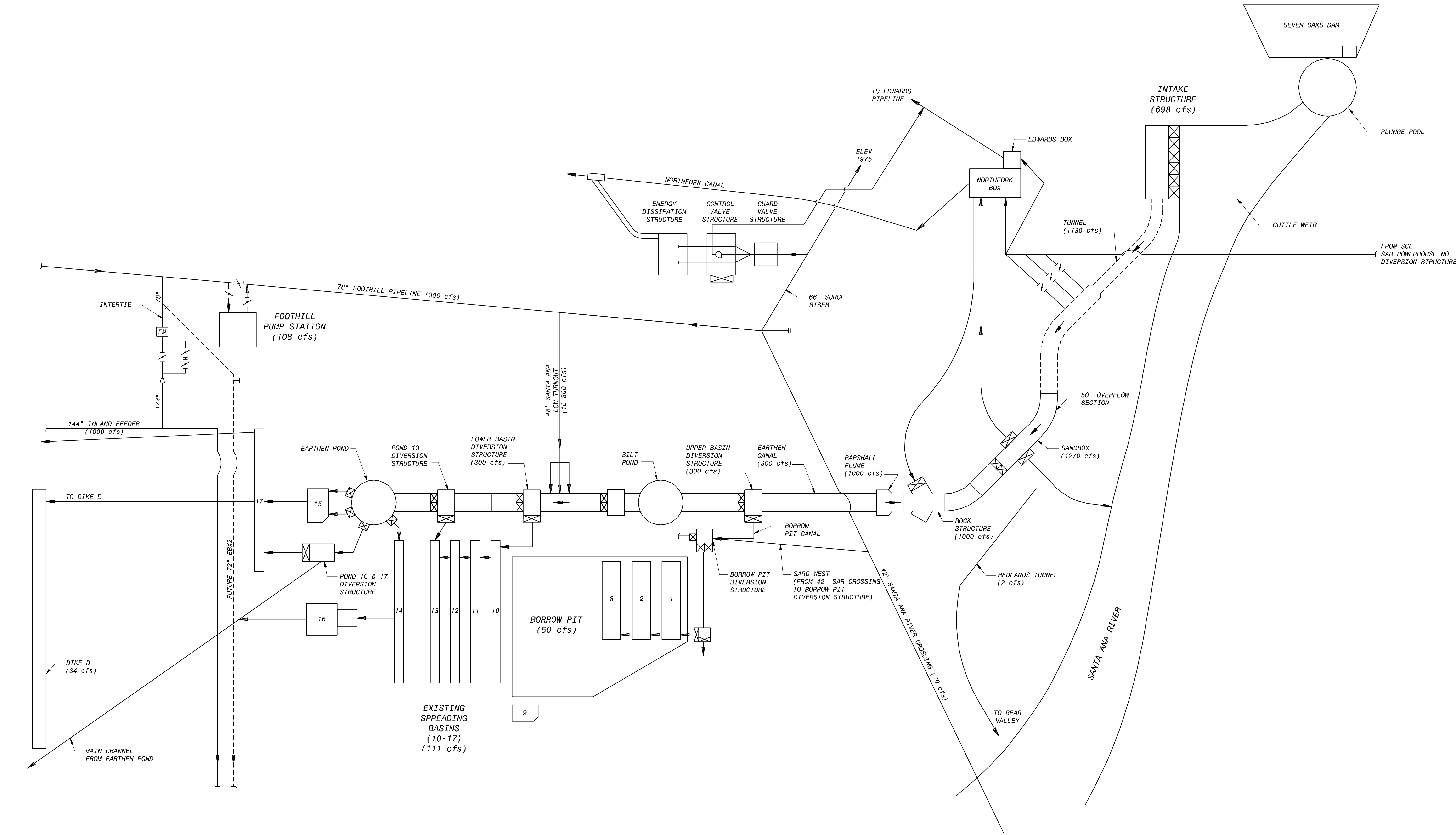


Water Conveyances

- BV Highline Bullion Connect
- Foothill Pipeline
- Greenspot Pipeline
- SARC Pipeline
- North Fork Canal
- Redlands Aqueduct
- SBVWCD Canal
- The Zanja
- Highways

Figure 2-3



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ISSUED FOR: PRELIMINARY		DRAWING NO. FIGURE 2-1
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT		
DATE: / DESIGN/DRAWN: / REVIEWED: / JOB NO:	ENHANCED RECHARGE IN THE SANTA ANA RIVER SPREADING BASINS PROJECT	SCALE: AS NOTED
	EXISTING PROCESS SCHEMATIC	SHEET OF / FILE NO.

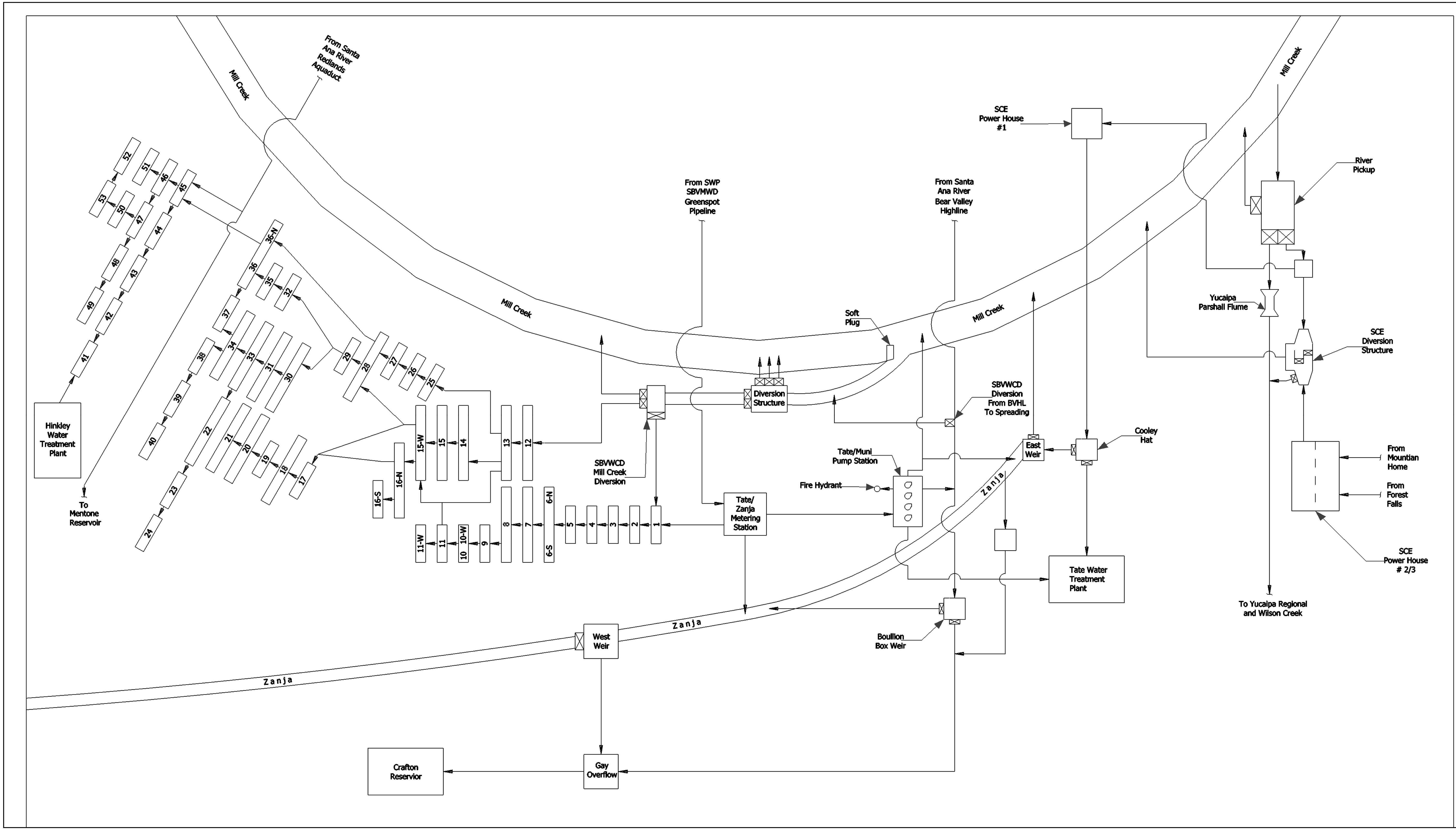
BLACK & VEATCH
Building a world of difference
Black & Veatch Corporation
Irvine, California

ENGINEER'S SEAL

PLANS PREPARED BY:
PROJECT ENGINEER DATE
APPROVED BY:
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT DATE

MARK BY DATE REVISION

San Bernardino Valley Municipal Water District
380 EAST VANDERBILT WAY, SAN BERNARDINO, CA 92408
PHONE: (909) 387-9253 FAX: (909) 387-9247



Operational Management Manual

Figure 2-5 Mill Creek Process Flow

REVISIONS

	MM/DD/YY	REMARKS
1	07/16/12	First Draft
2	__/__/__	...
3	__/__/__	...
4	__/__/__	...
5	__/__/__	...

Figure 2-5

Section 3- Future Projects and Facilities

The District is currently (2012) working on two major projects that will lead to new facilities and responsibilities. The first is the Enhanced Recharge Facilities with SBVMWD. The second is the Wash Plan. In addition a few small capital projects identified and budgeted yearly are planned.

Enhanced Recharge Facilities

This project is the result of SBVMWD and WMWD obtaining new water rights to the Santa Ana River due to the construction of the Seven Oaks Dam. Based on the Optimization Study, a number of improvements to District facilities and the addition of new spreading basins are required to capture additional Santa Ana River water conserved and released at controlled rates from the dam. The spreading facilities need to handle a peak flow rate of 500 cfs and be able to recharge 80,000 AF per year of Santa Ana River water. The District's existing Santa Ana recharge facilities and channel capacities we presented in Section 2 on Figure 2-4. The proposed improvement currently being design include: Cuttle Weir and Cuttle Weir intake structure improvements including a mechanical debris cleaning device; sedimentation basins after diversion; increased channel capacity; and additional spreading basins. See Appendix 3 for the location of the additional spreading basins and the Process Flow Schematic of the expanded facilities.

Construction for this project is expected to start in 2013. The District has negotiated an agreement with SBVMWD and WMWD to operate and maintain these new facilities. This includes the District's right to review and approve the design plans.

Wash Plan

The Upper Santa Ana River Wash Land Management and Habitat Conservation Plan (Wash Plan) is a multi-agency land-use planning effort for about 4,500 acres in the Santa Ana River wash area, as shown on the land-use and property ownership Figures in Appendix 15. The plan has multiple goals and benefits including: consolidating mining activities in one large area on land currently disturbed by mining or land adjacent to disturbed areas; habitat conservation located in large connected areas with intact natural habitat; continuation of water conservation and flood control in areas historically utilized for these activities; and establishment of a designated, connection trail and access roads. To accomplish these goals an exchange of land between the District and BLM is required.

The Wash Area extends from the District's Santa Ana spreading facilities on the east, to just west of the State Route 30 highway on the west, and north and south in the Santa Ana wash/flood plain area between the Cities of Highland and Redlands. Participants in the plan in additional to the District, which is the lead Agency include: San Bernardino County Flood Control District, US Bureau of Land Management, County of San Bernardino, City of Highland, the City of Redlands, East Valley Water District, CEMEX Construction Materials Pacific INC, and Robertson's Ready Mix. In addition a number of regulatory agencies are involved in permitting the plan including US Fish and Wildlife service, the US Army Corps of Engineers, and California Department of Fish and Game.

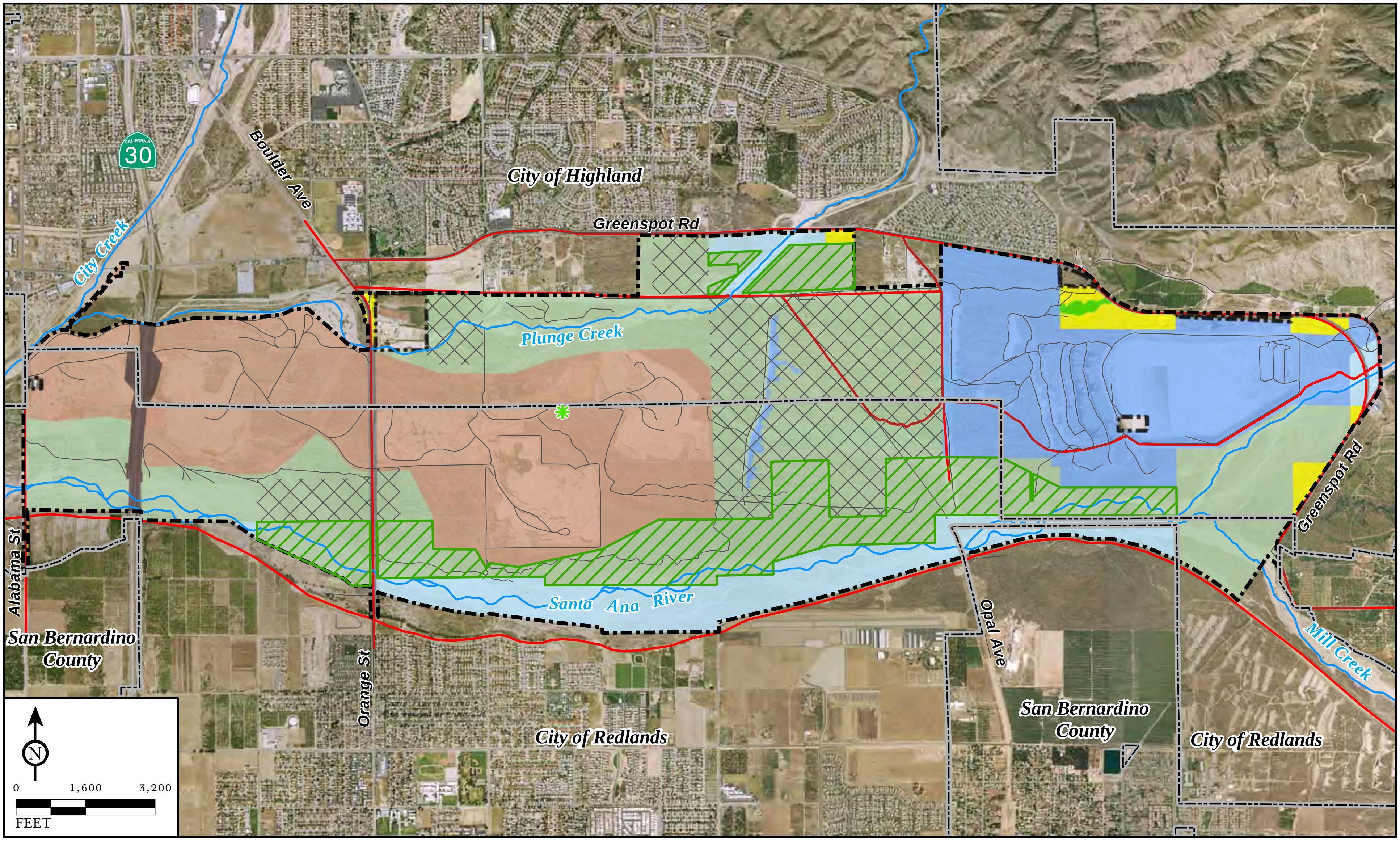
The plan was started a number of years ago and have been impacted by a number of regulatory hurdles and requirements, primarily due to endangered species issues and set-asides. A negotiated settlement with USFWS is imminent for habitat conservation areas, which should allow final processing of CEQA and EIS reports and a Habitat Conservation Plan (HCP). However, it is estimated that another 2 years and the expenditure of almost $800,000 will be needed to complete the planning and permitting work. The District's Board of Directors has authorized a phased approach to determine if all Wash Plan participants will continue to support completion of the project.

Yearly Capital Projects

District Field staff indentifies small improvement projects and bring these projects to the Resources Committee for review and approval. Recently these projects have involved the purchase of new or replacement equipment, projects that the Field staff can construct themselves, and smaller specialty construction contracts.

A list of potential projects will be prepared by Field Staff and reviewed by the Resources Committee before the next budget cycle.

Additionally, the District began participating with SBVMWD in 2008 in an "Enhanced Recharge Program" This program contains additional basins in the NE corner of Section 12 as well as improvements to the facilities to transport water to the new basins. SBVMWD is funding and constructing these improvements. The District is contemplating a 50 year Land Lease with SBVMWD for the access to the land to develop these basins. The District will be responsible for the operations and maintenance of these facilities. and a Joint Operating Committee will be formed to coordinate these efforts. When operational, an update to this plan will be completed to address the new facilities. Figures 3-1 and 3-2 show the Wash Plan Proposed Land use and Proposed Ownership.



LSA

PLAN BOUNDARY
JURISDICTIONAL BOUNDARY
WATER CONSERVATION
FLOOD CONTROL
HABITAT CONSERVATION
AGGREGATE MINING
STATE ROUTE 30
Subject to the Spineflower Relocation Program
ROADS
AGRICULTURAL
UNDESIGNATED/PUBLIC OWNERSHIP
WOOLLYSTAR PRESERVATION AREA
BLM, ACEC OR RNA
ROADS*
TRAILS
RIVER OR CREEK*

FIGURE 3.9

Upper Santa Ana River Wash
Land Management Plan
Environmental Impact Report

Proposed Land Uses

SOURCES: Thomas Bros, 2001, San Bernardino Water Conservation District, Dudek, Santa Ana Watershed Project Authority, AirPhotoUSA, 2007.

** Road and stream locations digitized from 2006 aerial.*

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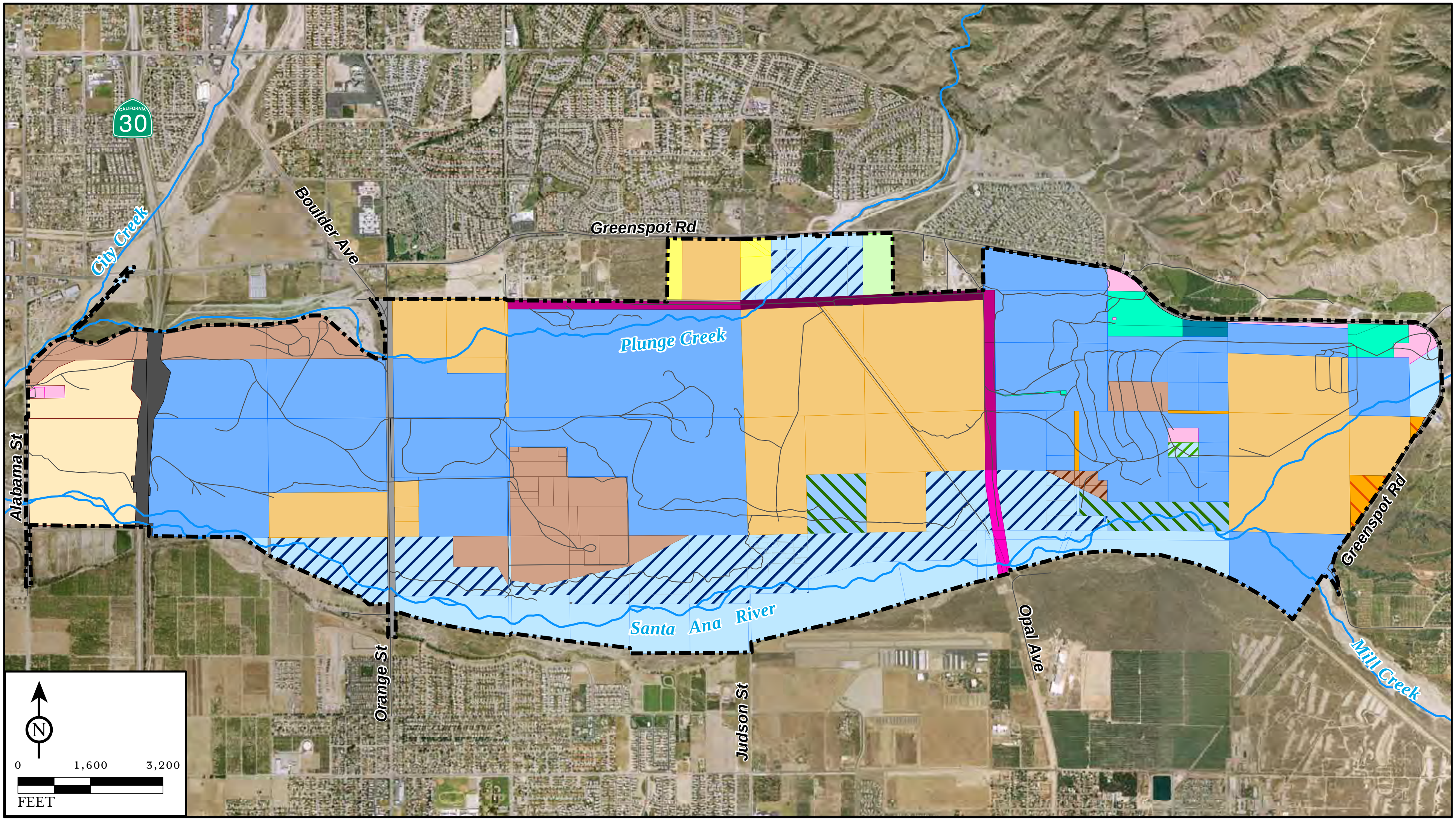


LSA

FIGURE 3.10

PLAN BOUNDARY
PRIVATE
CALTRANS
CITY OF HIGHLAND
CITY OF REDLANDS
COUNTY OF SAN BERNARDINO
EAST VALLEY WATER DISTRICT
OTHER GOVERNMENT
ROBERTSON'S READYMIX
SBVWCD / SBCFCD
US GOVERNMENT (BLM)
SBVWCD OWNED - WSPA EASEMENT
SBCFCD - WSPA EASEMENT
ORANGE COUNTY
FLOOD CONTROL - MWD EASEMENT
SBVWCD - MWD EASEMENT
BLM - MWD EASEMENT
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT
MITIGATION LAND/ROBERTSON'S HAUL ROAD - (SBVWCD OWNER)
STREET RIGHT-OF-WAY - REDLANDS, HIGHLAND
ROADS*
RIVER OR CREEK*

Road and stream locations digitized from 2006 aerial.

Upper Santa Ana River Wash
Land Management Plan
Environmental Impact Report

Proposed Ownership

SOURCES: San Bernardino Valley Water Conservation District, San Bernardino County, AirPhotoUSA, 2007

R:\SBW330\gis\Admin_Draft_EIR\Sect3_EnvironSetting\fig3-10_ProposedOwnership.mxd (01/15/08)

Figure 3-2

Section 4- Management of the System

Cooperative Recharge Coordination

In order to ensure accurate and up to date water measurements within the portion of the Bunker Hill Basin overlying the District boundaries, the District strategically measures and records data at specific locations in coordination with other local water districts. In addition, monitoring well depths are recorded on a monthly basis. Monitoring levels are posted on the District website. See Appendix 14 for well measuring instructions and locations.

In order to monitor the surface water flows, recharge, and diversions of the Santa Ana River and Mill Creek, the District produces a daily flow report (DFR). The DFR records the flow and volume of water at locations within the District's boundaries (see Appendix 5 for sample DFR and the DFR calculation formulas). Measurements are recorded between 6 a.m. and 12 p.m., Monday through Friday, by the District's field crew (measurements are not taken on weekends and District holidays). Each water measurement location is shown in Appendix 6 with a map and GPS location, picture of the facility, and other data.

Some locations have gauges that record the flows, while others are measured using a formula that takes in to account the height of the water flowing through weirs. Some information is gathering from SCADA view through the SBVMWD. The DFR accounts for all surface water coming in and out of all important locations in and around the District. As noted above the information is inputted into a spreadsheet and flows calculated automatically at some points. The information is shared electronically with SBVMWD and other entities and can be accessed on the District's website.

The DFR has several purposes for the District and other water agencies in the area. The amount of water recharged in certain basins, or parts of the river can be determined by calculating the difference of entering and exiting flows in the area. Theses flows are monitored directly by the DFR. By knowing how much water is recharged in certain locations the District can monitor the flows related to various water rights for agency. . The DFR is used to report values for Watermaster reports in the area, as well as specific reports used by the District.

Engineering Report: Executive Summary

In coordination with other local water agencies, the District annually produces a document that describes water elevation and production within the Bunker Hill Groundwater Basin; the Engineering Investigation Report (EI). The EI contains nine different tasks that present pertinent information regarding the groundwater condition of the Bunker Hill Basin for the water year. The EI is prepared and reviewed prior to setting the Groundwater Charge described in Section 6. The most recent EI appears in Appendix 13.

Operations scenarios and flows

Santa Ana River Spreading Facility

Water is distributed to the District's recharge facilities through a system of pipelines, channels, gates and weirs. See Appendix 4 for gate operation instructions. The Santa Ana River and the Mill Creek facilities each receive their water from their respective sources through different scenarios. See Figure 4-1 for photographs of the Cuttle Weir river intake gates on the Santa Ana River, and 4-2 for main channel for conveyance of Santa Ana River water to the spreading basins.

The Santa Ana River recharge facility primarily receives its water from the Santa Ana River after it makes its way through the Seven Oaks Dam (See Figure 2-4 for The Santa Ana River Process Flow Diagram). The Seven Oaks Dam impedes the natural flow of the water and collects it in its reservoir before it is periodically released by the Flood Control District. The river exits the dam through the outlet tunnel and into the plunge pool before it makes its way out of the canyon by means of the river exit channel. At the mouth of the canyon the District has two sets of intake structures that divert the water for use by Bear Valley Mutual Water Company, East Valley Water District, and the District (Cuttle Weir). The water passes over the Cuttle Weir intake structure and into the sandbox. The water can be diverted to Bear Valley Mutual and East Valley Water District by means of the District's Sandbox. . Bear Valley Mutual and East Valley Water District have the ability to divert water from the SCE Power House 3 Tail Race pipeline to the District's Santa Ana River recharge facility by means of the Tail Race Valves just upstream of the Sandbox, when water volume exceeds their needs. Water destined for the Santa Ana facility leaves the Sandbox and enters the District's main channel; prior to entering the spreading basins, the incoming water is measured on a daily basis at the District's Parshall Flume. The District has the ability to divert water into several areas of the Sana Ana River Spreading Facility by means of manual weirs in the main channel. The main channel runs between the Borrow Pit and Greenspot Road before it turns south and meanders between the basins in the western part of the facility.

SANTA Ana River Intake at the Cuttle Weir

Moveable gates at the District's intake on the Santa Ana River allow flows into the recharge facilities to be adjusted. Maximum flow at this intake exceeds the capacity of the district's Greenspot Road Culvert, which constrains recharge capabilities. Photograph by Mathew O'Carroll.

Channel

After passing through the District's intakes and under the Greenspot Road (located straight ahead), river flows enter this channel on their way to Basin 1. Photograph by Mathew O'Carroll.

From the main channel, water can first be diverted into percolation Basin 1. Basin 1 is located at the eastern side of the Santa Ana facility in the Borrow Pit and overflows into Basin 2. When at capacity, Basin 2 has the ability to overflow into Basin 3 or divert water from the south end of the basin to the west end of the Borrow Pit low point, where it would ponds. The water level must be kept 10 ft below the road directly on the West side of the pit, or it will be considered an impoundment and the District may be required to have a permit as it is considered a Dam. When receiving and spreading large amounts of water, the District must be conscience of the ground water level intinto the Borrow Pit. The District can also choose to spread water from the main channel to basins located in the western part of the facility. Water enters basins 10, 13 14, 15, and 17 through sets of manual weirs of the main channel . channel. When at capacity: basin 10 overflows to basin 11, and 12, basin 13 overflows to basin 14, and basin 14 fills 16. Basin 17 feedspercolationfeeds percolation basin Dike D or empties into either the CEMEX or Robertson mining pits or outflow to Plunge Creek.

Occasionally, the Santa Ana River facility also receives water via the California State Water Project by means of the Santa Ana Low and the SARC West diversion boxes that are operated by the SBVMWD. The Santa Ana Low diverts water from the Foothill Pipeline directly to the District's Main Channel just upstream of the lower basin diversion box at percolation basin 10. The SARC West diversion is also fed by the Foothill Pipeline but deposits water into the main channel above the Parshall Flume.

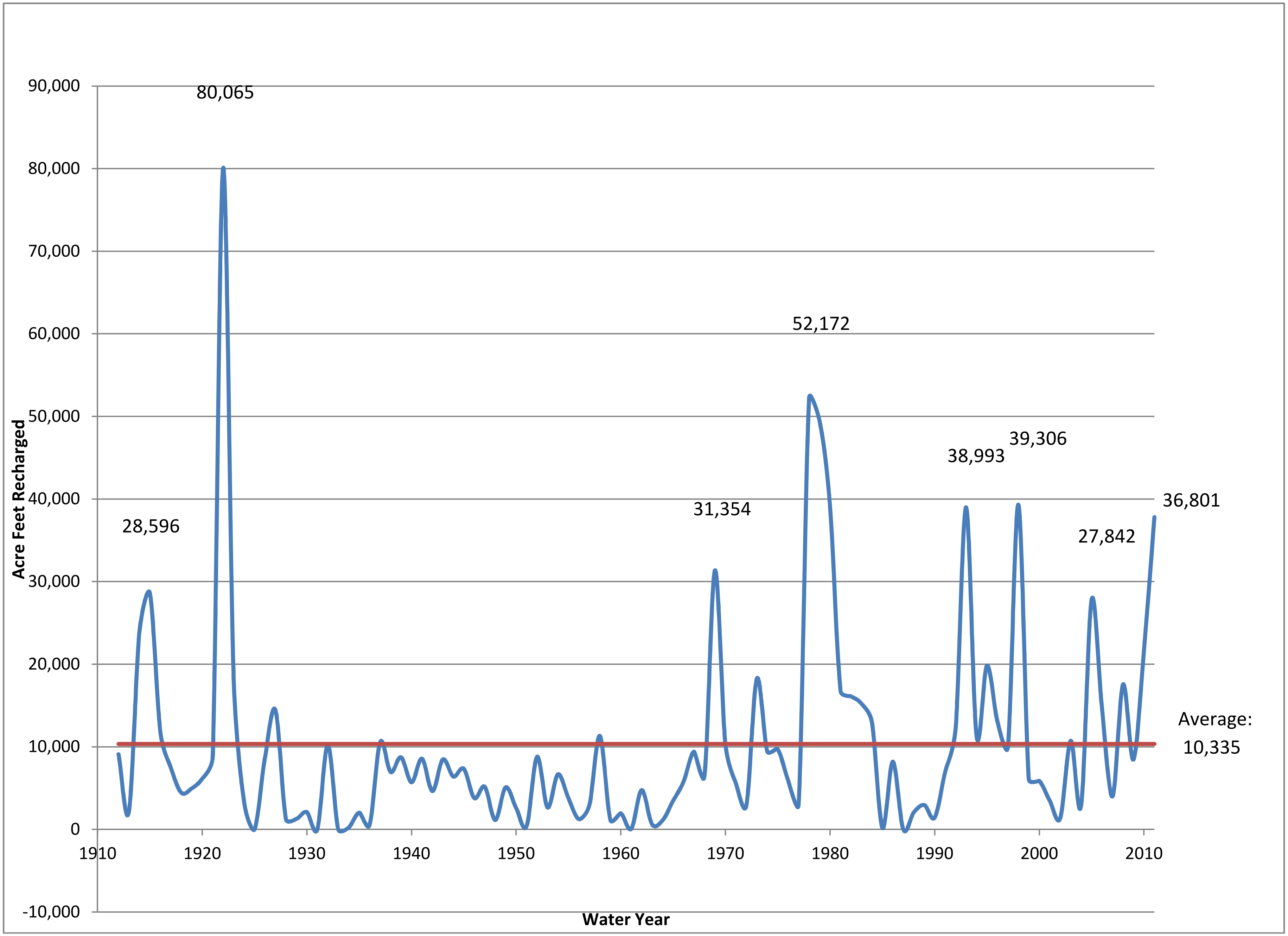
Mill Creek Spreading Facility

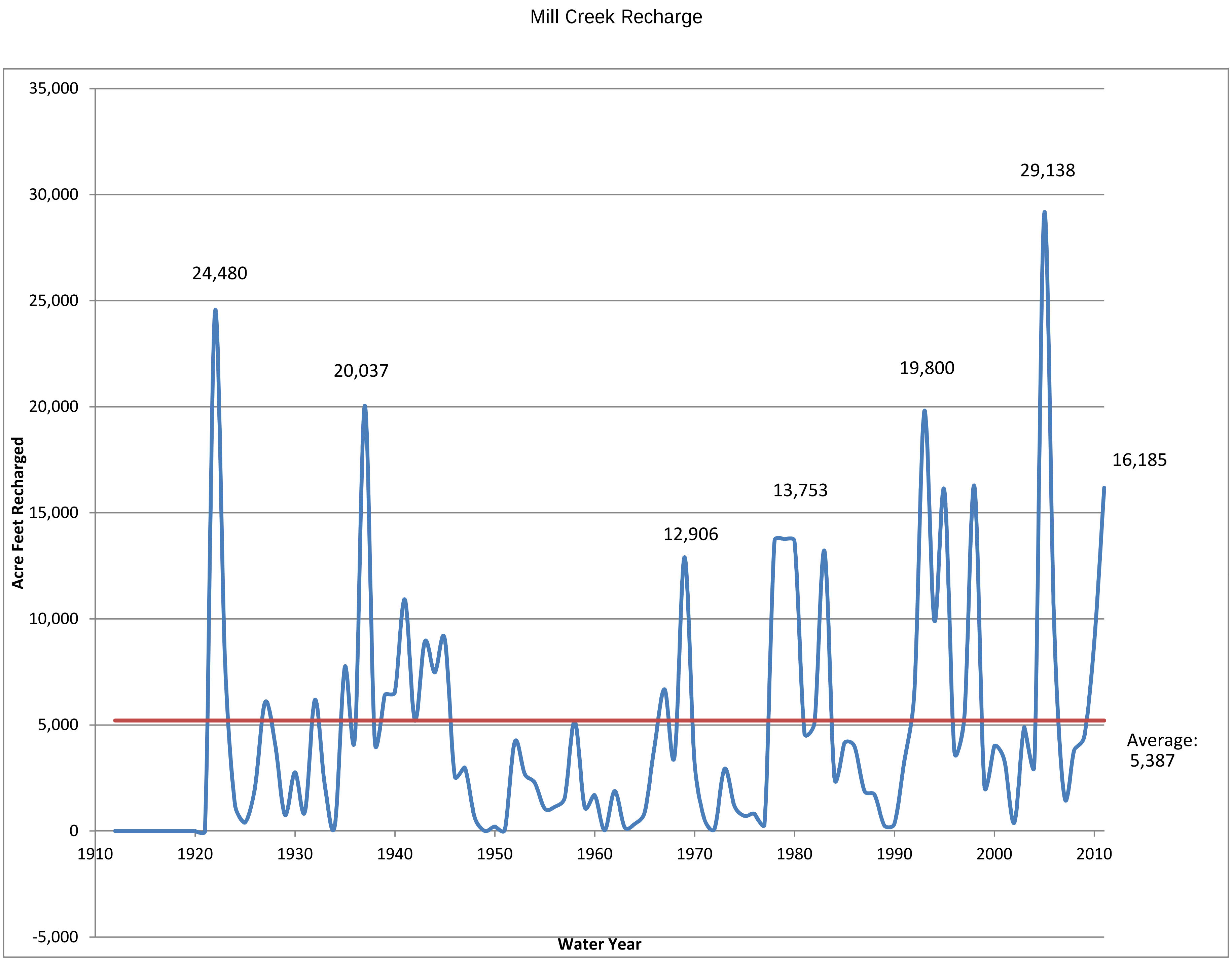
To supply water to the Mill Creek spreading facility, the District first diverts water from Mill Creek's main channel using a soft plug (berm) and through a series of manual weirs (See Figure 2-5 for The Mill Creek Process Flow Diagram). The water is then directed to the District's intake channel and diversion box that sends water to either the North or South Channels. The North Channel directly deposits water diverted from Mill Creek to percolation basin number 12. Water that enters the basins from the South Channel must first pass through two settling pondssettling ponds to remove sediments by allowing them to settle out through gravity before the water moves to percolation basins number 3. There are 59 percolation basins in Mill Creek that have a total volume of approximately 300 Acre-Feet. The facility automatically fills each subsequent basinsbasin by overflowing through a series of gates that link the percolations basins together.

Santa Ana River Water can be diverted to the Mill Creek Spreading Basins through the Bear Valley High Line Diversion and State Project Water through the Tate Zanja Meeting Station.

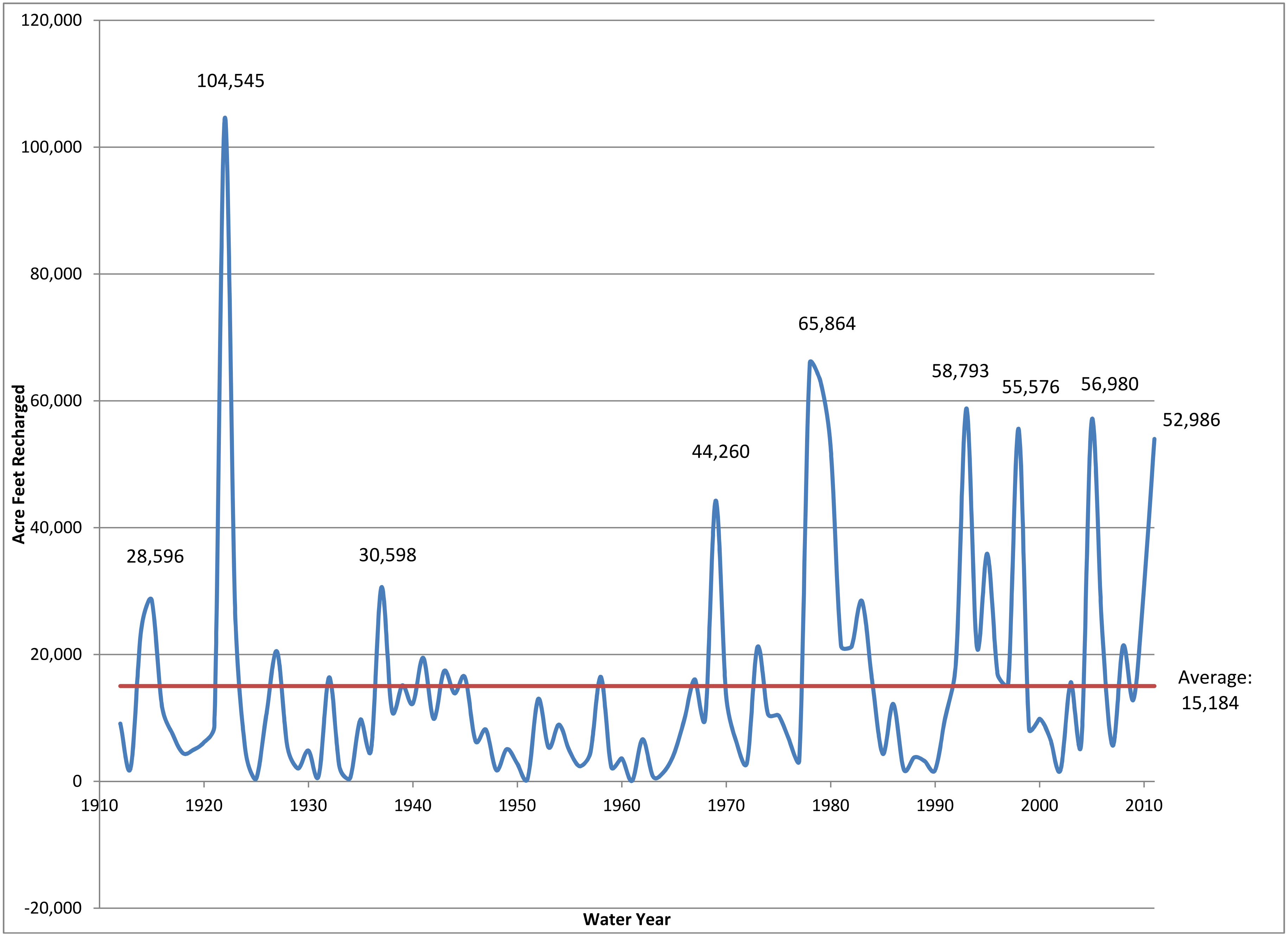
The total amount of water recharged each year from Mill Creek and Santa Ana River is recorded and analyzed in an Engineering Investigation Report (Section 5). See Appendix 7, Figures 4-3, 4-4, and 4-5 to see the District's recharge history.

Santa Ana River Recharge




Mill Creek Recharge
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
-5,000
Acre Feet Recharged
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Water Year
24,480
20,037
12,906
13,753
19,800
29,138
16,185
Average:
5,387

Total Recharge



Seven Oaks Dam

The Seven Oaks Dam (SOD) is located on the Santa Ana River at the narrowing of the upper Santa Ana Canyon, approximately one mile upstream of the canyon mouth (Figure 4-6). SOD was completed in November of 1999 for flood control purposes and is currently the 10th largest earthen dam in the world. For the history and complete specifications of the Seven Oaks Dam refer to Appendix 8.

Prior to the construction of SOD, the District's ability to spread water to the SAR facilities was dependent on the Santa Ana River and its natural fluctuations. Water would be regularly spread throughout the percolation basins during the winter and spring months duetodue to precipitation and snow melt runoff. Recharging the Bunker Hill Basin in accordance with the natural flow of the Santa Ana River allowed for the District to spread water over a period of several months. This facilitated the District's recharging ability by allowing them to fill the basins based on observed percolation rates subject to the availability of water. During intense rainfall periods flow of the river would have to be turned back and not recharged as flows would exceed the capacity of District facilities and would contain levels of silt that could plug the spreading basins.

Since the completion of the dam in 1999, it has operated in a testing mode through 2011. SOD was successfully tested to it'sits maximum water release capacity through its outlet works into the Plunge Pool in February and March 2011. It is expected that SOD will be managed in accordance with the Water Control Plan (WCP) shown in Appendix 8 beginning with the 2011-12 water year. Operations within the WCP will likely yield different results that may be more favorable to recharge of water from the upper watershed.

The WCP is detailed, but generally water is to be released similar to inflow amounts unless there are large storms. If large storms occur, SOD will be managed in conjunction with Prado Dam and will hold water to reduce pressure on Prado Dam. After the storm is over and Prado's waters recede, flows from SOD will be increased to reduce water levels in the reservoir. The result of this operation will likely make additional water available for recharge, but if the water is currently released above 300CFS, the District has advised the COE and Flood Districts it cannot recharge the water; this water will be lost from the basin. The SBVMWD Enhanced Recharge project will ultimately allow a flow of 500 CFS to be safely diverted and recharged. If the flows are above 1000 CFS and Prado Flows are high, virtually all the water will be lost from both the SBBA and the watershed as it flows to the ocean.

SBVMWD and SBVWCD and others are working on a Water Quality Study with the COE that may change the operation of the Dam. It is uncertain how these changes will be implemented. The agencies are also working on a long-term Water Conservation Study which would modify operation of the Dam for water conservation when flood control is not impacted. These changes and the improvements made in the facilities due to the Enhance Recharge Project will allow additional water to be recharged.

The District must work closely with the COE and OC Flood Control in the winter operations season to optimize recharge without impacting the operations of the facilities for Flood Control. The District should monitor any changes in the WCP or the studies to ensure that the needs of the District are met.

Also changes to the WCP should trigger review of this Operations Management Plan for potential changes.

Map of Seven Oaks Dam
2012
Operational Management Manual
Figure 4-6

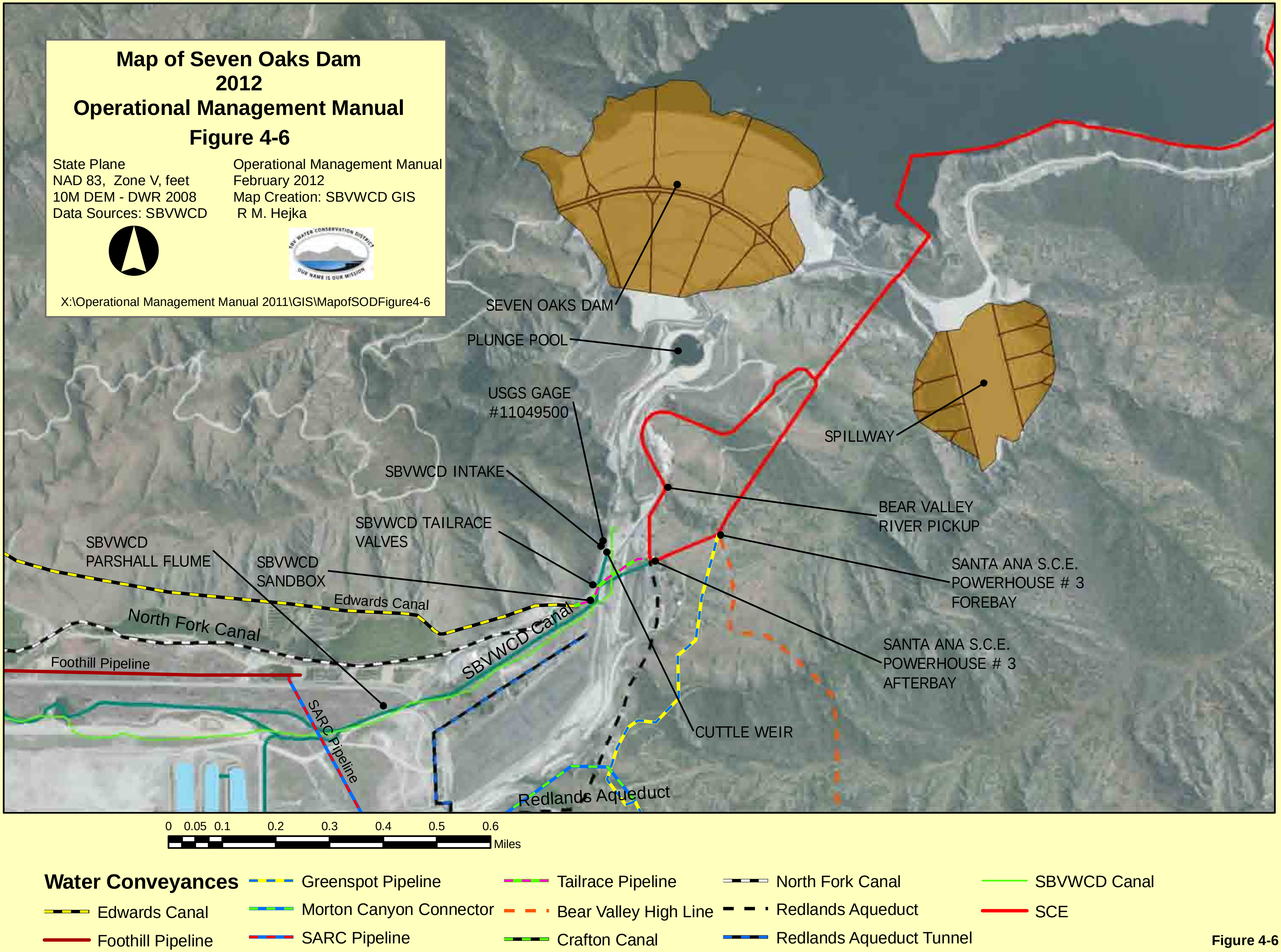


Figure 4-6

Water Quality

Generally the water quality from Mill Creek and Santa Ana River are the highest in the Santa Ana Watershed because they are low in TDS and has minimal development in the watershed above the District's diversions. Water quality data including TDS, nitrate, and turbidity is presented in Appendix 9. In the table the source column indicating Hinkley WTP is for Santa Ana water diverted around the SOD, and indicating Tate WTP is Mill Creek water. This water quality data is for non-storm events. (Appendix 9).

The US Army Corps of Engineers undertook a study of water quality shortly after Seven Oaks Dam was constructed due to the lower/poor water quality which contained high levels of suspended solids and organic matter impounded behind the dam in its early operations. Much of this water was not suitable for direct users of the water, Bear Valley Mutual, EVWD and City of Redlands, and it caused increased maintenance when percolated in the District's Basins. In later years the water volume was lower and of somewhat better quality. In 2010 water was impounded to test the gates and was not suitable for direct use but was adequate for spreading and groundwater recharge in the Districts Basins. 2011 was a high volume and high intensity storm year. Water quality was most impacted immediately after storms in December and January. Because the USACOE was accumulating water for high flow testing, the water quality improved in the weeks after the testing. By the time the release was planned the water had cleared to approximately 20 NTU. This was deemed to be acceptable for recharge, but proved to require additional basin cleaning, than the usual low turbidity water.

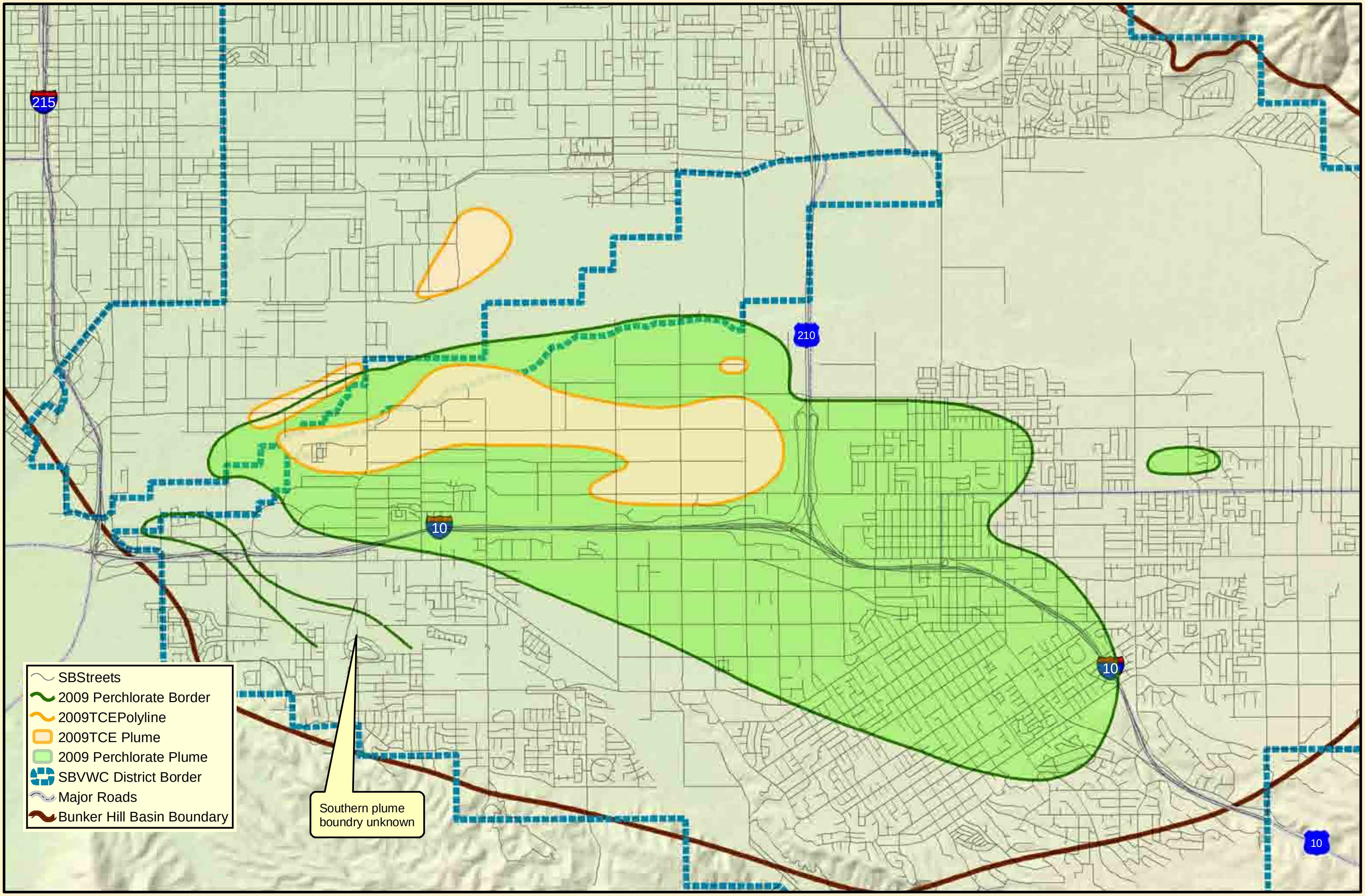
During high flows, especially as flows are increasing, water quality is greatly reduced as turbidity levels increase, and should generally not be diverted. Once flows have stabilized, the water tends to clear over the following few hours and can be diverted for recharge up to about 300 CFS. Following the operational regime used in the 2011 dam outlet works testing and should provide a good guideline for future high flow operations. A high flow plan is included in Appendix 4.

Lockheed Propulsion Company, a division of Lockheed Martin Corporation, was located where our Mill Creek Facilities currently operate. Lockheed operated, produced, tested, and disposed of solid rocket propellants at this location in the 1970s. As a result, trichloroethylene (TCE) and ammonium perchlorate were detected in our groundwater basin and formed large contamination plumes These contamination plumes have negatively affected the ground water quality in parts of the Bunker Hill basin. The contamination plumes are being monitored and have slowly been making their way towards the bottom of our basin. The extent of the plumes with water quality data as of 2009 is shown on Figure 4-7.

Monthly Distribution and Spreading

The District has two water diversionwater diversion licenses, numbers 2831 and 2832, which allow the District to divetdivert 10,400 AF of water a year to our Santa Ana spreading basins. These licenses regulate the amount of water the district is legally allowed to divert and infiltrate. However additional water, when available, is spread in the basins, as mentioned in Section 1, based on yerlyyearly recommendations fromrecommendations from the BTAC. Yearly goals are set for both the District's Santa Ana and Mill Creek facilities.Afacilities. A Monthly Recharge Report is producedinproduced in order to assure the District doesn't replenish more water than allowed. In 2011/2012 water year 30,000 acre feet per year of recharge water for the District's Santa Ana facilities and 18,000 AFY to the Mill Creek facilities.

Based on the data in the report, adjustments to the diversion rates and adjustments to the locations of diversion are made. The data is measured daily in the field and included in the DFR... An example of the Monthly Distribution Report is located in Appendix 10.



State Plane
NAD 83, Zone V, feet
10M DEM DWR
Data Sources:
TetraTech
Plume Data 2009

0 0.5 1 2 Miles

Groundwater Contamination Plumes 2012 Operational Management Manual

Operational Management Manual
February 2012

Map Creation: SBVWCD GIS
L. Pierce, M. O'Carroll, R. Hejka

Figure 4-7

X:\Operational Management Manual 2011\GroundwaterContaminationPlumesFigure4-7

Section 5- Basin Facility Maintenance

Normal Maintenance Activities

The District's facilities undergo routine maintenance; activities are conducted both outside and within the percolation basins when necessary. Outside of the percolation basins, the District routinely observes the conditions of the spreading grounds, specifically the basins' banks for debris and vegetation that may reduce percolation rates, prevent accessibility to the ponds or have the potential to block weirs. The removal of such objects and grading the banks are conducted routinely. Within both the Santa Ana and Mill Creek spreading grounds, vandalism and trash are major issues that must be dealt with on a daily basis. The District's staff patrols the facilities for damage to fences, gates and locks and disposes of illegally dumped trash. Specifically, the cutting of fences and gates are serious problems at the Mill Creek spreading grounds where repairs are frequently made. Warning/trespassing signs and stencils are constructed and strategically placed throughout all of the District's facilities to deter trespassing and vandalism. The District's main and field offices also undergo routine maintenance such as cleaning, painting and basic repairs.

Within the percolation basins, maintenance is conducted on a less frequent basis, but repairs and general upkeep are of the upmost importance and essential to ensuring efficient groundwater recharge. Basins are occasionally regraded, and reshaped to define basin boundaries or change basin dynamics in order to optimize percolation rates. Weir gates that move water from sources and between basins must be regularly inspected for damage and have their wheels and stems greased to facilitate their opening and closing. When necessary, debris such as tree branches, broken boards, and algae must be removed from the weir gates that may restrict the flow of water. Ideally, each basin must be cleaned out every three years to maximize the rate of percolation. Debris, sediments, algae and 3-5 inches or more of silt can build up during a three year period and decrease the efficiency of the spreading grounds. The District occasionally receives water from the California State Water Project which is higher in algae and sediments. Depending on the year a certain pond is chosen to spread State Water in, the pond maybe plugged with silt and algae quicker, and is required to be cleaned out more frequently (annually).

Emergencies and Urgent Work

Emergency maintenance is conducted occasionally, but due to the costs of such repairs and their effects on the basins, the District takes precautionary measures to reduce the possibility of severe damage. The District's facilities may require emergency maintenance during the winter and early spring when there are large amounts of precipitation and snow melt that enters both the Santa Ana River and Mill Creek. When heavy rains and summer thunder storms are forecasted, the District can close the spreading grounds by choosing not to take any water from either the Santa Ana River or Mill Creek, due to high levels of turbidity and excess debris in the water. This water can be a problem because the increased amounts of suspended solids plug up the bottom soils in the spreading basins faster causing the need for more frequent costly cleanouts. By choosing to not take water (turning out water) from

SAR or Mill Creek, the District can prevent uncontrollable amounts of water from entering the percolation basins, which prevents damage to the facilities. If the District does choose to take water during periods of heavy rainfall, basins are cleaned and equipment is relocated to ensure that the water can safely enter the spreading grounds and percolate at maximum efficiency. If these precautionary measures are not taken, or the amount of water entering the spreading facilities exceeds capacity, emergency work is often required. During such events, the District faces the possibility of eroded or destroyed dikes and damage to soft plugs (See Appendix 4 for more about soft plugs in Mill Creek). These types of damage require the District to contract heavy equipment, because of the lack in heavy machinery owned by the district. See Figure 5-1 Maintenance Functions for a more detailed list of daily or more frequent maintenance functions.

Maintenance Frequency

Maintenance and repairs of the District's facilities are completed when necessary. The District is capable of conducting minor repairs and general maintenance but for work that requires heavy machinery, the District must contract outside companies. Contracting outside companies for major repairs can be costly and sometimes restricted financially. Examples of repairs that require the assistance of outside companies include dike and soft plug repair as well as the cleaning of each basin. Based on the field staff experience, for maximum percolation the first three basins in series should be cleaned every year, the second two basins should be cleaned out every other year, and the rest should be cleaned every three years. See Appendix 12 for history and basin cleanout frequency for each of the District's Santa Ana and Mill Creek basins.

Considerations and Exceptions

The District's dependency on outside services to conduct major repairs is costly and does not always ensure that repair efforts start immediately or end in a timely matter. The purchase of a bulldozer could assist the District in major repairs and reduce its reliability on companies with heavy machinery while eliminating the costs of contracting. The district is also evaluating using other entities' equipment for operations.

Operation & Maintenance Equipment

The District's current major operations and maintenance equipment is presented in Appendix 11.

Daily Maintenance Functions

Daily Maintenance Functions

Field Maintenance

District land in the valley is often isolated and difficult to secure, making it susceptible to vandalism and trespassers. Trespassers and vandals cause damage to gates, roads, and have been known to block water infrastructure for swimming. The impacts of vandalism and trespassing on the district can be lessened by performing preventative measures in the field such as signage, fencing, boxes surrounding locks, and blocking of unfenced boundaries. However, illegal means of access to district land still exist which require monitoring by personnel.

Roads used in accessing different areas throughout the district require constant attention in order to make many operations possible. Since much of these roads are unpaved, most of this maintenance includes removal of vegetation, grading, and filling damaged spots in roads. Increased use or storm events can accelerate the deterioration of these roads as well; some may need more care than others.

Groundwater recharge basins throughout the district also require routine maintenance in order to continue the ability to recharge local groundwater. Basins collect sediment overtime that must be removed on a predetermined schedule depending on where the basin is located. Some of this basin maintenance can be performed by the district, but some also must be contracted to heavy equipment operators. Installation of accessibility infrastructure like catwalks, culverts, or gates is also required at times.

Equipment used in the field requires a more accelerated maintenance schedule as well. Working in the dusty environment, things like oil, air filters, intake systems, and pivot points all experience more intense wear. Accelerated maintenance preformed on field equipment help prevent premature wearing of components and costly repairs.

Infrastructure used in the district for the movement of water can be under constant strain. Weirs, channels, gates, and basins can be damaged from normal use over time, or from naturally occurring events such as storms. The system must be monitored for significant damage to ensure the ability to deliver resources where they are needed at any time. Damage to infrastructure can also lead to inaccuracies in calculating quantity.

Section 6- Fiscal Management and District Agreements

Ground Water Recharge Enterprise

With the 2011 District Budget the Board approved implementing an enterprise approach for all District budgeting and accounting. This change provides for clearer transactions in the District and transparency in funds provided and used for groundwater recharge. The groundwater enterprise is described in the approved 2011 budget as shown below:

The Groundwater Recharge Enterprise encompasses all activities directly allocable to groundwater recharge or water management operations. This enterprise includes the facilities at Mill Creek and Santa Ana River spreading grounds. This enterprise is funded by the Groundwater Charge and any service reimbursements or leases of facilities for groundwater purposes. Additionally, funding from the sale of aggregate from the cleaning of the District's facilities and interest from enterprise reserves are allocated to this enterprise. Expenses of this fund include the directly allocable portions of the following:

- Field staff, salary, burden, and overhead
- Field equipment, fuel, maintenance and related costs
- Non-Capital Repairs and Maintenance, basin cleaning and reconstruction
- Field Shop (Mentone) utilities, maintenance, grounds and IT Communications costs, cell phones and etc.
- Capital Improvements and major repairs that are capitalized
- Share of insurance based on facilities and carrier advice.
- Share of Board costs recovered on labor overhead.
- Directly allocable legal costs.

The groundwater enterprise tracks revenue from the groundwater charge and reimbursements and covers the costs of recharge operations and maintenance of the facilities. In many past years inadequate revenue was raised through the groundwater charge to fund the groundwater recharge costs resulting in either the Districts use of mining revenue or reserves for operations costs. With establish of the groundwater enterprise the full funding of this enterprise is expected using the groundwater charge in the future.

Other enterprises include:

- District's General Fund containing the operating revenue and cost related to District and Board activities
- Land and Washplan Enterprise containing mining costs and revenue as well at the Washplan project costs and revenue and costs related to habitat or other land leases.
- Property/Redlands Plaza Enterprise containing the costs and revenue of leased real property facilities (not including mining royalties).

The District also approved an initial Reserve Policy that develops and dedicates reserve funds for the various enterprises and allows the enterprises to lend or borrow funds among the reserves.

Facility Budgeting

The Groundwater Enterprise budget was developed based on historic costs and an outline of significant maintenance needed on a one, two or three year basis. These maintenance costs plus any capital costs (when revenue allows) along with labor are the main expenses of the enterprise. In general the more water recharged the higher the basins cleaning costs. Managing maintenance and repairs will keep costs in check. Also contributions to the GW Enterprise reserve should be budgeted to allow larger costs to be accommodated for repairs without significantly increasing the Groundwater Charge in a given year.

Groundwater Charge

The groundwater charge is administered by the District and based on the recovery of costs associated with the recharge of groundwater and related costs of the Enterprise. This charge is set each year by the Board after a careful deliberative process to determine the appropriate level. The majority of the groundwater charge is contributed by the local municipal retail water entities: City of Riverside/Gage Canal, East Valley WD, City of Redlands and the City of San Bernardino.

In the winter of each year an Engineering Investigation is performed to determine the status of the Groundwater basin and to support the groundwater charge (See discussion in Section 5 and in Appendix13. The District accounts for the amount of water pumped for the Bunker Hill Basin, the amount of rain in the year, the level of the Bunker Hill Basin, and the amount of time and money spent replenishing the Bunker Hill Basin. Keeping all of these factors in mind, the District comes up with a reasonable groundwater charge based on the acre feet of water pumped for each agency or private entity within the District,. Semi-=annual invoices are prepared based on the amount of water pumped reported by each agency or entity.

Cost Recovery/Reimbursement and Use of Facility by Others

The District has several cooperative agreements to allow the use of District facilities for the recharge of water beyond the Districts Licensed Diversion and rights. A regional agreement with agencies in the area, referred to as the Exchange Plan provides options to move water through District facilities and allows the District to seek reimbursement for tracking, monitoring and reporting the water in Santa Ana and Mill Creek. The Exchange plan costs are billed to SBVMWD.

The Big Bear Watermaster agreement names the District as a member of the Watermaster Committee, and while the District does not recharge water for them, they track and provide information to the Watermaster.

The District also currently has two agreements the 1975 Spreading Agreement and the 2007 Easement Agreement that provide recharge of State Project Water and Santa Ana River Water, respectively, for SBVMWD. These agreements pay a proportional share of the District's Maintenance costs for the facilities. The Spreading Agreement provides for year to year proportional share and the Easement agreement provides for a 5 year rolling average share of costs.

A new agreement called the Agreement to Develop and Operate Enhanced Recharge Facilities is currently being finalized between the District, SBVMWD, and WMWD. This is a collaborative agreement for the develop and operation of additional recharge facilities on District property to be able to recharge additional yield and water rights obtained by SBMWD and WMWD due to the Seven Oaks Dam. The District will operate and maintain the expanded facilities under this new Agreement

Section 7- Aggregate Management for Spreading Basins

Movement

Aggregate (sand, silt, gravel, rocks and boulders) move into the Districts facilities with the water that is recharged. This natural process would render the recharge basins useless over time, unless the sediment is removed. As indicated in Section 5, annual maintenance must be completed in many basins to keep them percolating water. Figure 2-1 and 2-2 show the basins in the Districts Santa Ana, and Mill Creek Systems.

In Appendix 12 the current basins removal of sediment are shown as annual, semi-annual or tri-annual, based on the accumulation of aggregate and the likelihood of plugging from other than aggregate materials. The volume of each basin is shown in the table and the likely quantity of material that will need to be moved to clean the basin. While these activities (moving, loading, processing and hauling) may appear similar to aggregate mining they are fundamentally different. These activities attempt only to maintain, repair or rehabilitate the basins. Aggregate materials brought in by water are removed with minimal removal of the underlying materials. Mining seeks to remove native materials and is not a renewable resource.

The District in other lands within the District leases land specifically permitted for aggregate extraction/mining. These operations significantly differ from the maintenance activities in the basins as the purpose of the work is the extraction of the aggregate for sale. The District has only a royalty interest in the material excavated. The leases are long term and have provisions for wet year water recharge operations.

Removal

The District must remove the aggregate materials from the basin and preferable from the property to keep the basins in good operating condition. This can be a costly process depending on the method and the equipment needed. Currently the District utilizes earthmoving equipment to move the materials to the sides and top of the embankment scarify the bottoms of the basins and in some basins remove sediment and haul away. Each year's basin cleaning list is determined by the planned frequency, observed deposition of material or reduction in percolation capacity for the specific basin. In wet years all basins are utilized most of the spring and potential summer and significant cleaning is likely to be needed.

Contracts and Methods

The District utilizes two primary methods to manage the cleaning of the basins: (1) Equipment Contracts with operators to scrape and move material from the bottoms of the basins with large heavy equipment; and (2) Access permits/processing licenses to allow maintenance contractors to remove the materials from the basins and process the material for removal from District property. In addition, District staff performs some maintenance within their capacity.

Equipment Contractors are generally used where the basins accumulate less aggregate and are less amenable to other options. These costs are significant and should be budgeted and executed carefully. Additionally this contract type is used for emergency repairs.

Maintenance/Removal Permits and Licenses are used in areas where the quantity and value of the aggregate is adequate to offset the cost of removing the material or under appropriate conditions pay a royalty to the District for the materials.

Currently both methods are used in the Mill Creek and Santa Ana Basins.

- Basin Cleanout in Borrow Pit

Future Efforts

For 2012, the District will request proposals/bids for both methods of aggregate management and maintenance. This process will provide a fair cost and reasonable return to the District and will allow a multi-year relationship to be developed for maintenance.

Section 8- Environmental Protection

The District's Awareness and Conservation Efforts

The District is aware of endangered species inhabited within its boundaries and makes a conscience effort to conduct operations with their presence in mind. The District works closely with local biological conservation organizations and environmental planning agencies such as the U.S. Fish and Wildlife Service and California Department of Fish & Game. The District has set aside land for the Santa Ana River Woolly Star and is in negotiations with USFWS for The District also makes an effort to compile their own information regarding threatened and endangered species that can be potentially affected by field operations. When taking daily measurements in the field, and conducting maintenance, field crews stay on designated roads and trails in an attempt to limit their environmental impact. Whether it is in the field or through research, the District understands the importance of preserving natural ecosystems and ensuring the longevity of threatened and endangered species.

The Wash Plan

The Upper Santa Ana River Wash Land Management and Habitat Conservation Plan is a major multi-agency planning effort initiated by the District. The planning objectives are described in detail in Section 3 and land-use plans are shown in Appendix 15. The Plan includes a significant amount of habitat conservation set-aside area totaling between 1500 and 2000 acres out of the 4500 acres covered in the plan. This included preservation of habitat for the species describes in the following sections.

Endangered Species

<u>Santa Ana River Woolly Star</u> (*Eriastrum densifolium sanctorum*)

The Santa Ana River Woolly Star (SARWS), *Eriastrum densifolium* ssp. *sanctorum*, is an endangered wild flowering plant of the Riversidian Alluvial Fan Sage Scrub community that is found on the higher elevation flood plain terraces of the Santa Ana River and its tributaries. Its branching woody stems grow 10 to 30 inches tall from the base and contain profuse leaves that are gray-green in color. Large blue-lavender flowers form slender tubes that radiate open at the top and cluster in groups of about 20 per flowerhead. The SARWS blooms annually from late May to mid-August but peaks in June. It has been listed as an endangered species by the California Fish and Game Commission since September 28, 1987.

(http://upload.wikimedia.org/wikipedia/commons/1/17/Eriastrum_densifolium_sanctorum.jpg)

San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*)

The San Bernardino Kangaroo Rat (SBKR), *Dipodomys merriami* spp. *parvus*, is an endangered species of rodent belonging to the Heteromyidae family. The physical description of this particular species is similar to other kangaroo rat species; large hind feet, long tail, cheek pouches, etc. but are generally darker and smaller than the other two subspecies in Southern California. They breed once a year, usually between January and late November and produce a litter of two and three young. The SBKR inhabits alluvial fans and flood plains with large populations near the Santa Ana River, Lytle and Cajon Creek and the San Jacinto River. Originally the SBKR's range included 320,000 acres but as of 1998 it only encompasses approximately 3,247 acres. It has been listed as an endangered species by the U.S. Fish and Wildlife Service since January 27, 1998.

(http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0G8)

Coastal California Gnatcatcher (*Polioptila californica californicus*)

The Coastal California Gnatcatcher (CCG), *Polioptila californica* spp. *californicus*, is a small insectivorous bird that grows up to 4.25 inches long. The CCG is listed as a threatened species under the Endangered Species Act (ESA) and inhabits the coastal sage scrub of Southern California and Mexico. Coastal sage scrub makes up a significant amount of vegetation within the flood plain of the Santa Ana River and the District's land. Urbanization has dramatically decreased their numbers due to the removal of coastal sage scrub; in 1997 no more that 2,900 pairs were documented to be left in the U.S. The male and female are both a dusky gray-color but vary in terms of the color of their crown with the male having a black crown and the female having a blue-gray crown. The CCG was placed on the ESA in 1993.

(Peter Knapp: http://www.prbo.org/calpif/htmldocs/species/scrub/california_gnatcatcher.html)

Slender-horned Spineflower (*Dodecahema leptoceras)*

The Slender-horned Spineflower is a dicot in the family Plygonaceae and is endemic to California. Specifically, it inhabits alluvial-fan habitats in Chaparral and Coastal Sage Scrub communities. The Slender-horned Spineflower has been documented within the District's Santa Ana River Spreading Facility. In 1997 it was ranked by the California Native Plant Society as extremely rare. During the same year it was also listed as an endangered species by both the state of California and the Federal Government.

(http://www.fs.fed.us/wildflowers/rareplants/profiles/tep/dodecahema_leptoceras/images/dodecahema_leptoceras_se1_lg.jpg)

Table of Appendices

Appendix 1 CA Water Code

California Water Code
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Part 5 Powers and Purpose

Chapter 1 Powers and Duties Generally

74500. A district may:
(a) Have perpetual succession.
(b) Adopt a seal and alter it at pleasure.

74501. A district may make contracts and do all acts necessary for the full exercise of its powers.

74502. A district may appoint and employ such engineer or engineers and such attorney or attorneys as the board deems necessary or advisable to accomplish the purposes of the district.

74503. A district may employ and hire such men, teams, tools, implements, machinery, and equipment as the board deems expedient or advisable to perform the work which it deems necessary or advisable to accomplish the purposes of the district.

74504. A district shall cause such work to be done and shall acquire such property as the board deems necessary or advisable to accomplish the purposes of the district, and the board shall estimate the cost thereof, together with rights-of-way for the purpose of ingress to and egress from the works of the district.

74505. A district shall provide for the payment, from the proper fund, of all the debts and just claims against the district.

74506. A district may disseminate information concerning the rights, properties, activities, plans, and proposals of the district; provided, however, that expenditures during any fiscal year for such purposes shall not exceed three cents ($0.03) for each one hundred dollars ($100) of assessed valuation of the district.

74507. A district may vote bonds, cause assessments to be levied, cause elections to be held for the voting of bonds, or on the question of special assessments. If special assessments are voted, the district may cause them to be levied, as provided by Chapter 3 (commencing with Section 75390) of Part 8 of this division, for the purpose of paying any obligation of the district, and for the purpose of raising money to further accomplish the purposes of this division in the manner provided in this division.

74508. A district may levy and collect a ground water charge for the production of water from the ground water supplies within the district or within a zone or zones thereof in the manner prescribed in Part 9 (commencing with Section 75500) of this division.

74509. Notwithstanding any other provision of law, a district may, by resolution of the board of the district, change the name of the district. Such changed name shall include the words "Water Conservation District."

74510. A district may construct, operate, and maintain one or more plants, which plants are constructed after the effective date of this section, for the generation of hydroelectric power and transmission lines for the conveyance thereof. Construction of the plants or plants and transmission lines may be financed by the issuance of revenue bonds pursuant to the Revenue Bond Law of 1941 (commencing with Section 54300 of the Government Code) or any other method of financing district works as provided in this division.

74511. The hydroelectric plant or plants and transmission lines constructed pursuant to Section 74510 may be leased for operation to, or the power generated may be sold to, a public utility or public agency engaged in the distribution, use, or sale of electricity. The power generated may be used by the district for its own purposes, or for the production or transmission of water, but shall not be offered for sale directly by the district to customers other than a public utility or public agency.

Chapter 2 Water

74520. A district may make surveys and investigations of the water supply and resources of the district.

74521. A district may appropriate, acquire, and conserve water and water rights for any useful purpose.

74522. A district may conserve, store, spread, and sink water and for such purposes may acquire or construct dams, damsites, reservoirs and reservoir sites, canals, ditches and conduits, spreading basins, sinking wells, and sinking basins.

74523. A district may maintain, operate, and repair any of the works described in Section 74522.

California Water Code
Division 21 Water Conservation Districts
Part 5 Powers and Purpose

74524. A district may provide for the construction, operation, and maintenance of such works, facilities, or operations within or without the district boundaries as the board deems necessary to protect the land or property in the district from damage by flood or overflow.

74525. A district may drill, construct, install, and operate wells, pumps, pipelines, conduits, valves, gates, meters, and other appurtenances to such wells, pipelines and conduits, and may pump water therefrom and thereby for sale, delivery, distribution, or other disposition.

74526. A district may sell, deliver, distribute, or otherwise dispose of any water that may be stored or appropriated, owned, or controlled by the district.

74527. A district may fix the rates at which water may be sold by the district. The rates shall be uniform for like classes of service throughout the district.

Chapter 3 Recreational Facilities

74540. A district may acquire, construct, maintain, and operate recreational facilities in connection with any dams, reservoirs, or other works owned or controlled by the district.

74541. A district may fix and assess reasonable charges for the use of the recreational facilities by members of the public, and may deposit any funds collected thereby with the treasurer to the credit of the district as provided in Section 74750.

Chapter 4 Property

74550. A district, for the full exercise of its powers and the accomplishment of the purposes of this division, may within or without the district:
(a) Take real and personal property of every kind by grant, appropriation, purchase, gift, devise, condemnation, or lease.
(b) Hold, use, enjoy, manage, occupy, possess, lease, or dispose of real and personal property of every kind.

74551. The legal title to all property acquired by a district shall immediately and by operation of law vest in such district, and shall be held in trust for and set apart for the uses and purposes set forth in this division.

74552. A district may take conveyances or other assurances for all property acquired by it.

74553. A district may exercise the right of eminent domain to take any property necessary to be used for dams, damsites, reservoirs, reservoir sites, canals, ditches and conduits, spreading basins, sinking wells or sinking basins, or otherwise necessary to accomplish the purposes of this division, or to operate or to make use of such works.

74554. The right of eminent domain shall not extend to any property used for, or dedicated to, cemetery purposes.

Chapter 5 Contracts with Other Agencies

74570. A district may cooperate and contract with one or more other districts or public corporations or agencies, whenever, in the opinion of the board, such cooperation or contract is desirable or advantageous to the district.

74570.5. A district may contract with any state agency to finance any district improvement authorized by this division that is related to the provision of water for human consumption. The terms of the contract shall be consistent with this division. Notwithstanding any other provision in this division, the term of the contract may extend up to 30 years.

74571. In furtherance of such cooperation a district may:
(a) Join with another district or districts organized under the laws of this state in the acquisition, purchase or construction of works or other property, real or personal, for the joint use or benefit of the cooperating districts, and may raise any necessary funds by assessments, bonds, or any other means authorized by law.
(b) Empower a cooperating district to conduct the actual construction and operation of the works, or the actual acquisition of the property, and may pay its agreed share of the cost or expense thereof by delivering and turning over to the cooperating district its bonds authorized therefor, such bonds to be received in payment at not less than par value.

74572. If the district is annexed to a cooperating district, all bonds of the annexed district authorized for payment of its agreed share of the cost and expense of the construction and operation of works or the acquisition of property by the annexing cooperating district, shall be issued and shall be delivered to and received by the annexing district at not less than par value. Such bonds shall become the property of the annexing district and they may be collected at maturity or sold by the annexing district at not less

California Water Code
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Part 5 Powers and Purpose

than par value and the proceeds of sale applied to the purpose for which the bonds were issued.

74590. A district may contract with any city, city and county, county, or district organized under the laws of this state for a water supply.

74591. A district may enter into contracts with municipalities, water districts of any type or kind, counties, cities and counties, the State of California, or the United States, under such terms as may be mutually advantageous, for the acquisition or construction of the works authorized by this division, and each of the parties to such contract may contribute to the cost of such acquisition or construction such sums of money as may be agreed upon. Such contracts shall provide for the operation and maintenance of the works thus acquired and for the distribution and sale of any water that may be stored or controlled by the parties thereto. Any surplus revenue derived from such sale, after paying the cost of the operation and maintenance of the works, may be distributed to the parties to the contract in such proportions as may be agreed upon, or may be used for extensions and improvements.

74592. A district may enter into contracts with municipalities, water districts of any type or kind, counties, cities and counties, the State of California, or the United States, under such terms as may be mutually advantageous, for the acquisition or disposal of water or water rights or water storage facilities and rights, or any interest in such water, water rights, or water storage facilities and rights for any useful purpose.

74593. A district, whenever the board deems it to be to the advantage of the district so to do, may:
(a) Enter into contracts with municipalities, sanitary districts or other incorporated bodies, either within or without the district, providing for the delivery to the district of sewage or storm water produced by or coming from such municipalities, sanitary districts, or other incorporated bodies.
(b) Treat, purify, and recycle such water for beneficial use.
(c) Store, distribute, sell, or otherwise dispose of the water and byproducts resulting from such treatment, purification, or recycling.
The district may construct and operate the works necessary for such purposes, and may acquire or construct and may maintain pipelines, flumes, ditches, and reservoirs suitable or adaptable for the prevention of the wastage of water.
Whenever the district receives a revenue from the sale of water and byproducts in excess of the cost of operating and maintaining the works authorized in this section, it may, for the purpose of enlarging, extending, or improving such works, issue its certificates of indebtedness payable out of such excess revenues, and pledge the same for the payment of the indebtedness so created.

74610. A district may cooperate and contract with the United States either under the Federal Reclamation Act of June 17, 1902, and all acts amendatory thereof or supplementary thereto, or under any other act of Congress heretofore or hereafter enacted authorizing or permitting such cooperation or contract.

74611. The cooperation or contract may be for any or all of the following purposes:
(a) Acquisition or construction of works authorized by this division.
(b) A water supply.
(c) Acquisition or disposal of water or water rights or water storage or conservation facilities and rights, and any interest in such water, water rights, or water storage or conservation facilities.
(d) Acquisition or construction of works for any useful purpose.
(e) Investigation, study, or preparation of proposals or plans for any or all of the above purposes.
(f) Obligation of the district to repay to the United States advances of funds made by the United States to the district for any or all of the above purposes.
(g) Assumption as principal or guarantor of indebtedness to the United States.

74612. A district may carry out and perform the terms of any contract so made.

74613. As used in this article, "United States" includes the United States, and any board, bureau, agency, office or officers, department, or corporation of the United States.

74614. The board shall generally perform all acts necessary to exercise the authority conferred by this article, except that if the issuance of bonds of the district is necessary for such purposes, the bonds shall be voted upon and issued in the manner provided in this division for the incurring of bonded indebtedness of the district.

74615. When, in furtherance of a contract made with the United States, bonds of a district are authorized, such bonds may be transferred to or deposited with the United States, at not less than their par value. In such case, the interest or principal, or both, of such bonds may be legally paid to the United States and applied to the amount, or any part thereof, to be paid by the district to the United States, as provided in the contract.

74616. The board may accept, on behalf of the district, appointment of the district as fiscal agent of the United States, or authorization of the district by the United States to make collection of money for, and on behalf of, the United States, and to assume the duties and liabilities incidental thereto. The board may do any and all things required by the federal statutes now or hereafter enacted in connection therewith, and all things required by any rules or regulations now or hereafter established under any such federal statutes.

74617. A contract entered into between a district and the United States may provide that the district shall not be dissolved, nor shall the boundaries be changed except upon the written consent of an official of the United States filed with the official records of the district. If such consent is given and the lands excluded, the area excluded shall be free from all liens and charges for payments to become due to the United States under any such contract.

74618. As whole or partial consideration for any privileges obtained by a district under any contract with the United States, any rights-of-way or rights to water or to the property owned or acquired by the district may be conveyed by the board to the United States insofar as they may be needed for the construction, operation, and maintenance of works by the United States for the benefit of the district pursuant to such contract.

74630. If a district undertakes to execute a contract pursuant to this chapter, no part of the annual payments for the obligations assumed therein, as principal or guarantor, or the interest thereon, or the costs of maintenance and operation of the works so acquired or constructed, over and above the amounts available therefor from revenues, that is in excess of the limitations on assessment taxes provided in Sections 75357 and 75358, shall be levied until such contract has been approved by the voters of the district, or of the improvement district, for which such contract was made, by a majority of the voters thereof voting on the proposition, in the manner provided for the incurring of a bonded indebtedness. In the event of the approval of such contract by the voters, the limitations provided in Sections 75357 and 75358 shall not apply.

74640. A district may sue and be sued, except as otherwise provided in this division or by law, in all actions and proceedings in all courts and tribunals of competent jurisdiction.

74641. A district may commence, maintain, intervene in, and compromise, in the name of the district, and assume the costs of, any action or proceeding involving or affecting the ownership or use of water or water rights within the district, used or useful for any purposes of the district, or of common benefit to the lands situated therein.

74642. A district may commence, maintain, intervene in, defend, and compromise actions and proceedings to prevent interference with or diminution of the natural flow of any stream or streams or unnavigable river, or rivers, including the natural subterranean supply of water therefrom, which may be used or useful for any purpose of the district, or a common benefit to the lands within the district or its inhabitants; and may commence, maintain, and defend actions and proceedings to prevent any such interference with such waters as may endanger the inhabitants or lands of the district.

74643. A district may institute and maintain any and all actions, proceedings, and suits at law or in equity necessary or proper to fully carry out the provisions of this division, or to enforce, maintain, protect, or preserve any and all rights, privileges, and immunities created by this division or acquired in pursuance thereof.

74644. In all courts, actions, suits, or proceedings, the board may sue, appear, and defend in the name of the district in person or by attorneys.

74645. All claims for money or damages against the district are governed by Part 3 (commencing with Section 900) and Part 4 (commencing with Section 940) of Division 3.6 of Title 1 of the Government Code except as provided therein, or by other statutes or regulations expressly applicable thereto.

74650. (a) A district may act by ordinance in exercising its powers under this division over lands, structures, and facilities in which the district has a real property interest. All ordinances shall be enacted only by rollcall vote entered into the proceedings of the board.

(b) It is the policy of the Legislature to avoid duplication of authority of local districts to regulate upon the same subjects in the same area. Accordingly, this chapter shall not apply to a district lying within another district having and exercising, in accordance with the governing statute of the overlying district, the authority to adopt and enforce, upon civil or penal sanction, ordinances for the same purposes.

74651. An ordinance shall be in full force and effect upon adoption, but shall be published once in full in a newspaper of general circulation, printed, published, and circulated in the district within 10 days after adoption, or if there be no such newspaper, then posted within that time in three public places within the district.

74652. It is a misdemeanor for any person to violate any district ordinance adopted pursuant to Section 74650 from and after the publication or posting of the ordinance pursuant to Section 74651. The violation shall be punishable by a fine not to exceed five hundred dollars ($500), or imprisonment in the county jail not to exceed 30 days, or by both that fine and imprisonment. Any violation or threatened violation may also be enjoined by civil action.

Appendix 2 Water Rights Licenses

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
STATE ENGINEER

License for Diversion and Use of Water

LICENSE 2831 PERMIT 2488 APPLICATION 2217

THIS IS TO CERTIFY, *That* **San Bernardino Valley Water Conservation District, Redlands, California**

has made proof as of **May 22, 1945** *(the date of inspection) to the satisfaction of the State Engineer of California of a right to the use of the waters of* **Santa Ana River in San Bernardino County**

tributary to **Pacific Ocean**

for the purpose of **irrigation and domestic uses** *under Permit* **2488** *of the Department of Public Works and that said right to the use of said waters has been perfected in accordance with the laws of California, the rules and regulations of the Department of Public Works and the terms of the said permit; that the priority of the right herein confirmed dates from* **February 18, 1921;**

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to the amount actually beneficially used for said purposes and shall not exceed **eighty-three hundred (8300) acre-feet per annum by underground storage to be diverted and spread from about January 1 to about May 31 of each season SUBJECT TO VESTED RIGHTS. The spreading grounds are located within Township 1 South, Ranges 2 and 3 West, S.B.B. & M., as shown on a map, No. 4522, filed with the State Engineer June 23, 1945.**

This license is based on storage collected during the 1943 season and use thereof.

The points of diversion and recovery *of such water are located* as follows:

POINT OF DIVERSION TO SPREADING GROUNDS

N. 50° E. 1212' from the Southwest corner of Section 4, T 1 S., R 2 W., S.B.B. & M., being within the SW¼ of SW¼ of said Section 4.

POINTS OF REDIVERSION OF STORED WATER

By Gravity: (1) N. 1600' and E. 1600' from Southwest corner of Section 13, T 1 S., R 4 W., S.B.B. & M., being within the NE¼ of SW¼ of said Section 13.

(2) N. 350' and E. 1482' from the Southwest corner of Projected Section 21, T 1 S, R 4 W., S.B.B. & M., being within the SE¼ of SW¼ of said Section 21.

(3) N. 3283' and W. 7024' from the E¼ corner of Section 36, T 3 S, R 8 W, S.B.B. & M., being within the SW¼ of SE¼ of Section 26, T 3 S, R 8 W, S.B.B. & M.

(4) S. 78° 00' E. 2070' from the N¼ corner of Section 32, T 3 S, R 8 W., S.B.B. & M., being within the NE¼ of NE¼ of said Section 32.

By Pumping: Sundry wells in storage basin of Santa Ana River within T 1 S, Rs. 3 and 4 W. and T 2 S, Rs. 5 and 6 W, S.B.B. & M.

A description of the lands or the place where such water is put to beneficial use is as follows:

52,640 acres located in Township 1 South, Ranges 3 and 4 West; Township 2 South, Ranges 4, 5 and 6 West; Township 3 South, Ranges 5, 6, 9 and 10 West; Township 4 South, Ranges 9 and 10 West; Township 5 South, Ranges 9 and 10 West; S.B.B. & M., as shown on said map No. 4522 filed with the State Engineer on June 23, 1945.

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
STATE ENGINEER

License for Diversion and Use of Water

LICENSE 2831 PERMIT 2488 APPLICATION 2217

THIS IS TO CERTIFY, *That* San Bernardino Valley Water Conservation District, Redlands, California

has made proof as of May 22, 1945 *(the date of inspection) to the satisfaction of the State Engineer of California of a right to the use of the waters of* Santa Ana River in San Bernardino County

tributary to Pacific Ocean

for the purpose of irrigation and domestic uses *under Permit* 2488 *of the Department of Public Works and that said right to the use of said waters has been perfected in accordance with the laws of California, the rules and regulations of the Department of Public Works and the terms of the said permit; that the priority of the right herein confirmed dates from* February 18, 1921;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to the amount actually beneficially used for said purposes and shall not exceed eighty-three hundred (8300) acre-feet per annum by underground storage to be diverted and spread from about January 1 to about May 31 of each season SUBJECT TO VESTED RIGHTS. The spreading grounds are located within Township 1 South, Ranges 2 and 3 West, S.B.B. & M., as shown on a map, No. 4522, filed with the State Engineer June 23, 1945.

This license is based on storage collected during the 1943 season and use thereof.

The points of diversion and recovery *of such water* are *located* as follows:

All rights and privileges under this license including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of the Department acting through the State Engineer in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

Reports shall be filed promptly by licensee on appropriate forms which will be provided for the purpose from time to time by the State Engineer.

The right to the diversion and use of the water aforesaid hereby confirmed is restricted to the point of diversion herein specified and to the lands or place of use herein described.

This license is granted and licensee accepts all rights herein confirmed subject to the following provisions of the Water Code:

Section 1625. Each license shall be in such form and contain such terms as may be prescribed by the Department.

Section 1626. All licenses shall be under the terms and conditions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1628. Every license shall include the enumeration of conditions therein which in substance shall include all of the provisions of this article and the statement that any appropriator of water to whom a license is issued takes the license subject to the conditions therein expressed.

Section 1629. Every licensee, if he accepts a license, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivison of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, city and county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property can not agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

Witness my hand and the seal of the Department of Public Works of the State of California, this 17th *day of* June *, 19*46

EDWARD HYATT, *State Engineer*

By ______________

LICENSE 2831

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
STATE ENGINEER

LICENSE TO APPROPRIATE WATER

ISSUED TO San Bernardino Valley Water Conservation District

DATED June 17, 1946

36292 7-44 1M STATE PRINTING OFFICE

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
STATE ENGINEER

License for Diversion and Use of Water

LICENSE 2832 PERMIT 3593 APPLICATION 4807

THIS IS TO CERTIFY, *That* San Bernardino Valley Water Conservation District
Redlands, California

has made proof as of May 22, 1945
(the date of inspection) to the satisfaction of the State Engineer of California of a right to the use of the waters of

Santa Ana River in San Bernardino County

tributary to Pacific Ocean

for the purpose of irrigation and domestic uses
under Permit 3593 *of the Department of Public Works and that said right to the use of said waters has been perfected in accordance with the laws of California, the rules and regulations of the Department of Public Works and the terms of the said permit; that the priority of the right herein confirmed dates from* October 21, 1925;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to the amount actually beneficially used for said purposes and shall not exceed twenty-one hundred (2100) acre-feet per annum by underground storage to be diverted and spread from about October 1 to about December 31 of each season SUBJECT TO VESTED RIGHTS. The spreading grounds are located within Township 1 South, Ranges 2 and 3 West, S.B.B. & M., as shown on a map No. 4522, filed with the State Engineer June 23, 1945.

This license is based on storage collected during the 1941 season and use thereof.

The points of diversion and of recovery *of such water* are *located* as follows:

POINT OF DIVERSION TO SPREADING GROUNDS

N. 50° E. 1212' from the Southwest corner of Section 4, T 1 S, R 2 W, S.B.B. & M., being within the SW¼ of SW¼ of said Section 4.

POINTS OF REDIVERSION OF STORED WATER

By Gravity: (1) N. 1600' and E. 1600' from Southwest corner of Section 13, T 1 S, R 4 W, S.B.B. & M., being within the NE¼ of SW¼ of said Section 13.

(2) N. 350' and E. 1482' from the Southwest corner of Projected Section 21, T 1 S, R 4 W, S.B.B. & M., being within the SE¼ of SW¼ of said Section 21.

(3) N. 3283' and W. 7024' from the E¼ corner of Section 36, T 3 S, R 8 W., S.B.B. & M., being within the SW¼ of SE¼ of Section 26, T 3 S, R 8 W, S.B.B. & M.

(4) S. 78° 00' E. 2070' from the N¼ corner of Section 32, T 3 S, R 8 W, S.B.B. & M., being within the NE¼ of NE¼ of said Section 32.

By Pumping: Sundry wells in storage basin of Santa Ana River within T 1 S, Rs. 3 and 4 W., and T 2 S, Rs. 5 and 6 W.,S.B.B. & M.

A description of the lands or the place where such water is put to beneficial use is as follows:

52,640 acres located in Township 1 South, Ranges 3 and 4 West; Township 2 South, Ranges 4, 5 and 6 West; Township 3 South, Ranges 5, 6, 9 and 10 West; Township 4 South, Ranges 9 and 10 West; Township 5 South, Ranges 9 and 10 West, S.B.B. & M., as shown on said map No. 4522 filed with the State Engineer on June 23, 1945.

3

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
STATE ENGINEER

License for Diversion and Use of Water

LICENSE 2832 PERMIT 3593 APPLICATION 4807

THIS IS TO CERTIFY, *That* San Bernardino Valley Water Conservation District
Redlands, California

ha s *made proof as of* May 22, 1945 *(the date of inspection) to the satisfaction of the State Engineer of California of a right to the use of the waters of* Santa Ana River in San Bernardino County

tributary to Pacific Ocean

for the purpose of irrigation and domestic uses *under Permit* 3593 *of the Department of Public Works and that said right to the use of said waters has been perfected in accordance with the laws of California, the rules and regulations of the Department of Public Works and the terms of the said permit; that the priority of the right herein confirmed dates from* October 21, 1925;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to the amount actually beneficially used for said purposes and shall not exceed twenty-one hundred (2100) acre-feet per annum by underground storage to be diverted and spread from about October 1 to about December 31 of each season SUBJECT TO VESTED RIGHTS. The spreading grounds are located within Township 1 South, Ranges 2 and 3 West, S.B.B. & M., as shown on a map No. 4522, filed with the State Engineer June 23, 1945.

This license is based on storage collected during the 1941 season and use thereof.

*The point*s *of diversion* and of recovery *of such water* are *located* as follows:

All rights and privileges under this license including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of the Department acting through the State Engineer in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

Reports shall be filed promptly by licensee on appropriate forms which will be provided for the purpose from time to time by the State Engineer.

The right to the diversion and use of the water aforesaid hereby confirmed is restricted to the point of diversion herein specified and to the lands or place of use herein described.

This license is granted and licensee accepts all rights herein confirmed subject to the following provisions of the Water Code:

Section 1625. Each license shall be in such form and contain such terms as may be prescribed by the Department.

Section 1626. All licenses shall be under the terms and conditions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1628. Every license shall include the enumeration of conditions therein which in substance shall include all of the provisions of this article and the statement that any appropriator of water to whom a license is issued takes the license subject to the conditions therein expressed.

Section 1629. Every licensee, if he accepts a license, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivison of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, city and county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property can not agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

Witness my hand and the seal of the Department of Public Works of the State of California, this day of June 17th, 1946

EDWARD HYATT, *State Engineer*

By ______ Deputy State Engineer

LICENSE 2832

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
STATE ENGINEER

LICENSE
TO APPROPRIATE WATER

ISSUED TO San Bernardino Valley Water Conservation District.

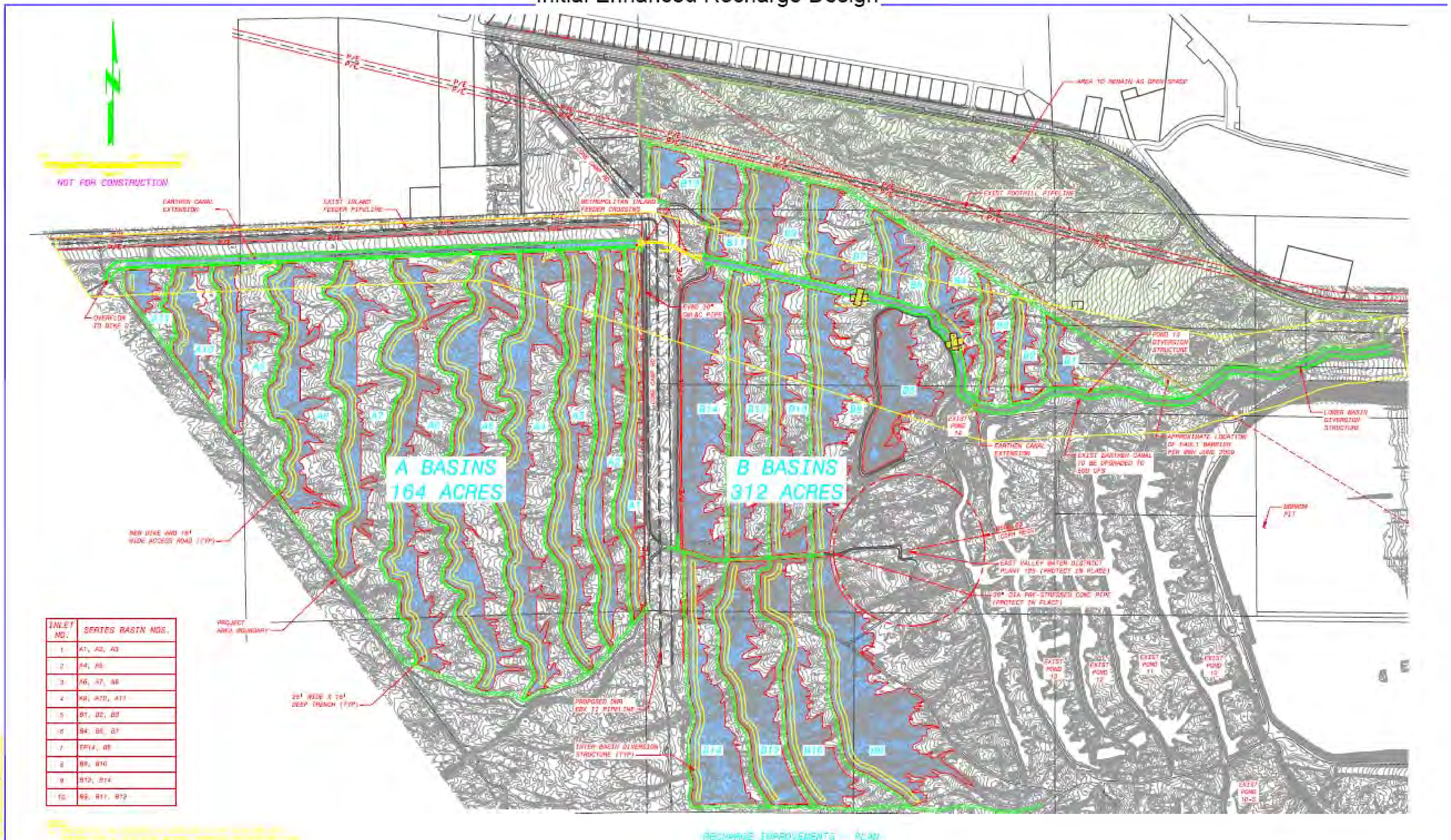
DATED June 17, 1946

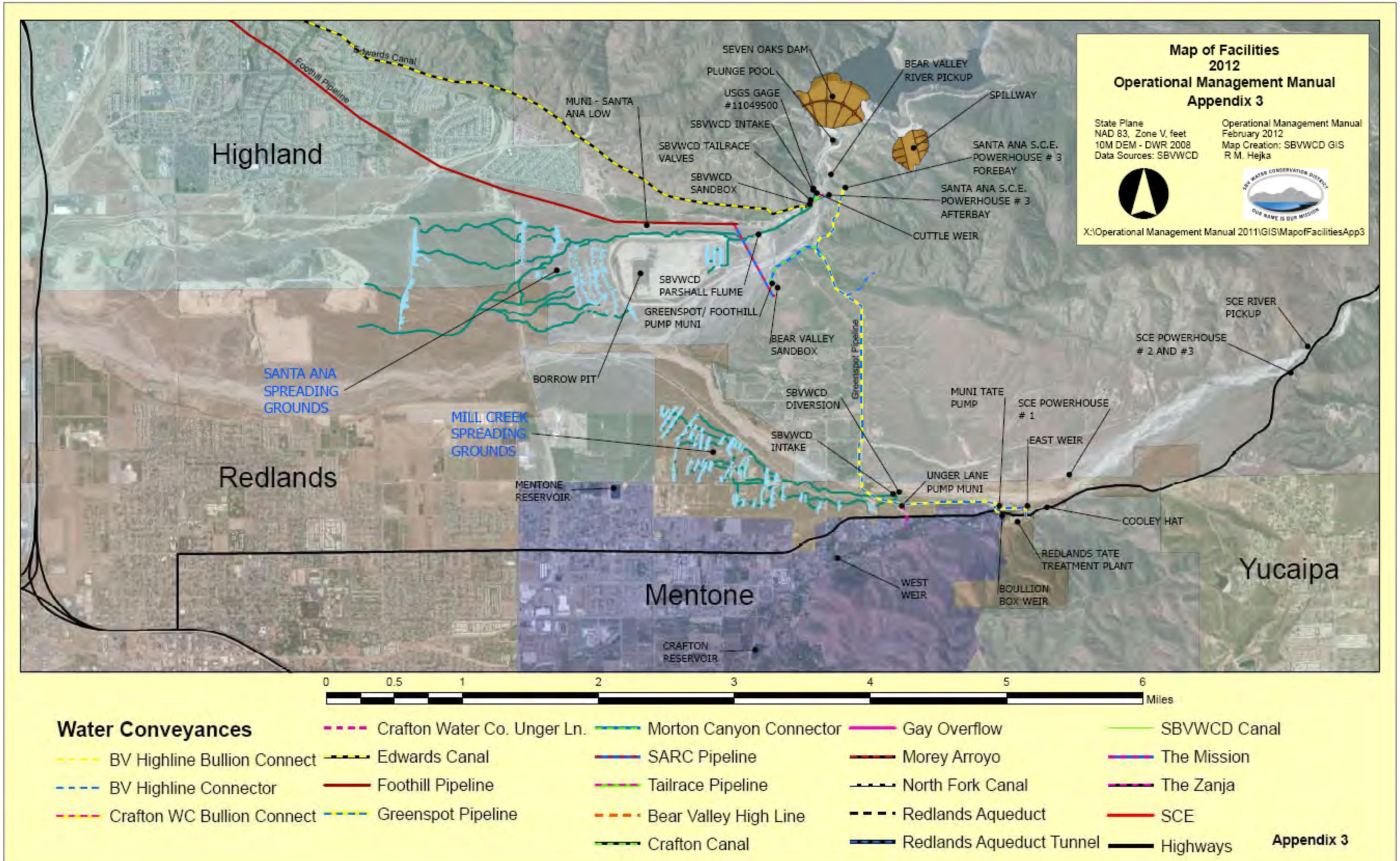
36292 7-44 1M STATE PRINTING OFFICE

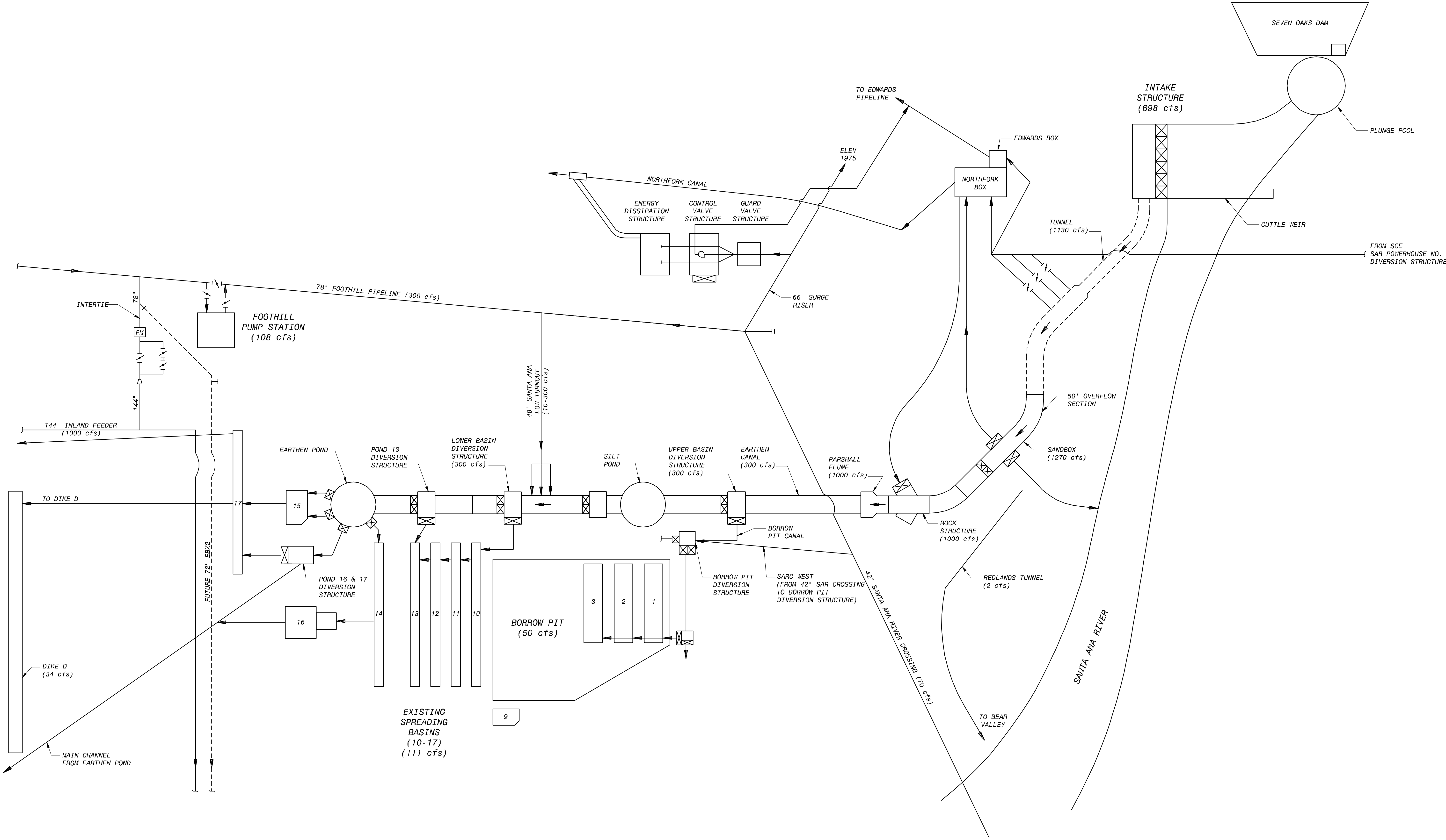
Appendix 3 Initial Enhanced Recharge Design

Appendix 3

Initial Enhanced Recharge Design




Map of Facilities
2012
Operational Management Manual
Appendix 3
State Plane
NAD 83, Zone V, feet
10M DEM - DWR 2008
Data Sources: SBVWCD
Operational Management Manual
February 2012
Map Creation: SBVWCD GIS
R M. Hejka
X:\Operational Management Manual 2011\GIS\MapofFacilitiesApp3
Highland
Redlands
Mentone
Yucaipa
Edwards Canal
Foothill Pipeline
Greenspot Pipeline
SEVEN OAKS DAM
PLUNGE POOL
USGS GAGE #11049500
SBVWCD INTAKE
SBVWCD TAILRACE VALVES
SBVWCD SANDBOX
MUNI - SANTA ANA LOW
BEAR VALLEY RIVER PICKUP
SPILLWAY
SANTA ANA S.C.E. POWERHOUSE # 3 FOREBAY
SANTA ANA S.C.E. POWERHOUSE # 3 AFTERBAY
CUTTLE WEIR
SBVWCD PARSHALL FLUME
GREENSPOT/ FOOTHILL PUMP MUNI
BEAR VALLEY SANDBOX
BORROW PIT
SANTA ANA SPREADING GROUNDS
MILL CREEK SPREADING GROUNDS
SBVWCD DIVERSION
SBVWCD INTAKE
MUNI TATE PUMP
SCE POWERHOUSE # 1
EAST WEIR
UNGER LANE PUMP MUNI
SCE RIVER PICKUP
SCE POWERHOUSE # 2 AND #3
MENTONE RESERVOIR
COOLEY HAT
REDLANDS TATE TREATMENT PLANT
WEST WEIR
BOULLION BOX WEIR
CRAFTON RESERVOIR
0
0.5
1
2
3
4
5
6
Miles
Water Conveyances
BV Highline Bullion Connect
BV Highline Connector
Crafton WC Bullion Connect
Crafton Water Co. Unger Ln.
Edwards Canal
Foothill Pipeline
Greenspot Pipeline
Morton Canyon Connector
SARC Pipeline
Tailrace Pipeline
Bear Valley High Line
Crafton Canal
Gay Overflow
Morey Arroyo
North Fork Canal
Redlands Aqueduct
Redlands Aqueduct Tunnel
SBVWCD Canal
The Mission
The Zanja
SCE
Highways
Appendix 3



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CYGNET ID: 167164-2000-C-H0001OSRC

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Black & Veatch Corporation
Irvine, California

ENGINEER'S SEAL

PLANS PREPARED BY:

PROJECT ENGINEER DATE

APPROVED BY:

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT DATE

MARK	BY	DATE	REVISION

San Bernardino Valley Municipal Water District
380 EAST VANDERBILT WAY, SAN BERNARDINO, CA 92408
PHONE: (909) 387-9253 FAX: (909) 387-9247

ISSUED FOR: PRELIMINARY
DRAWING NO. FIGURE 2-1

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

DATE:
DESIGN/DRAWN:
REVIEWED:
JOB NO:

ENHANCED RECHARGE IN THE SANTA ANA RIVER SPREADING BASINS PROJECT

EXISTING PROCESS SCHEMATIC

SCALE: AS NOTED
SHEET ___ OF ___
FILE NO.

Appendix 4 Operational Procedures

Well Measuring Procedures

Using Well Sounder

** Warning there could be a wasp or bee's nest, or spiders (Black Widows) under the lid so use caution when approaching the well and removing the lid**

1. Unlock pad lock on the top of the well casing, and remove the well's lid.
2. Open the lid of Well Sounder and flip the power switch to the on position.
3. Press the test button on the Well Sounder. You must hear a beep to ensure the device is working properly. If there is no beep you must change the batteries.
4. Lower the metal probe on the end of the Well Sounder down the well until you hear the beep from the well sounder.
5. Adjust the probe's height up or down to the point where the Well Sounder just begins to make a beep.
6. Record the measurement on the tape attached to the Well Sounder at the height of the very top of the inside casing.
7. To obtain the water surface elevation. Take the well's reference point elevation and subtract the number you just measured from it.
8. Remove the Well Sounder from the well and toggle the power switch to the off position.
9. Replace the well's lid and re-lock the pad lock.

Using Rugged Reader (only to measure wells with electronic well measuring devices installed)

** Warning there could be a wasp or bee's nest, or spiders (Black Widows) under the lid so use caution when approaching the well and removing the lid**

1. Unlock pad lock on the top of the well casing, and remove the well's lid.
2. Remove the plug that is inserted into the casing, and pull up the attached chord.
3. Remove the electronic well measuring device from the cap attached to the chord by twisting the cap counter clockwise. You may need to use a wrench. Be careful not to damage the device.
4. Power on the rugged reader (you may need to plug the DC power cord into your truck's cigarette lighter), plug in the serial rugged reader attachment and load the program called Win-Situ Mobile by clicking on the upper left start menu then the program icon.
5. Dry the well measuring device then plug it into the serial reader that is plugged into the Rugged Reader.
6. Push the connect button on the bottom left corner of the screen. Then press the download button (it looks like a curved down arrow). Once the log is downloaded press the disconnect button
7. Turn off, unplug, and secure all the cables for the Rugged Reader.
8. Install the well measuring device back into the lid that is attached to the cable. Tighten by twisting the lid clockwise and secure it is tight as you can with your hands.
9. Lower the cable with the well monitoring device on it, back down the well.
10. Replace the Plug attached to the chord, and replace and re-lock the well's casing lid
11. Repeat this process for all necessary wells and return the Rugged Reader to the Office.

New Gate Operations

Due to excessive time and effort required to open and close the old gates in the district facilities, new gates have been installed. The following procedures are instructions on how to properly raise and lower the new gates:

Warning never open the diversion gates at the Cuttle Weir past a flow of 300cfs, this is the flow limit for the culvert at Greenspot Rd. futher down the river.

1. Back up the generator close enough to provide power for the tripod mounted drill
2. Unload the tripod mounted drill from the truck and place in front of the actuators. Make sure to remove and secure the two cotter pins, don't let them fall into the water.
3. Unlock and secure the lock on the actuator, don't drop it into the water.
4. Lower the tripod until the top of the drill head is lower than the spindle on the actuator.
5. Lift the drill and tripod assembly together and slide the drill head over the spindle, until the holes line up.
6. Insert the cotter pins into both of the holes
7. Spin the wheel at the top of the tripod to lower the tripod securely onto the ground
8. **Do not let the flow at the diversion point at the Cuttle Weir exceed 300cfs.**
9. Use the switch on the drill to select foreword or reverse depending on whether you want the gate to open or close. Press the trigger on the switch to ensure the gate is moving in the direction you desire.
10. Hold the switch down until the gate is open to the height you want or until it closes
11. If you are closing the gate you need to make sure that the rod is not bent, if it starts to bend you need to reverse the drill a rotation to take the pressure off the rod.
12. Spin the wheel to at the top of the tripod to raise it off the ground, then remove cotter pins and slide the drill off of the actuator.
13. Replace the cotter pins in the drill and re-lock the actuator.
14. Take the tripod mounted drill, and the generator back to the shop.

High Flow Plan

Mill Creek

In Mill Creek, with the start of any rain, the creek should be turned out or will already have been turned out. First flows usually bring excess debris from the hills as well as clay from Yucaipa which will slow the percolation process in the ponds. When the rain has subsided or let up, check to see if the red tinge color of clay is gone from the water flowing through Mill Creek. Sometimes this can take a couple of days. What to look for is water that does not look too dirty from silt or clay, but dirty from just sand. Once the silt and clay appear to be absent in the water, and only the sandy color remains, the water can be turned in for percolation. There are two things to keep in mind:

(1) all this can happen if flows have not damaged the channel, and/or the soft plug has not been lost (A soft plug is a low berm (about 18 inches) of dirt, sand, and rock that diverts water from a creek away from its natural intended course (0- 100 cfs). During a high water event (excess of 100 cfs) the soft plug is washed away. With the destruction of the soft plug, the area it was diverting water to is now unaffected by damage and debris).

(2) high flows in the canals bring rock and sand that needs to be sluiced out occasionally by opening the gates back to the Creek at the intake and also the flush gate downstream, while the main canal gate stays open.

Santa Ana River

In the Santa Ana River (SAR), high flows are contingent on the Seven Oaks Dam (SOD). Before any unusually high flows are released from SOD, the SOD operators will contact SBVWCD with more than enough time to prepare for these high flows. In the case of a high flow, start with the intake gates closed. At flows higher than 800cfs the gates at the Cuttle Weir should be removed so that rocks, and debris from behind the dam and in the channels, can flow freely downstream. When the water has pretty much settled out and is no longer climbing the gates of the intake, they can be cracked to let the desired amount in, but no more than 300 cfs, which is right at the upper limits of what the culvert at Greenspot Road can handle. At flows lower than 800 cfs the gates at the Cuttle Weir should be in place to help direct the capture the 300 cfs into our intake. Note that the removal and replacement of Cuttle Weir gates can only happen when the water is off!

Appendix 5 Example Daily Flow Report (DFR) With Formulas

Santa Ana River-Mill Creek Cooperative Water Project

Daily Flow Report

Date: January 9, 2012

Time: 0745

State Water Project

	Inflows	Flow Rate (cfs)		Deliveries	Flow Rate (cfs)		Deliveries (continued)	Flow Rate (cfs)
(+)A	BBMWD In-lieu	0.0	(+)H	[1]EVWD Treatment Plant	0.0	(+)P	[1]SARC West	0.0
(+)B	Muni test @ Greenspot Sta.	0.0	(+)I	[1]Santa Ana Low Turnout	0.0	(+)Q	[1]Zanja	0.0
(+)C	Exchange Water	0.0	(+)J	[1]Northfork Canal	0.0	(+)R	[1]Tate Treatment Plant	0.0
(+)D	Purchased Water	0.0	(+)K	[1]Edwards Canal	0.0	(+)S	[1]SBCFCD Grove	0.0
(+)E	Redlands Aqueduct Leakage	0.0	(+)L	[1]Redlands Aqueduct	0.0	(+)T	[1]Newport for BVMWC	0.0
(+)F	Recharge Project	0.0	(+)M	[1]Crafton Unger Lane	0.0	(+)U	[1]M/C spreading @ ZT	0.0
(Σ)G	**Total SWP Inflows**	**0.0**	(+)N	[1]BVMWC Boullioun Box	0.0			0.0
				Observation at SOD	NA	(Σ)V	**Total SWP Deliveries**	**0.0**
Santa Ana River				**SOD Reservoir Elevation**	**2187.68**		**Debris Pool Elevation**	**2200.00**

	Inflows	Flow Rate (cfs)		Deliveries	Flow Rate (cfs)		Deliveries	Flow Rate (cfs)
(+)A1	PH #3 Penstock (CALC)	20.3	(+)M1	SBCFCD Grove	0.0	(+) A2	Newport	0.0
(+)B1	BVMWC Highline	4.5	1.0	BVMWC Highline	0.0	(+)B2	*Gay Overflow*	2.2
(+)C1	Greenspot Pipeline	0.0	(+)O1	Newport for BVMWC	0.0	(+)C2	*Irrigation*	2.3
(+)F1	Greenspot Spill	1.1	(+)P1	SBVWCD Mill Creek Spreading	0.0	(+)(Σ)D2	Boullioun Box Weir	4.5
A4	**SAR Inflow-SubTotal-1**	**25.9**	(+)Q1	Crafton WC Unger Lane	0.0	(+) E2	Boullioun Box to Zanja	0.0
(+)D1	BVMWC Rvr PU-USGS, Flume	3.5	(+)R1	BVMWC Highline to Boullioun	0.0	(+) F2	SBVWCD Mill Creek Spread	0.0
(+)E1	Main River Gage (USGS)	0.0	(+)S1	Crafton WC Boullioun	0.0	(Σ) B1	**BVMWC Highline**	**4.5**
Z1	**SOD ReleaseSubTotal D1+E1**	**3.5**	(+)T1	Tate Pump Station to Zanja	0.0	(+) G2	Northfork Canal Weir	6.8
(Σ)G1	**SubTotal 1+2 SAR Inflows**	**29.4**	(Σ) C1	Greenspot Pipeline	0.0	(+) H2	Edwards Canal	0.0
(-)D1a	If BV p/u gated, divert to SAR= "Y"		(+)V1	PH#3 Afterbay SpillLoss to SAR	0.0	(+) J2	Tailrace Valve	0.0
(Σ)A5	**Total SAR Inflows**	**29.4**	W1	Redlands Aqueduct / Sandbox	18.5	(+)K2	Northfork Parshall Flume	0.0
H1	SBVWCD Diversion	0.0	X1	SBVWCD Mill Creek Spreading	0.0	(Σ) I2	**Tailrace Pipeline**	**6.8**
I1	Redlands Tunnel	0.4	Y1	Redlands Sandbox Spill	0.0	(+) L2	**SBVWCD Parshall FlumeTo Basins**	**0.0**
J1	[a]Big Bear Lake Release	1.5	(+)Z2	Cuttle Weir To River	0.0	(Σ) C1	Greenspot Pipeline	0.0
K1	PH#3 Penstock (SCADA)	NA				(Σ)N2	[1)]**Total SAR Deliveries**	**29.4**
L1	SCE SAR AVM (SCADA)	27.7						

				Deliveries	Flow Rate (cfs)		Deliveries	Flow Rate (cfs)
Mill Creek			(+)I3	Yucaipa Regional Park	0.0	(+)P3	Tate Inflow	0.0
	Inflows	Flow Rate (cfs)	(+)J3	Wilson Creek Spreading	0.0	(+)Q3	East Weir to Mill Creek	8.0
(+) A3	RPU Flow	10.1	(Σ)K3	**Yucaipa Pipeline**	**0.0**	(+)R3	Boullioun to BVMWC Highline	0.0
(+) B3	M/C #3 Penstock	10.3	(+)L3	East Weir (MC)	8.0	(+)S3	East Weir to Zanja	12.4
(+) C3	SBVWCD Mill Creek Diversion	0.0	(+)M3	BVHL (SAR)	0.0	(Σ)T3	Mill Creek #1 Flow (Cooley Hat)	20.4
(Σ) D3	**Total MC Inflows**	**20.4**	(+)C3	Mill Creek Diversion (MC)	0.0	U3	**Total MC Deliveries**	**20.4**
E3	M/C #1 Penstock Flow	20.4	(Σ)O3	**SBVWCD Spreading**	**8.0**	V3	Zanja West Weir to CWC Canal	11.1
F3	Stream Parshall Flume to Yucaipa	0.0				W3	Mill Creek PH #2,3 Afterbay Spill	0.0
G3	Observation at Garnet Bridge	2.0						
H3			I3	Mentone Reser. Level (23.0)	19.7	Y3	Crafton Reser. Level (21.3)	17.7

SBVWCD Recharge

	Location	Type		Previous Day (AF)			WY To Date (AF)	Target
A4	**Santa Ana River**	**SAR**	E4	0		I4	692	10400/30000
M4	**Santa Ana Rvr to Mill Creek**	**SAR-MC**	N4	0		O4	0	
B4	**Santa Ana River**	**SWP**	F4	0		J4	0	
C4	**Mill Creek**	**MC**	G4	71		K4	1,875	18,000
D4	**Mill Creek**	**SWP**	H4	0		L4	0	714
	SBVMWD	**SWP**		0			0	
	WMWD	**SWP**						

	SAR Passing Cuttle Weir	SAR	0	**Share of Lost Flow**	0	SARP	**Estimate SAR Recharge**[18]	0
	Mill Creek Passing Garnet	MC	2	**Share of Lost Flow**	0	MCRP	**Estimate Mill Creek Recharge**[19]	2
	Flow in the River Above Alabama	Total	2	**Flowing Beyond Alabama**	0		**Total River Recharge**	2

DFR Formulas

	C	D	E	F	G	H	I	J	K
1	Santa Ana River-Mill Creek Cooperative Water Project								
2				*Daily Flow Report*				Date:	
3								Time:	
4	**State Water Project**								
5									
6		**Inflows**	Flow Rate (cfs)		**Deliveries**	Flow Rate (cfs)		**Deliveries (continued)**	Flow Rate (cfs)
7	**(+)A**	BBMWD In-lieu	**SCADA**	**(+)H**	[1]EVWD Treatment Plant	**SCADA**	**(+)P**	[1]SARC West	**SCADA**
8	**(+)B**	Muni test @ Greenspot Sta.	**SCADA**	**(+)I**	[1]Santa Ana Low Turnout	**SCADA**	**(+)Q**	[1]Zanja	**SCADA**
9	**(+)C**	Exchange Water	**SCADA**	**(+)J**	[1]Northfork Canal	**SCADA**	**(+)R**	[1]Tate Treatment Plant	**SCADA**
10	**(+)D**	Purchased Water	**SCADA**	**(+)K**	[1]Edwards Canal	**SCADA**	**(+)S**	[1]SBCFCD Grove	**SCADA**
11	**(+)E**	Redlands Aqueduct Leakage	**SCADA**	**(+)L**	[1]Redlands Aqueduct	**SCADA**	**(+)T**	[1]Newport for BVMWC	**SCADA**
12	**(+)F**	Recharge Project	**SCADA**	(+)M	[1]Crafton Unger Lane	**SCADA**	**(+)U**	[1]M/C spreading @ ZT	**SCADA**
13	**(Σ)G**	**Total SWP Inflows**	**=SUM(E7:E12)**	**(+)N**	[1]BVMWC Boullioun Box	**SCADA**			**SCADA**
14					Observation at SOD	**SCADA**	**(Σ)V**	**Total SWP Deliveries**	**=SUM(H8:K13)**
15	**Santa Ana River**				**SOD Reservoir Elevation**	**NA**		**Debris Pool Elevation**	**SCADA**
16									
17		**Inflows**	Flow Rate (cfs)		**Deliveries**	Flow Rate (cfs)		**Deliveries**	Flow Rate (cfs)
18	**(+)A1**	PH #3 Penstock (CALC)	**=K25+K26+K27+K28+H27+H28+H30-E30-E23-E21**	**(+)M1**	SBCFCD Grove	**SCADA**	**(+) A2**	Newport	
19	**(+)B1**	BVMWC Highline	**SCADA**	**(+)N1**	BVMWC Highline	**SCADA**	(+)B2	*Gay Overflow*	**Measure on site**
20	**(+)C1**	Greenspot Pipeline	**SCADA**	**(+)O1**	Newport for BVMWC	**SCADA**	(+)C2	*Irrigation*	**=K21-K19**
21	**(+)F1**	Greenspot Spill	**Measure on site**	**(+)P1**	SBVWCD Mill Creek Spreading	**SCADA**	**(+)(Σ)D2**	Boullioun Box Weir	
22	**A4**	**SAR Inflow-SubTotal-1**	**=SUM(E18:E21)**	**(+)Q1**	Crafton WC Unger Lane	**SCADA**	**(+) E2**	Boullioun Box to Zanja	
23	**(+)D1**	BVMWC Rvr PU-USGS, Flume	**SCADA**	**(+)R1**	BVMWC Highline to Boullioun	**SCADA**	**(+) F2**	SBVWCD Mill Creek Spread	
24	**(+)E1**	Main River Gage (USGS)	**SCADA**	**(+)S1**	Crafton WC Boullioun	**SCADA**	**(Σ) B1**	**BVMWC Highline**	**=K18+K19+K20+K22+K23**
25	**Z1**	**SOD ReleaseSubTotal D1+E1**	**=E23+E24**	**(+)T1**	Tate Pump Station to Zanja	**SCADA**	**(+) G2**	Northfork Canal Weir	**Measure on site**
26	**(Σ)G1**	**SubTotal 1+2 SAR Inflows**	**=(E22+E25)**	**(Σ) C1**	Greenspot Pipeline	**=SUM(H18:H25)**	**(+) H2**	Edwards Canal	**Measure on site**
27	**(-)D1a**	If BV p/u gated, divert to SAR= "Y"		**(+)V1**	PH#3 Afterbay SpillLoss to SAR	**Measure on site**	**(+) J2**	Tailrace Valve	
28	**(Σ)A5**	**Total SAR Inflows**	**=IF(E27="Y", E26-E23,E26)**	**W1**	Redlands Aqueduct / Sandbox	**SCADA**	**(+)K2**	Northfork Parshall Flume	**Measure on site**
29	**H1**	SBVWCD Diversion		**X1**	SBVWCD Mill Creek Spreading		**(Σ) I2**	**Tailrace Pipeline**	**=K25+K26+K27+K28**
30	**I1**	Redlands Tunnel	**Measure on site**	**Y1**	Redlands Sandbox Spill	**Measure on site**	**(+) L2**	**SBVWCD Parshall FlumeTo Basins**	**=E29+K28+K27**
31	**J1**	[a]Big Bear Lake Release		**(+)Z2**	Cuttle Weir To River	**Measure on site**	**(Σ) C1**	Greenspot Pipeline	**=H26**
32	**K1**	PH#3 Penstock (SCADA)	**SCADA**				**(Σ)N2**	[1)]**Total SAR Deliveries**	**=H27+H28+H30+H31+E19+K29+K30+K31+E20-K27-K28-E30**
33	**L1**	SCE SAR AVM (SCADA)	**SCADA**						
34					**Deliveries**	Flow Rate (cfs)		**Deliveries**	Flow Rate (cfs)
35	**Mill Creek**			**(+)I3**	Yucaipa Regional Park	**SCADA**	**(+)P3**	Tate Inflow	**Measure on site**
36		**Inflows**	Flow Rate (cfs)	**(+)J3**	Wilson Creek Spreading	**SCADA**	**(+)Q3**	East Weir to Mill Creek	**Measure on site**
37	**(+) A3**	RPU Flow	**SCADA**	**(Σ)K3**	**Yucaipa Pipeline**	**=H35+H36**	**(+)R3**	Boullioun to BVMWC Highline	
38	**(+) B3**	M/C #3 Penstock	**SCADA**	**(+)L3**	East Weir (MC)	**Measure on site**	**(+)S3**	East Weir to Zanja	**Measure on site**
39	**(+) C3**	SBVWCD Mill Creek Diversion	**Measure on site**	**(+)M3**	BVHL (SAR)	**Measure on site**	**(Σ)T3**	Mill Creek #1 Flow (Cooley Hat)	**=K35+K36+K38**
40	**(Σ) D3**	**Total MC Inflows**	**=E37+E38+E39**	**(+)C3**	Mill Creek Diversion (MC)		**U3**	**Total MC Deliveries**	**=K39+H40**
41	**E3**	M/C #1 Penstock Flow		**(Σ)O3**	**SBVWCD Spreading**	**=SUM(H38:H40)**	**V3**	Zanja West Weir to CWC Canal	**Measure on site**
42	**F3**	Stream Parshall Flume to Yucaipa	**SCADA**				**W3**	Mill Creek PH #2,3 Afterbay Spill	**SCADA**
43	**G3**	Observation at Garnet Bridge							
44	**H3**			**I3**	Mentone Reser. Level (23.0)	**Measure on site**	**Y3**	Crafton Reser. Level (21.3)	**Measure on site**
45	**SBVWCD Recharge**								
46		**Location**	**Type**		**Previous Day (AF)**			**WY To Date (AF)**	**Target**
47	**A4**	**Santa Ana River**	**SAR**	**E4**			**I4**		
48	**M4**	**Santa Ana Rvr to Mill Creek**	**SAR-MC**	**N4**			**O4**		
49	**B4**	**Santa Ana River**	**SWP**	**F4**			**J4**		
50	**C4**	**Mill Creek**	**MC**	**G4**			**K4**		
51	**D4**	**Mill Creek**	**SWP**	**H4**		`	**L4**		
52		**SBVMWD**	**SWP**						
53		**WMWD**	**SWP**						
54									
55		**SAR Passing Cuttle Weir**	**SAR**	**=H31**	**Share of Lost Flow**	**=H57*(F55/F57)**	**SARP**	**Estimate SAR Recharge [18]**	**=F55-H55**
56		**Mill Creek Passing Garnet**	**MC**	**=E43**	**Share of Lost Flow**	**=F56*(H57/F57)**	**MCRP**	**Estimate Mill Creek Recharge [19]**	**=F56-H56**
57		**Flow in the River Above Alabama**	**Total**	**=F56+F55**	**Flowing Beyond Alabama**			**Total River Recharge**	**=K56+K55**
58									
59									
60									
61									
62									
63									
64									
65									

DFR Formulas

	C	D	E	F	G	H	I	J	K
66									
67									
68									
69									
70									
71	**Comments:**								
72	1) Source = SCADAVIEW					18)Tailrace Pipeline, (Σ)I2 = G2+H2+J2+K2			
73	2) State Water Inflows, (Σ)G = A+B+C+D+E+F					19)BVMWC Highline, (Σ)B1 = A2+B2+C2+E2+F2			
74	3) State Water Deliveries, (Σ)V = H+I+J+K+L+M+N+P+Q+R+S+T+U-F1					20)Greenspot Pipeline, (Σ)U1 =M1+N1+O1+P1+Q1+R1+S1+T1			
75	4) PH#3 Penstock (Calc), (Σ)A1=V1+G2+H2+J2+K2+W1+Y1-I1-D1-E21					21)SBVWCD Parshall Flume, (Σ)L2 = H1+K2+J2			
76	5) Bear Valley Highline, (Σ)B1 = A2+D2+E2+F2					22)PH#3 PENSTOCK (Calc)			
77	6) Total SAR Inflows = SAR Deliveries, (Σ)G1 = (Σ)N2					23)Total Mill Creek Deliveries,(Σ)U3 = T3+C3			
78	7) Total SAR Inflows, (Σ)G1 = A1+B1+C1+D1+E1, if BVMWD River Pickup not gated closed & is directed to SCE PP# 3 Afterbay(F1 now part of D1 value)								
79	8) Total SAR Inflows, (Σ)G1 = A1+B1+C1+E1, if BVMWD River Pickup gated closed ("Y" for "yes") water is bypassed to SAR (F1 now part of D1 value)								
80	9) Greenspot Pipeline, (Σ) U1 = M1 +N1+O1+P1+Q1+R1+S1+T1								
81	10) Total SAR Deliveries, (Σ)N2 = V1+W1+Y1+Z2+B1+I2+L2+C1-J2-K2-I1								
82	11)Total Mill Creek Inflows, (Σ)D3 = A3+B3+C3								
83	12) M/C #1 Penstock Flow, (Σ)E3 = T3								
84	13) M/C #1 Penstock Flow, (Σ)E3 = A3 + B3								
85	14) SBVWCD Mill Cr Diversion (Σ)C3 = E3+F3								
86	15) Yucaipa Pipeline, (Σ)K3 = I3 + J3					a) Per fish release from Big Bear Lake.			
87	16) SBVWCD Spreading, (Σ)O3 = N3 + M3 + L3								
88	17) Seven Oaks Dam Release = Z1 = D1 - F1								
89	18) Santa Ana in River Percolation est. SARP = Z2 -(total estimated flow past Alabama *(Z2/(Z2+G3)) [SA proportional share of flow in river]								
90	19) Mill Creek in River Percolation est. MCRP = G3 -(total estimated flow past Alabama *(G3/(Z2+G3)) [MC proportional share of flow in river]								
91	SAR - On August 21, 2008, the agreement to waive the provisions of paragraph 5(e) of Exhibit A of the August 2005								
92	Settlement Agreement among Valley District/Western and the Conservation District, in connection with application 31693 expired.								
93									
94									
95									
96									
97	**Description Of Collection of Data**								
98									
99	SCADA View is located at: http://data.sbvmwd.com/								
100	SCADA data is looked up online in the morning before the field technician makes the rounds to measure the "Measured on site" data.								
101									
102	Data that is "Measured on site" is gathered daily. Each site has a different measurement method (weir and tape measure with conversion chart, gage, estimate, ect.).								
103	The "Measured on site" data is collected by the field technician. The field technician must drive to all "Measured on site" sites in order to collect the data.								

Appendix 6 Daily Flow Report (DFR) Site Information

DFR Site Information

Agencies:

EVWD - East Valley Water District (909) 889-9501

3654 E. Highland Avenue, Suite 18

Highland, California 92346-2607

Valley - San Bernardino Valley Municipal Water District (909) 387-9200

380 East Vanderbilt Way

San Bernardino, CA 92408

CWC - Crafton Water Company (909) 794-0494

101 E Olive Ave.

Redlands, CA 92373

BVMWC - Bear Valley Mutual Water Company (909) 793-4901

101 East Olive Avenue

Redlands, CA 92373

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Big Bear Lake Release

Map

 View of Big Bear Lake and Dam, where the Releases occur.	 View downstream of the dam, where broken gauge is located.

Site Information

Property	Value
Site Name	**Big Bear Lake Release**
DFR #	J1
Owner	Big Bear Mutual Water Company
SCADA	No
Measurement Method	Flow Meter
Inflows	Big Bear Lake
Outflows	Santa Ana River
Notes	Release flows remain constant, we are notified upon change.

Boullioun Box to Zanja

Map

Entrance to the Boullioun Box.

Yellow leads to BVHL. Red leads to Zanja.

Site Information

Property	Value
Site Name	**Boullioun Box to Zanja**
DFR #	E2
Owner	BVMWC, CWC
Longitude	W 117°04.610
Latitude	N 34°04.403
SCADA	No
Measurement Method	Weir
Inflows	SAR, State (BVHL)
Outflows	Zanja, BVHL
Notes	This structure is located at 3053 Highway 38.

Boullioun Box Weir

Map

Entrance to the Boullioun Box.

Yellow leads to BVHL. Red leads to Zanja.

Site Information

Property	Value
Site Name	Boullioun Box Weir
DFR #	D2
Owner	BVMWC
Longitude	W 117°04.610
Latitude	N 34°04.403
SCADA	No
Measurement Method	Weir, Meter above PH #3
Inflows	SAR, State Water, (BVHL)
Outflows	Gay Overflow, Irrigation, Crafton Res., Zanja
Notes	This structure is located at 3053 Highway 38.

Boullioun to BVMWC Highline

Map

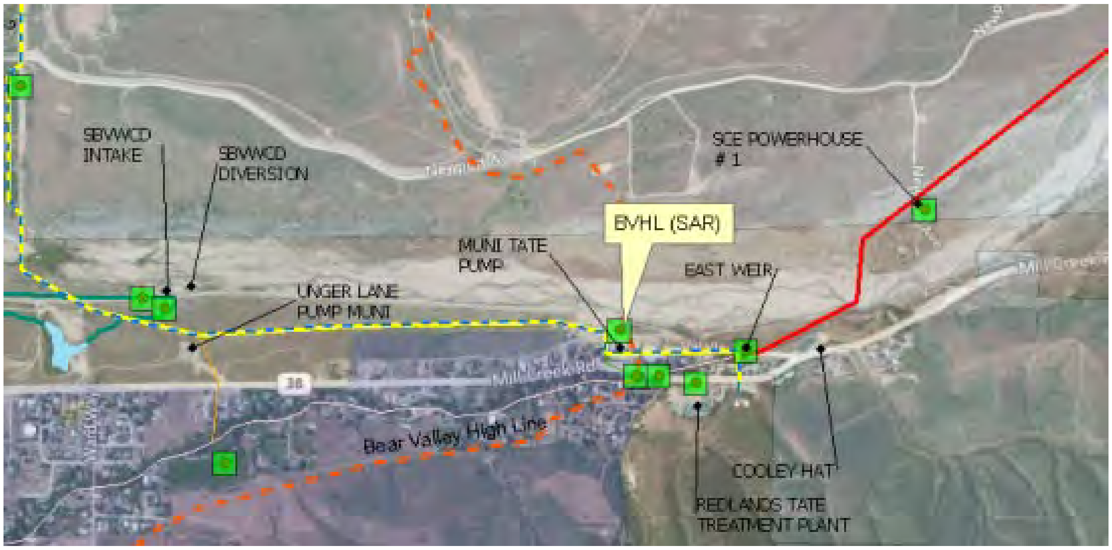
Water coming from the BVHL.

Some water can go to either the Zanja red or Irrigation yellow.

Site Information

Property	Value
Site Name	Boullioun to BVMWC Highline
DFR #	R3
Owner	BVMWC
Longitude	W 117°04.574
Latitude	N 34°04.404
SCADA	No
Measurement Method	Estimate
Inflows	MC, (East Weir)
Outflows	BVHL, Gay Overflow, Crafton Reis.

BVHL (SAR)



Map

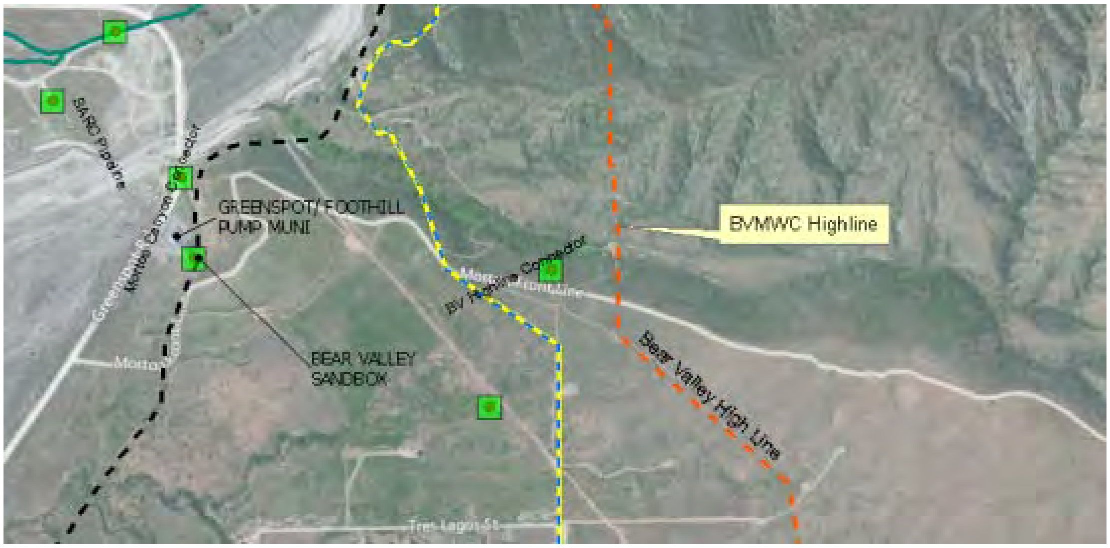
By opening this gate BVHL can send SAR water to MC.

A flow meter is located in the bushes just NW of the Gate

Site Information

Property	Value
Site Name	**BVHL (SAR)**
DFR #	M3
Owner	BVMWC
Longitude	W 117°04.643
Latitude	N 34°04.472
SCADA	No
Measurement Method	Flow Meter
Inflows	SAR , (BVHL)
Outflows	MC Spreading
Notes	F2 = M3

BVMWC Highline



Map

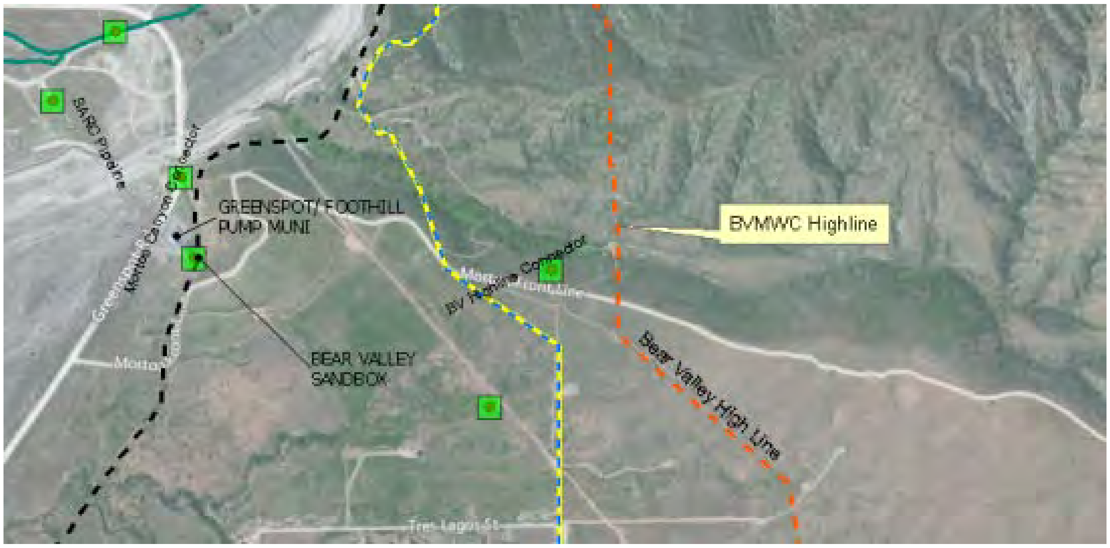
Water enters the highline through tunnel in the Mountain.

SCADA Meter.

Site Information

Property	Value
Site Name	BVMWC Highline
DFR #	N1
Owner	BVMWC
SCADA	Yes
Measurement Method	Flow Meter
Inflows	SCE PH 1
Outflows	Irrigation (Boullion box) Many
Notes	SCADA is down. Pipeline runs from behind SOD to Crafton Reservoir. Water is sent to many different locations along the way.

BVMWC Highline



Map

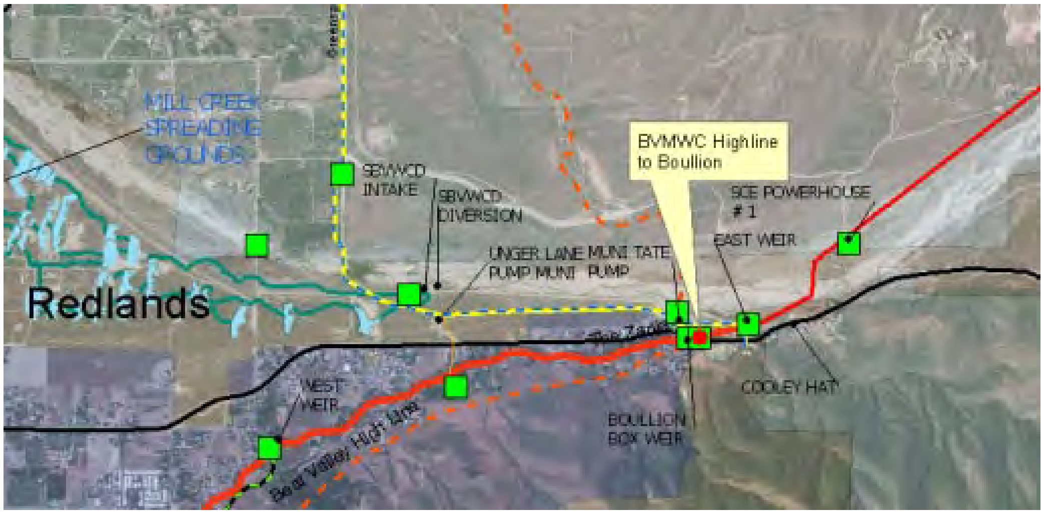
Water enters the highline through tunnel in the Mountain.

SCADA Meter.

Site Information

Property	Value
Site Name	BVMWC Highline
DFR #	B1
Owner	BVMWC
SCADA	Yes
Measurement Method	Flow Meter
Inflows	SCE PH 1
Outflows	Irrigation (Boullion box) Many
Notes	SCADA is down. Pipeline runs from behind SOD to Crafton Reservoir. Water is sent to many different locations along the way.

BVMWC Highline to Boullioun



Map

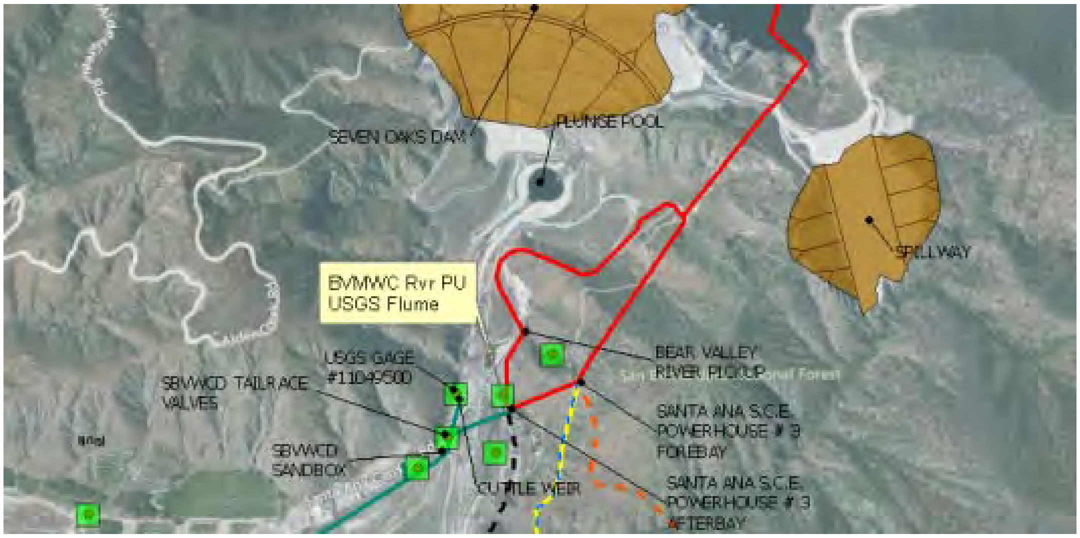
Pipe used to send State water to BVHL from Tate Pump.

Water comes from Tate Pump Station before entering BVHL.

Site Information

Property	Value
Site Name	BVMWC Highline to Boullioun
DFR #	R1
Owner	Valley
Latitude	N 34.073401
Longitude	W 117.076231
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Tate Pump Station)
Outflows	Zanja, Crafton Reis., Irrigation, (BVHL)
Notes	South of M3?

BVMWC Rvr PU-USGS, Flume



Map

Main USGS Gauge.

Parshall Flume just upstream from USGS Gauge.

Site Information

Property	Value
Site Name	BVMWC Rvr PU-USGS, Flume
DFR #	D1
Owner	BVMWC
Longitude	W 117°05.951
Latitude	N 34°06.475
SCADA	No
Measurement Method	Flume
Inflows	SAR,(Seven Oaks Dam, Greenspot Spill)
Outflows	SAR, MC Spreading, EVWD, (SCE PH 3 Afterbay)
Notes	Ca n also be measured by Parshall Flume.

Crafton Reser. Level

Map

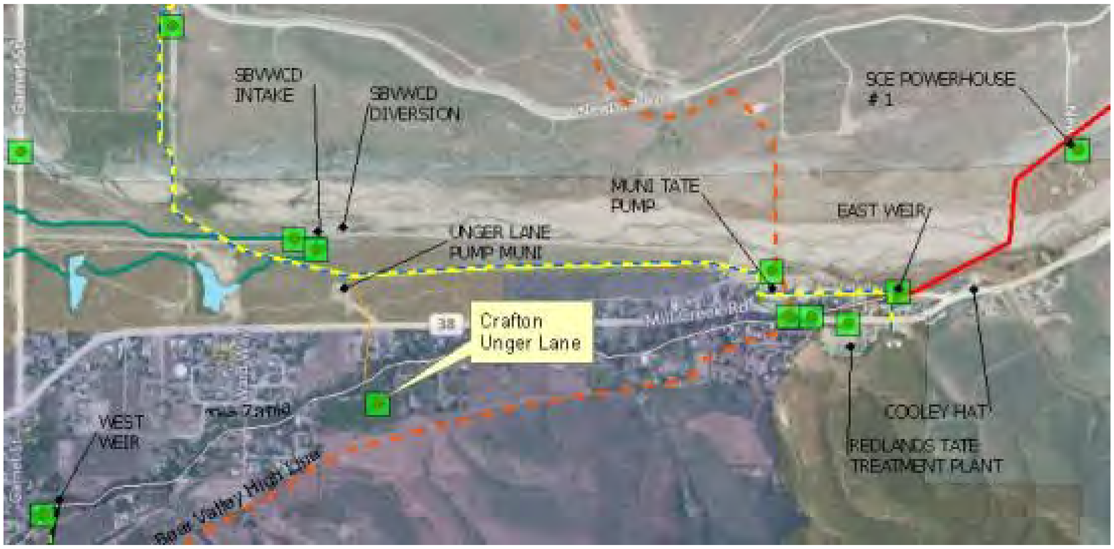
There is a tape measure on a post in the middle of water.

Water entering Crafton Reservoir from the Gay Overflow.

Site Information

Property	Value
Site Name	Crafton Reser. Level
DFR #	Y3
Owner	CWC
Latitude	N 34°3.550
Longitude	W 117°6.502
SCADA	Yes
Measurement Method	Staff Gauge, SCADA Meter
Inflows	SAR,MC, (BVHL, Gay Overflow, West Weir, Ground Water)
Outflows	Zanja, Irrigation

Crafton Unger Lane



Map

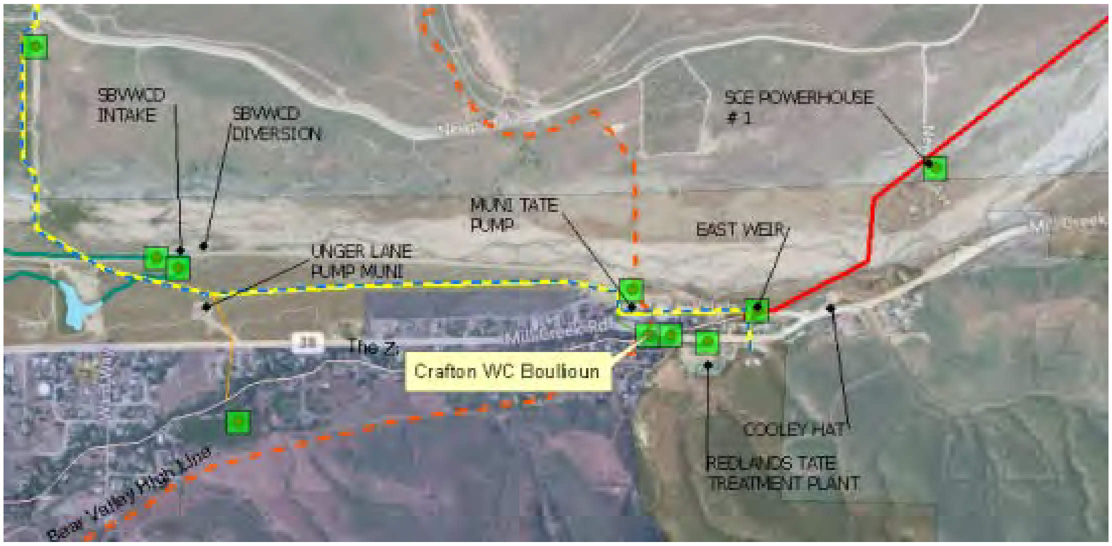
Pictured is the outlet structure. Mentone Blvd. is 300ft north.

Inside of structure, weir can be used as backup measurement.

Site Information

Property	Value
Site Name	Crafton Unger Lane
DFR #	M
Owner	Valley
Longitude	W 117°05.338
Latitude	N 34°04.281
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Zanja/Tate Meter Station)
Outflows	Zanja
Notes	1 of 2 ways to send state water to Zanja.

Crafton WC Boullioun



Map

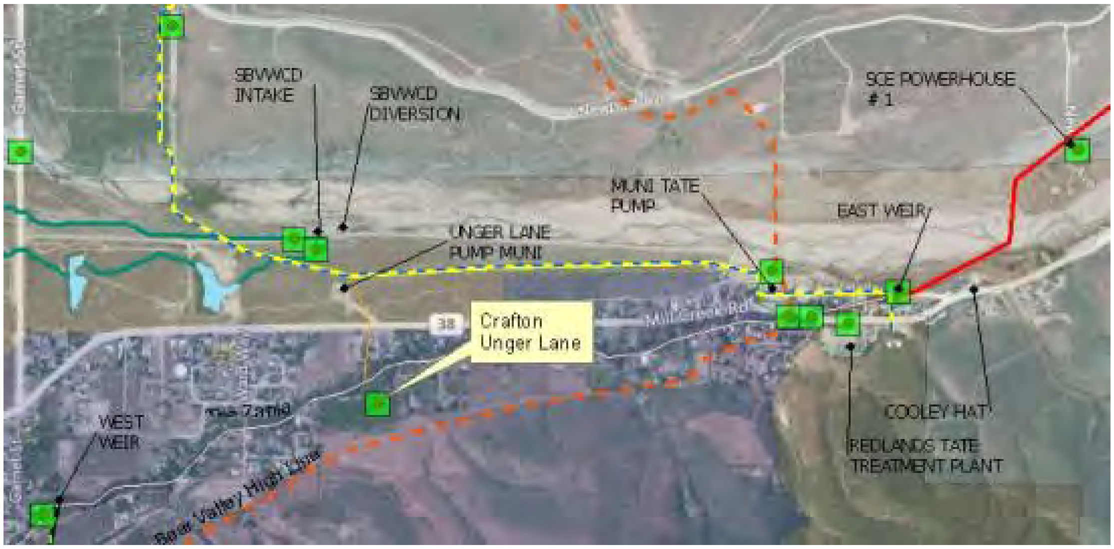
Water is controlled and pumped from Tate Pump Station.

Flow can be verified at gage under concrete pad (red arrow).

Site Information

Property	Value
Site Name	Crafton WC Boullioun
DFR #	S1
Owner	Valley
Latitude	N 34°4.400
Longitude	W 117°4.603
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Tate Pump Station)
Outflows	Zanja
Notes	East of Boullion Box.

Crafton WC Unger Lane



Map

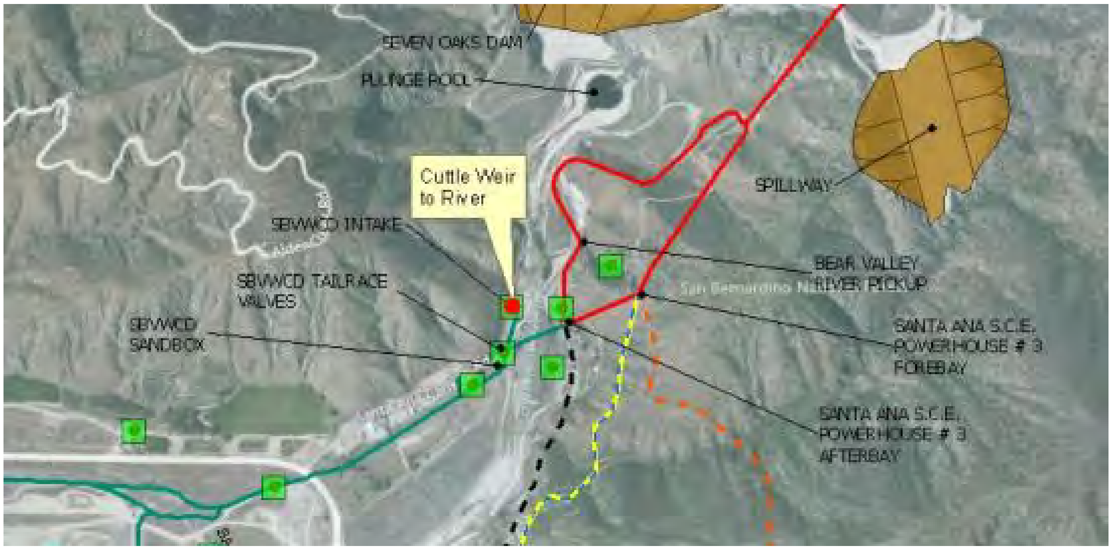
Pictured is the outlet structure. Mentone Blvd. is 300ft north.

Inside of structure, weir can be used as backup measurement.

Site Information

Property	Value
Site Name	Crafton WC Unger Lane
DFR #	Q1
Owner	Valley
Longitude	W 117°05.338
Latitude	N 34°04.281
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Zanja/Tate Meter Station)
Outflows	Zanja
Notes	Historically always zero. Located on Unger Lane.

Cuttle Weir To River



Map


Water is backed up against the Cuttle Weir (red arrow).


View of Cuttle Weir from the backside.

Site Information

Property	Value
Site Name	Cuttle Weir To River
DFR #	Z2
Owner	SBVWCD
Longitude	W 117°06.037
Latitude	N 34°06.479
SCADA	No
Measurement Method	Estimate, USGS Box
Inflows	Santa Ana River
Outflows	Santa Ana River
Notes	Usually there is no flow going over the weir.

East Weir (MC)

Map

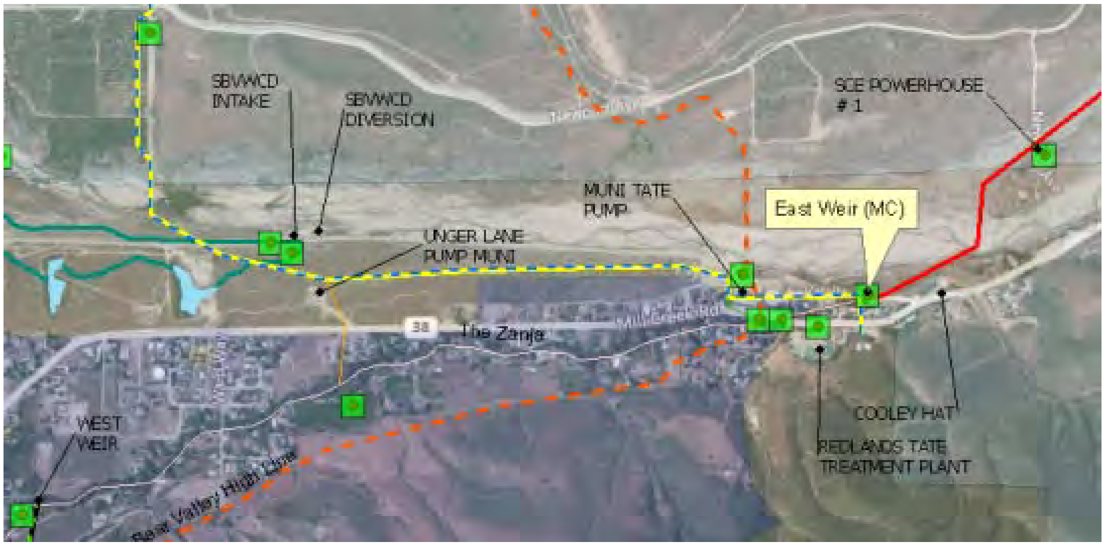
East weir is located behind someone's house off a dirt road.

This sluice gate is opened to send water to Mill Creek.

Site Information

Property	Value
Site Name	East Weir (MC)
DFR #	L3
Owner	CWC
Longitude	W 117°04.420
Latitude	N 34°04.439
SCADA	No
Measurement Method	Estimate, or measured at MC Diversion Structure
Inflows	MC, (Cooley Hat)
Outflows	Mill Creek
Notes	Q3 = L3. Be careful on wooden structure it is old.

East Weir to Mill Creek



Map

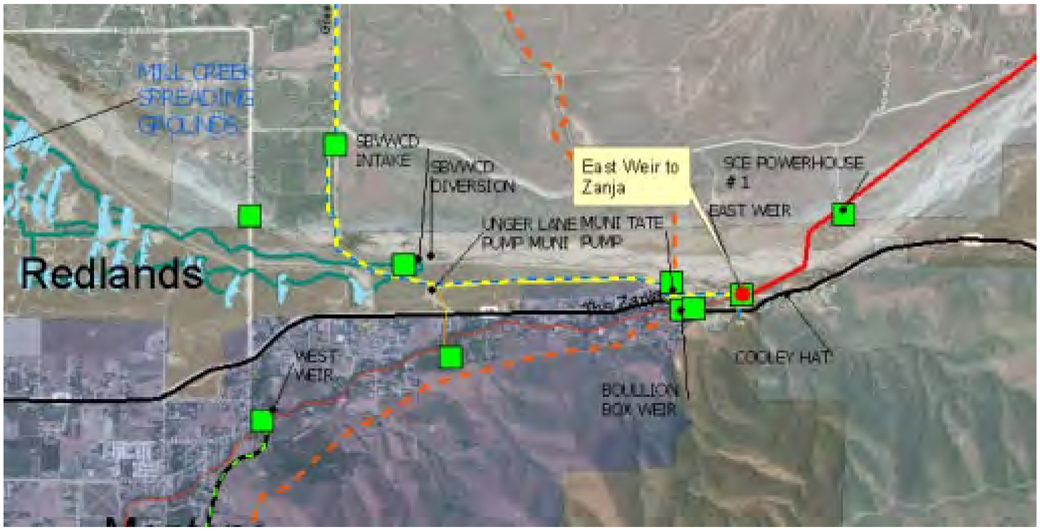
East weir is located behind someone's house off a dirt road.

This sluice gate is opened to send water to Mill Creek.

Site Information

Property	Value
Site Name	East Weir to Mill Creek
DFR #	Q3
Owner	CWC
Longitude	W 117°04.420
Latitude	N 34°04.439
SCADA	No
Measurement Method	Estimate, or measured at MC Diversion Structure
Inflows	MC, Cooley Hat
Outflows	Mill Creek
Notes	Q3 = L3.

East Weir to Zanja



Map

East weir is located behind someone's house off a dirt road.

Flow is measured using a tape and weir (red arrow).

Site Information

Property	Value
Site Name	East Weir to Zanja
DFR #	S3
Owner	CWC
Longitude	W 117°04.420
Latitude	N 34°04.439
SCADA	No
Measurement Method	Weir and stick, Meter
Inflows	MC, (Cooley Hat)
Outflows	Zanja
Notes	Be careful on wood because it is old and week!

Edwards Canal

Map

Edwards canal is the Northern and smaller canal.

EC is measured using a still well and weir (red arrow).

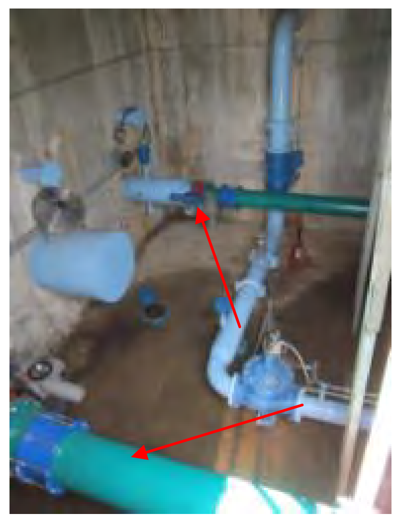
Site Information

Property	Value
Site Name	Edwards Canal
DFR #	H2
Owner	EVWD
Longitude	W 117°06.099
Latitude	N 34°06.387
SCADA	No
Measurement Method	Weir, Broken Meter
Inflows	SAR, (Tailrace)
Outflows	Irrigation, (Edwards Canal)

Edwards Canal

Map

Above ground view of Edwards Diversion Point.



There is a high turnout and a low turnout (red arrows).

Site Information

Property	Value
Site Name	Edwards Canal
DFR #	K
Owner	Valley
Longitude	W 117°06.707
Latitude	N 34°06.298
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Foothill Pipeline)
Outflows	Irrigation, (Edwards Canal)
Notes	Used to send State Water into the Edwards Pipeline.

EVWD Treatment Plant

Map

View looking up at the East Valley Water Treatment Plant.

EVWD Treatment Plant Sludge Drying Beds.

Site Information

Property	Value
Site Name	EVWD Treatment Plant
DFR #	H
Owner	Valley
Latitude	N 34°8.263
Longitude	W 117°11.322
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (North Fork Turnout)
Outflows	Customers

Gay Overflow

Map

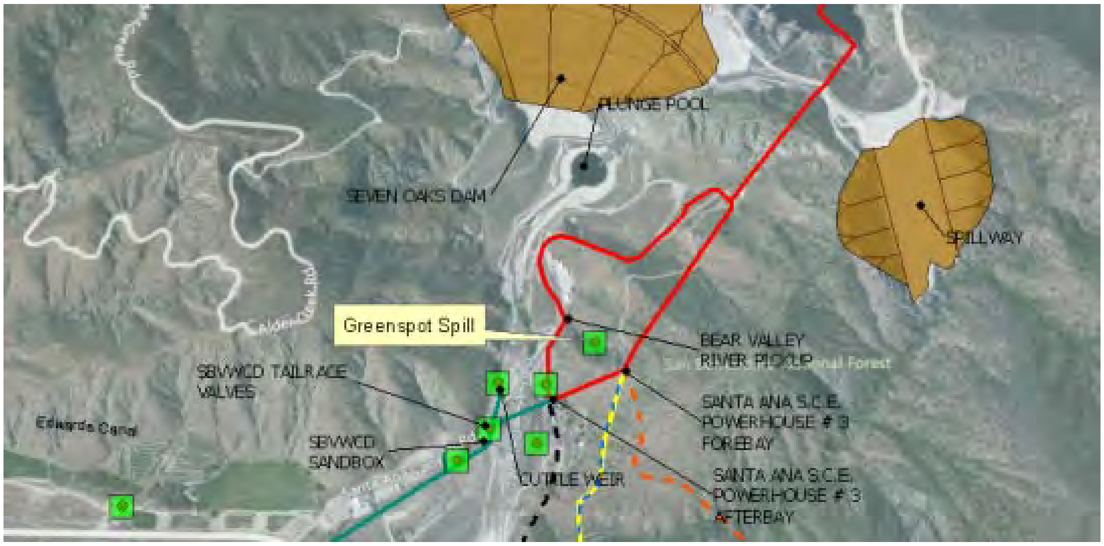
View of the Gay Overflow once you get of the dirt road

Location of measurement

Site Information

Property	Value
Site Name	Gay Overflow
DFR #	B2
Owner	BVMWC
Longitude	W 117°06.228
Latitude	N 34°02.689
SCADA	No
Measurement Method	Weir and Stick, Meter
Inflows	MC, SAR, (BVHL)
Outflows	Crafton Reservoir
Notes	Amethyst Ave. to Bonview Dr. Make a right after the first house. Continue until you see exposed pipeline. Follow the pipeline.

Greenspot Spill



Map

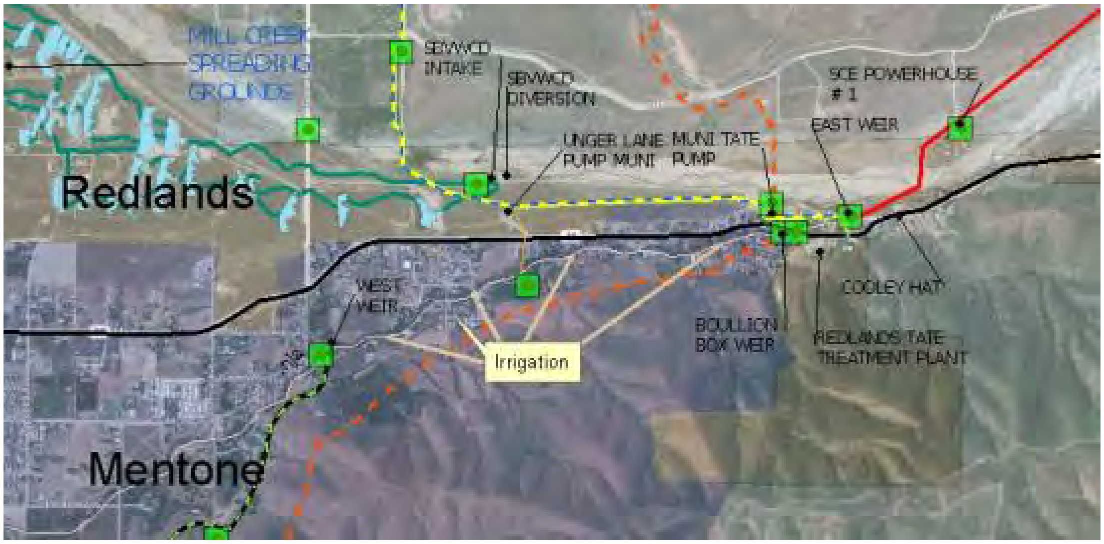
A waterfall is formed by release from the BVHL.

The water flows from waterfall through the square pipe here.

Site Information

Property	Value
Site Name	Greenspot Spill
DFR #	F1
Owner	SCE
Longitude	W 117°05.821
Latitude	N 34°06.555
SCADA	Yes
Measurement Method	Estimate
Inflows	SAR, (SCE PH 1)
Outflows	SAR, (River Pick Up, SBVWCD Diversion)
Notes	Amount released is estimated based on the flow from the square pipe above.

Irrigation



Map

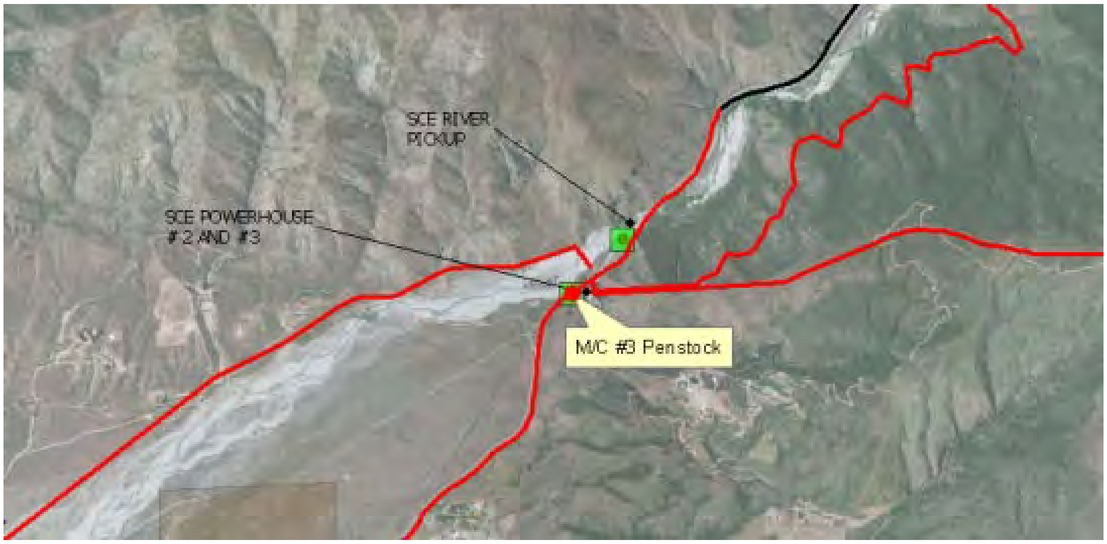
Water can be taken off of the BVHL by local farmers.

Water taken for irrigation is used on the local land.

Site Information

Property	Value
Site Name	Irrigation
DFR #	C2
Owner	BVMWC
SCADA	No
Measurement Method	Calculation
Inflows	SAR, MC, (BVHL)
Outflows	Irrigation
Notes	Irrigation takes place along the BVHL between the Boullioun Box and the Gay Overflow.

M/C #3 Penstock



Map

The MC #3 Penstock is feed by a buried pipeline (red arrow).

The Penstock charges the turbines at SCE PH 2/3.

Site Information

Property	Value
Site Name	M/C #3 Penstock
DFR #	B3
Owner	SCE
Longitude	W 117°02.410
Latitude	N 34°05.278
SCADA	Yes
Measurement Method	Flow Meter
Inflows	MC, (Mountian Home, Forest Falls)
Outflows	MC, (SCE PH 2/3)
Notes	These are the pipes that feed SCE PH 2/3.

M/C spreading @ ZT

Map

Pictured is the outlet structure. Mentone Blvd. is 300ft north.

Inside of structure, weir can be used as backup measurement.

Site Information

Property	Value
Site Name	M/C spreading @ ZT
DFR #	U
Owner	Valley
Longitude	W 117°05.458
Latitude	N 34°04.498
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Zanja/Tate Meter Station)
Outflows	MC Spreading, (Pond 1)
Notes	Located on Unger Lane.

Main River Gage (USGS)

Map

Main River Gage is located to the right of the Main Gates.

This USGS Gage along with USGS River PU

records the total flow from SOD.

Site Information

Property	Value
Site Name	Main River Gage (USGS)
DFR #	E1
Owner	USGS
Latitude	N 34.107978
Longitude	W 117.100605
SCADA	No
Measurement Method	Flow Meter, (USGS Website)
Inflows	SAR, (Seven Oaks Dam)
Outflows	Santa Ana River

Mentone Reser. Level

Map

Enters from Redlands Aqueduct

Stairs used for measurement

Site Information

Property	Value
Site Name	Mentone Reser. Level
DFR #	(I3?)H3
Owner	BVMWC
Longitude	N 34°04.565
Latitude	W 117°07.588
SCADA	No
Measurement Method	Stairs
Inflows	SAR, (Redlands Aquaduct, Ground Water)
Outflows	Irrigation
Notes	Jim Evans also has his own spreading ground.

Mill Creek #1 Flow (Cooley Hat)

Map


This structure is known as Cooley Hat.


Meter inside the shack take continuous readings of the flow.

Site Information

Property	Value
Site Name	Mill Creek #1 Flow (Cooley Hat)
DFR #	T3
Owner	SCEPH
Longitude	W 117°04.103
Latitude	N 34°04.647
SCADA	No
Measurement Method	Meter, Hand Adjustment
Inflows	MC (PH No. 1)
Outflows	MC, Zanja (East Weir, Tate Treatment Plant)
Notes	There is also a pipeline with a meter on in below Cooley hat and the shack.

Mill Creek PH #2,3 Afterbay Spill

Map

Monitoring panel shows the flow of the spill (red arrow).

This is the physical location where the spill happens.

Site Information

Property	Value
Site Name	Mill Creek PH #2,3 Afterbay Spill
DFR #	W3
Owner	SCE
Longitude	W 117°02.433
Latitude	N 34°05.280
SCADA	Yes
Measurement Method	Flow Meter
Inflows	MC, (SCE PH 2/3)
Outflows	Mill Creek
Notes	Meters are located inside SCE PH2/3.

Newport

Map

Monitoring tower as seen from entrance at Newport Rd.

Gauge as seen from standing on the platform

Site Information

Property	Value
Site Name	Newport
DFR #	A2
Owner	BVMWC
Longitude	W 117°05.691
Latitude	N 34°04.840
SCADA	No
Measurement Method	Told By Jim
Inflows	SAR, (BVHL)
Outflows	Newport
Notes	Used for watering groves a few times a year. Hasn't been used for years.

Newport for BVMWC

Map

Monitoring tower as seen from entrance at Newport Rd.

Gage as seen from standing on the platform.

Site Information

Property	Value
Site Name	Newport for BVMWC
DFR #	O1
Owner	Valley
Longitude	W 117°05.691
Latitude	N 34°04.840
SCADA	Yes
Measurement Method	Flow Meter
Inflows	SAR, State Water, (Greenspot/Foothill Pipeline)
Outflows	Irrigation
Notes	Used to water groves a few times a year.

Newport for BVMWC

Map

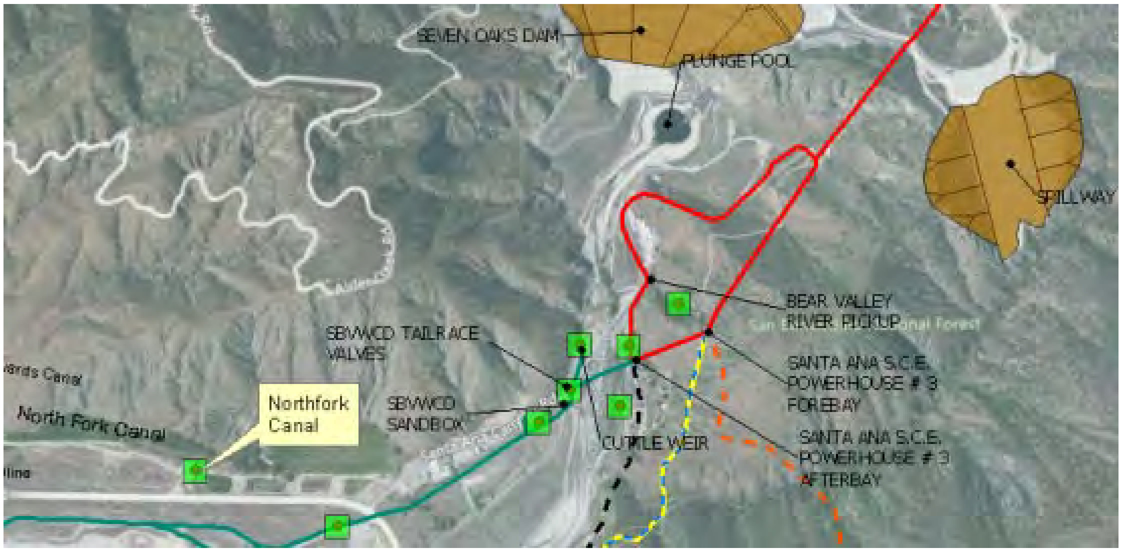
Monitoring tower as seen from entrance at Newport Rd.

Gauge as seen from standing on the platform.

Site Information

Property	Value
Site Name	Newport for BVMWC
DFR #	T
Owner	Valley
Longitude	W 117°05.691
Latitude	N 34°04.840
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Greenspot Foothill Pump Station)
Outflows	Irrigation
Notes	Used for watering groves a few times a year.

Northfork Canal

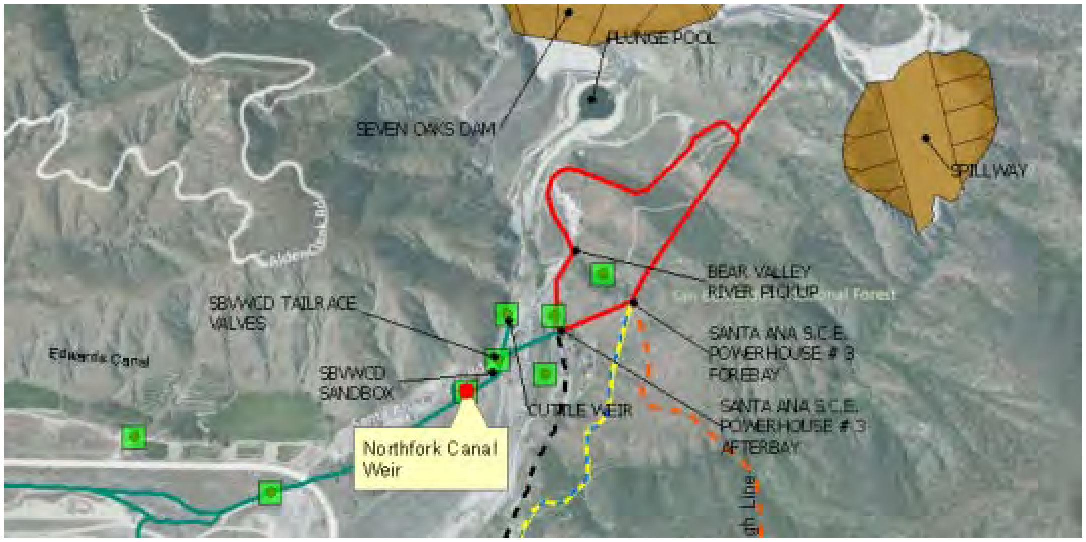


Map

Site Information

Property	Value
Site Name	Northfork Canal
DFR #	J
Owner	Valley
Longitude	W 117°06.707
Latitude	N 34°06.298
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Foothill Pipeline)
Outflows	EVWD, (Northfork Canal)
Notes	This is a way to send State Water to the North fork Canal.

Northfork Canal Weir



Map

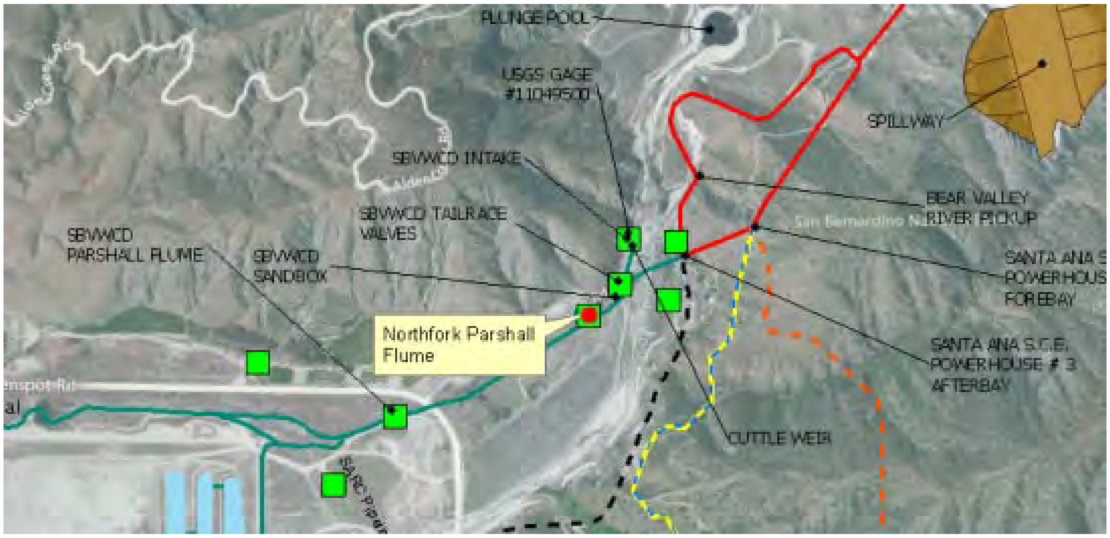
Water from the North fork Box (pictured) to the NF Weir.

Nortfork weir is measured with a weir and still well (red arrow).

Site Information

Property	Value
Site Name	Northfork Canal Weir
DFR #	G2
Owner	EVWD
Longitude	W 117°06.580
Latitude	N 34° 06.219
SCADA	No
Measurement Method	Weir, Still Well Meter
Inflows	SAR, (Afterbay Tailrace, SBVWCD Sand Box)
Outflows	EVWD, (Northfork Canal, Northfork Parshall Flume)
Notes	Sanbox rarely/never feeds Northfork Weir.

Northfork Parshall Flume



Map


Water can be diverted at red arrow from NF Box to spreading.


Water sent for spreading is measured at the Parshall Flume.

Site Information

Property	Value
Site Name	Northfork Parshall Flume
DFR #	K2
Owner	SBVWCD
Longitude	W 117°06.110
Latitude	N 34°06.364
SCADA	No
Measurement Method	Parshall Flume
Inflows	SAR, (Tailrace Pipline)
Outflows	SAR Spreading Grounds, (SBVWCD Parshall Flume)
Notes	Gate to enter Parshall Flume is just before the big weir.

Observation at Garnet Bridge

Map

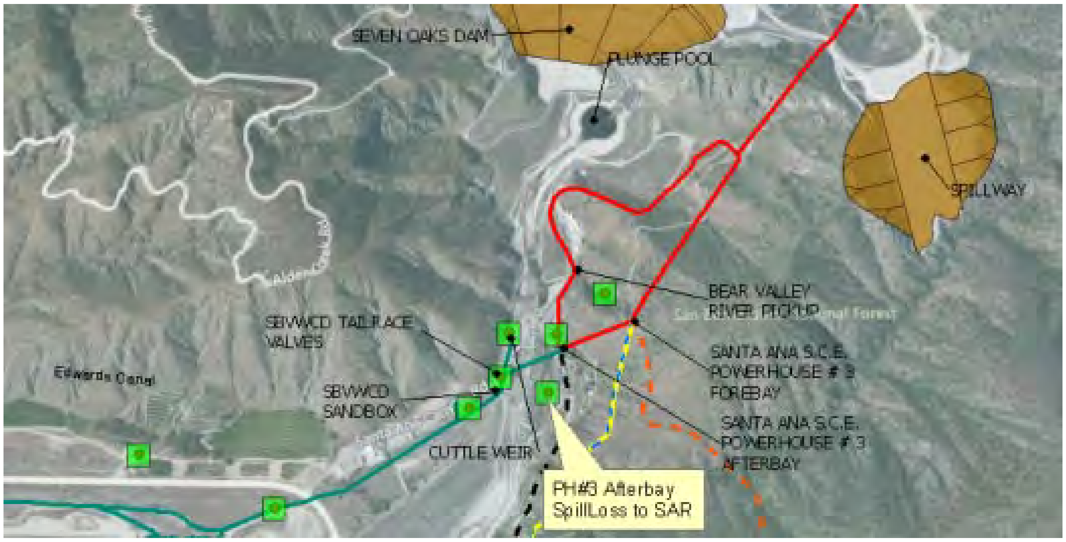
Garnet Bridge as seen from Garnet Rd.

The flow of the water under the bridges is estimated.

Site Information

Property	Value
Site Name	Observation at Garnet Bridge
DFR #	G3
Longitude	W 117°05.960
Latitude	N 34°04.657
SCADA	No
Measurement Method	Estimate
Inflows	Mill Creek
Outflows	Mill Creek
Notes	Estimation taken will driving or stopping on bridge.

PH#3 Afterbay SpillLoss to SAR



Map

Excess water exits the Afterbay through weir (red arrow).

Flow measurements are estimated at the river.

Site Information

Property	Value
Site Name	PH#3 Afterbay SpillLoss to SAR
DFR #	V1
Longitude	W 117°05.966
Latitude	N 34°06.387
SCADA	No
Measurement Method	Estimate
Inflows	SAR, (SCE PH 3)
Outflows	Santa Ana River
Notes	Estimate location is off of the dirt road South of the Afterbay.

Redlands Aqueduct

Map

State Water can be pump from here to Redlands Aqueduct.

State Water enters the Sandbox through these gates (red arrow).

Site Information

Property	Value
Site Name	Redlands Aqueduct
DFR #	L
Owner	Valley
Latitude	N 34°097949
Longitude	W 117°105425
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Greenspot Foothill Pump Station)
Outflows	MC, SAR, MC Spreading Grounds, (Redlands Sandbox)
Notes	Water can be sent from Greenspot Foothill Pump Station to Sandbox.

Redlands Aqueduct Weir

Map

This weir measures the SAR water going to BVMWC.

This box houses all of the metering equipment.

Site Information

Property	Value
Site Name	Redlands Aqueduct Weir
DFR #	W1
Owner	BVMWC
Longitude	W 117°06.325
Latitude	N 34°05.877
SCADA	Yes
Measurement Method	Weir
Inflows	SAR, (SCE PH 3, River PU)
Outflows	Spreading Grounds, Hinkley Treatment Plant
Notes	This facility is located on a dirt road just past the GS Pump Station.

Redlands Sandbox Spill

Map

Water spills from sandbox through these 2 gates (red arrow).

When spill gates are open water runs down this hillside.

Site Information

Property	Value
Site Name	Redlands Sandbox Spill
DFR #	Y1
Owner	BVMWC
Longitude	W 117°06.325
Latitude	N 34°05.877
SCADA	No
Measurement Method	Estimate
Inflows	SAR, (Redlands Sandbox)
Outflows	Santa Ana River
Notes	An estimate of the flow is taken on the hillside.

Redlands Tunnel

Map

View as seen from Greenspot Rd.

There is a flow meter locked inside a steel cover (red arrow).

Site Information

Property	Value
Site Name	Redlands Tunnel
DFR #	I1
Owner	SBVWCD
Longitude	W 117°06.348
Latitude	N 34°05.996
SCADA	No
Measurement Method	Flow Meter
Inflows	Ground Water
Outflows	BVMWC Sandbox, BVMWC Sandbox Spill,
Notes	Located South of the Bridge on the East side of Greenspot RD.

RPU Flow

Map

Location of River Pickup as seen walking up from driveway

the red arrow indicates the location of where the water enters

Site Information

Property	Value
Site Name	RPU Flow
DFR #	A3
Owner	SCE
Longitude	W 117°02.277
Latitude	N 34°05.411
SCADA	Yes
Measurement Method	Flow Meter
Inflows	Mill Creek
Outflows	Mill Creek, SCE Mill Creek PH 1, Yucaipa Pipeline

Santa Ana Low Turnout

Map

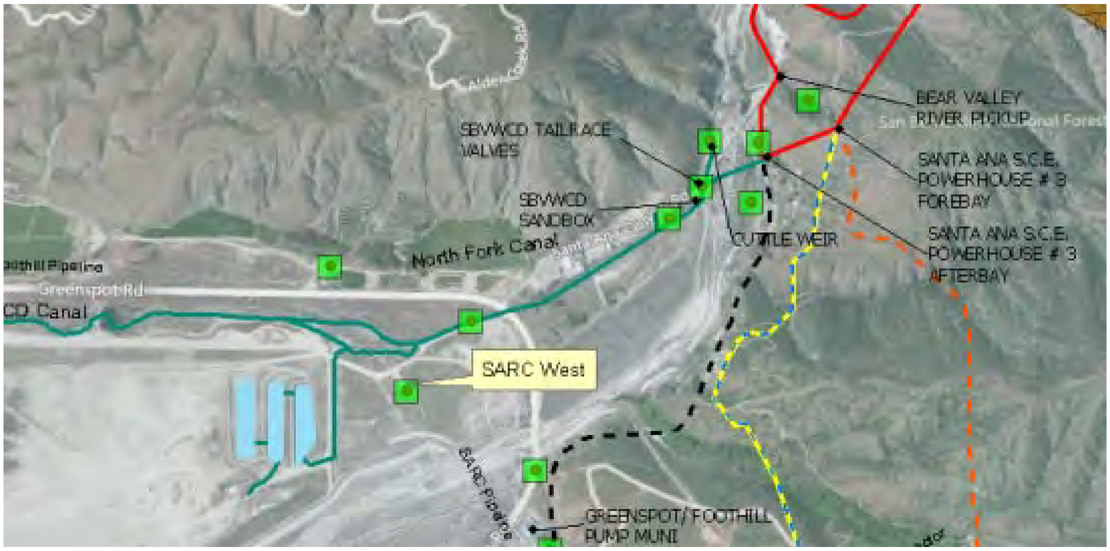
Two High flow and one low flow pipelines.

SA Low Turnout Structure.

Site Information

Property	Value
Site Name	Santa Ana Low Turnout
DFR #	I
Owner	Valley
Longitude	W 117°07.342
Latitude	N 34°06.272
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Foothill Pipeline, State Water)
Outflows	SAR Spreading Grounds

SARC West



Map

Hydrant used to fill up watering or fire trucks.

Gage can be used to verify SCADA's readings.

Site Information

Property	Value
Site Name	SARC West
DFR #	P
Owner	Valley
Longitude	W 117°06.574
Latitude	N 34°06.113
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water
Outflows	Fire Hydrant at SAR Spreading Basins
Notes	Can be used to recharge or for fire supression.

SBCFCD Grove

Map

Site Information

Property	Value
Site Name	SBCFCD Grove
DFR #	M1
Longitude	W 117°05.804
Latitude	N 34°05.651
SCADA	No
Measurement Method	Flow Meter
Inflows	SAR, (Greenspot/Foothill Pipeline)
Outflows	Irrigation
Notes	This is the measurement recorded when Santa Ana Water is used here. From Greenspot Rd. head East on Newport. Make a left after first set of orange groves, open a gate and follow the road to the left. Site is on LHS.

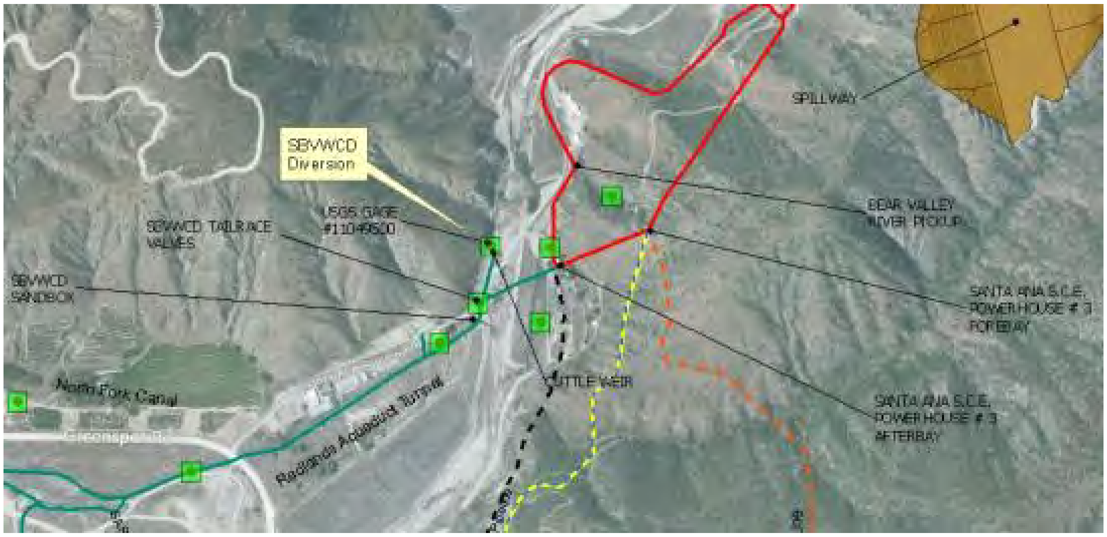
SBCFCD Grove

Map

Site Information

Property	Value
Site Name	SBCFCD Grove
DFR #	S
Longitude	W 117°05.804
Latitude	N 34°05.651
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Greenspot Foothill Pump Station)
Outflows	Irrigation
Notes	This is the measurement recorded when State Water is used here. From Greenspot Rd. head East on Newport. Make a left after first set of orange groves, open a gate and follow the road to the left. Site is on LHS.

SBVWCD Diversion



Map

Six main gates that feed SA water to SA spreading Grounds.

Diversion gates as seen from the Mountain to the East.

Site Information

Property	Value
Site Name	SBVWCD Diversion
DFR #	H1
Owner	SBVWCD
Latitude	N 34.107978
Longitude	W 117.100605
SCADA	No
Measurement Method	USGS Meter
Inflows	Santa Ana River
Outflows	SAR Spreading Grounds, (SBVWCD Sandbox)
Notes	Gates are operated by hand or electric drill crank.

SBVWCD Mill Creek Diversion

Map

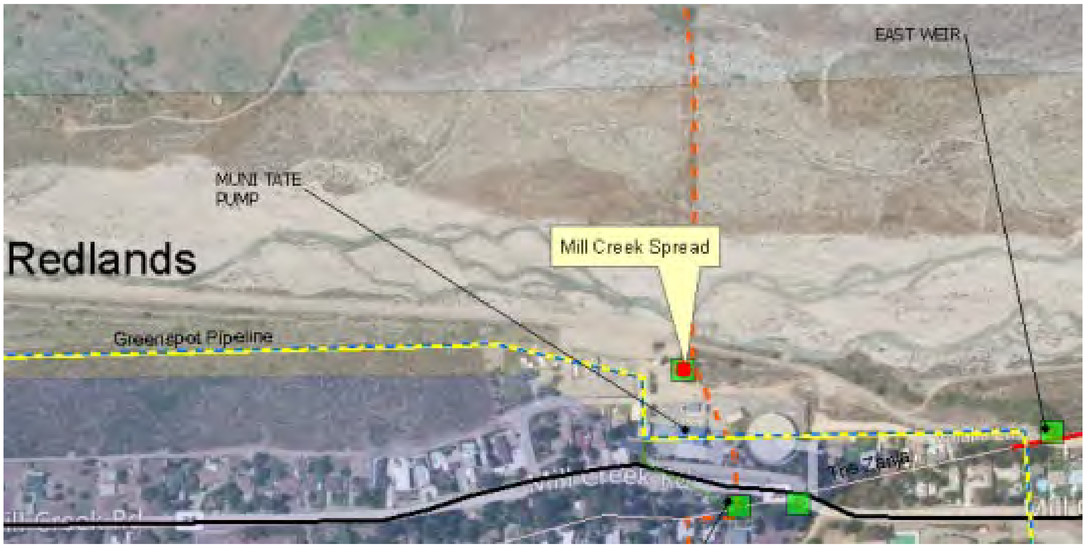
This gate allows MC water to enter diversion structure.

Water is diverted at red arrow.

Site Information

Property	Value
Site Name	SBVWCD Mill Creek Diversion
DFR #	C3
Owner	SBVWCD
Longitude	W 117°05.480
Latitude	N 34°04.524
SCADA	No
Measurement Method	Weir
Inflows	Mill Creek, BVHL
Outflows	MC Spreading
Notes	It equals reading at gates - Q3 - M3.

SBVWCD Mill Creek Spread



Map

By opening this gate BVHL can send SAR water to MC.

A flow meter is located in the bushes just NW of the Gate.

Site Information

Property	Value
Site Name	SBVWCD Mill Creek Spread
DFR #	F2
Owner	BVMWC
Longitude	W 117°04.643
Latitude	N 34°04.472
SCADA	No
Measurement Method	Flow Meter
Inflows	SAR, (BVHL)
Outflows	MC Spreading
Notes	F2 = M3.

SBVWCD Mill Creek Spreading

Map

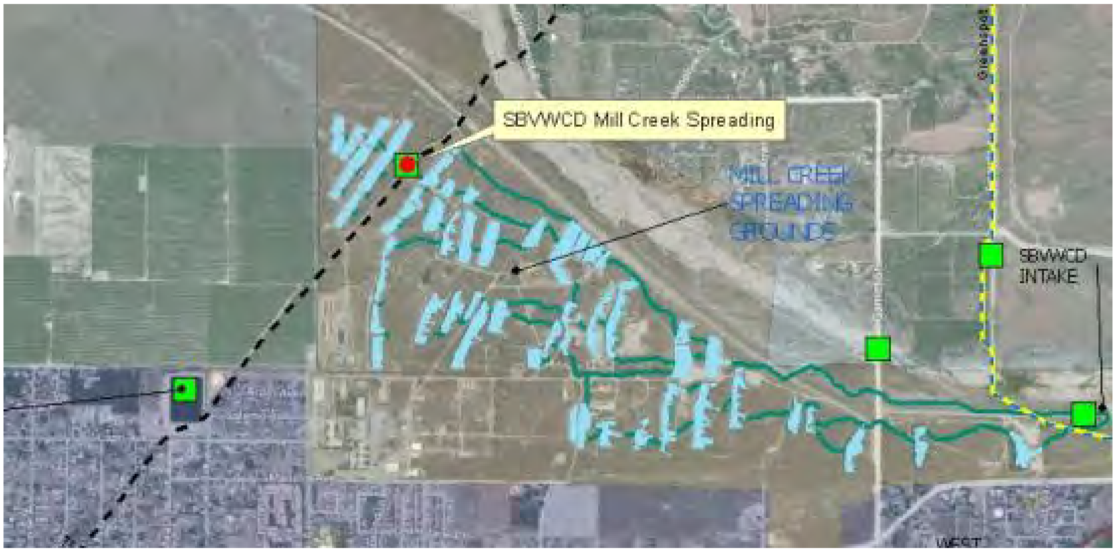
Zanja/Tate metering station can sand water to MC Spreading.

This is the outlet pipe used to send water to Mill Creek.

Site Information

Property	Value
Site Name	SBVWCD Mill Creek Spreading
DFR #	P1
Owner	Valley
Latitude	N 34.083774
Longitude	W 117.117624
SCADA	Yes
Measurement Method	Flow Meter
Inflows	SAR, (Crafton Tank)
Outflows	MC Spreading
Notes	This site can be seen directly South of MC Diversion.

SBVWCD Mill Creek Spreading



Map

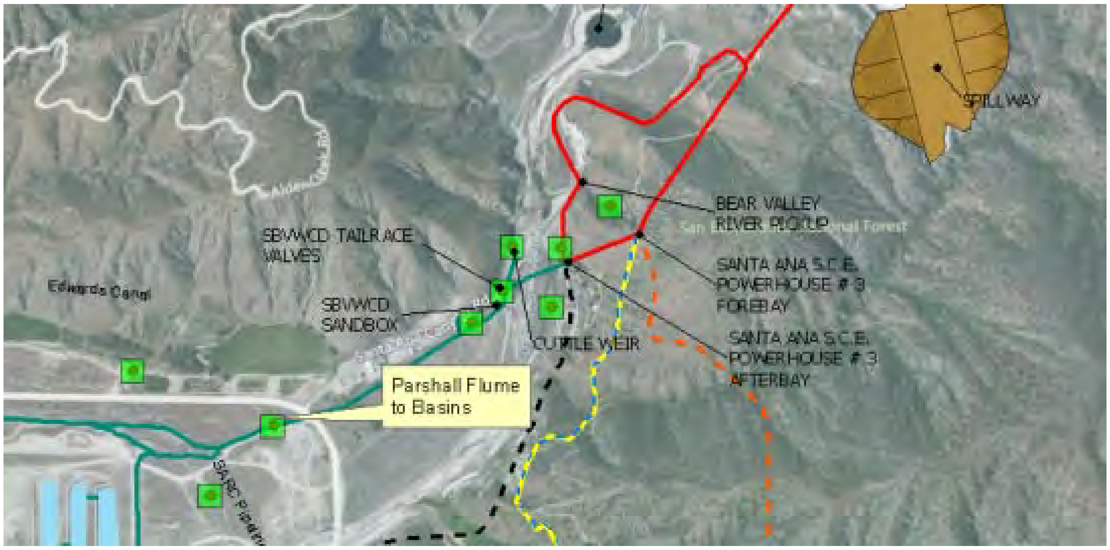
Water is sent to MC Spreading over the weir.

Close up of the weir.

Site Information

Property	Value
Site Name	SBVWCD Mill Creek Spreading
DFR #	X1
Owner	SBVWCD
Longitude	W 117°07 057
Latitude	N 34°05.026
SCADA	No
Measurement Method	Weir
Inflows	SAR, State Water, (Redlands Sandbox)
Outflows	Mill Creek Spreading
Notes	East of Greenspot Road. On North side of Levee.

SBVWCD Parshall FlumeTo Basins

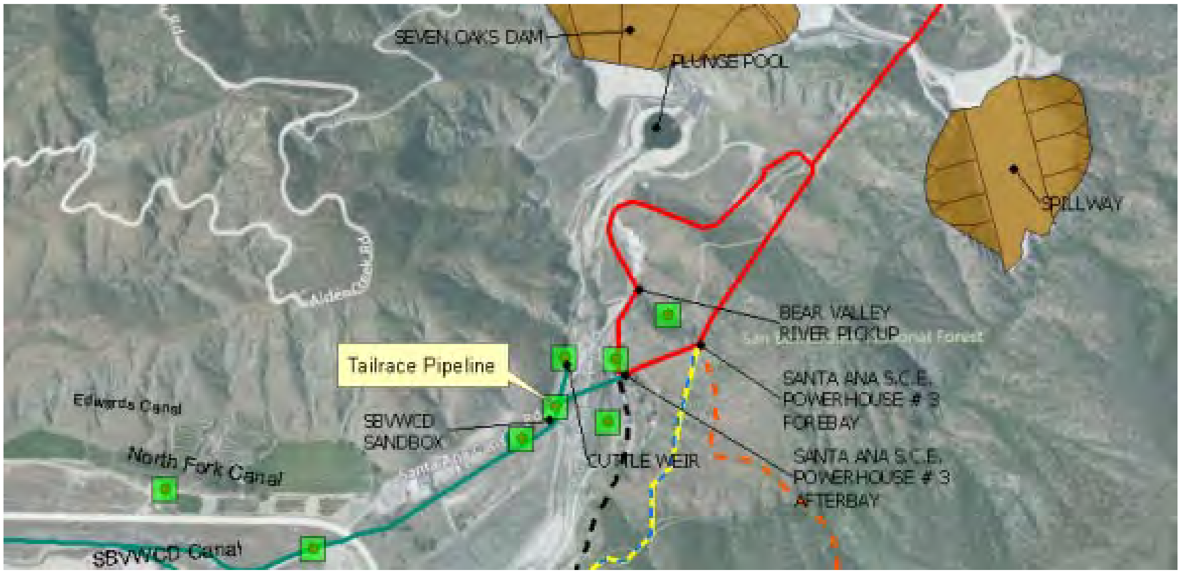


Map

Site Information

Property	Value
Site Name	SBVWCD Parshall FlumeTo Basins
DFR #	L2
Owner	SBVWCD
Longitude	W 117°06.462
Latitude	N 34°06.214
SCADA	No
Measurement Method	Parshall Flume
Inflows	SAR, (SBVWCD Sand Box, North fork Parshall Flume)
Outflows	SAR Spreding Grounds
Notes	This location is the main point of measurement for SA spreading.

Tailrace Pipeline



Map

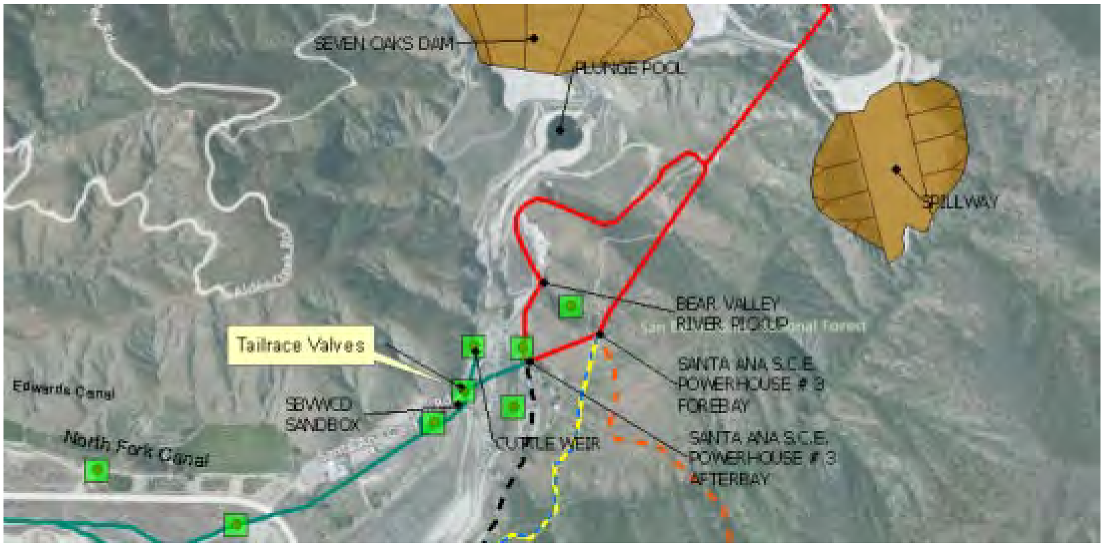
View of Tailrace Pipeline crossing SA River.

Pipeline and three Tailrace Valves (red arrows).

Site Information

Property	Value
Site Name	Tailrace Pipeline
DFR #	I2
Owner	EVWD
SCADA	No
Measurement Method	Calculation
Inflows	SAR, (BVMWC River PU, SCE PH 3)
Outflows	Tailrace Valve, Edwards Box, Northfork Box
Notes	Pipe line that connects SCE PH3 Afterbay to Edwards/ Northfork Box.

Tailrace Valve



Map

Pipeline and three Tailrace Valves (red arrows).

View of Tailrace Pipeline crossing SA River.

Site Information

Property	Value
Site Name	Tailrace Valve
DFR #	J2
Owner	SBVWCD
Longitude	W 117°06.054
Latitude	N 34°06.411
SCADA	No
Measurement Method	Excel Calc
Inflows	SAR, (Tailrace Pipline)
Outflows	SBVWCD Sand Box

Tate Inflow

Map

Water is diverted to Tate via a pipe under this structure.

This is the Office building of the Tate Treatment Plant.

Site Information

Property	Value
Site Name	Tate Inflow
DFR #	P3
Owner	Redlands
Longitude	W 117°04.508
Latitude	N 34°04.394
SCADA	Hand Calc
Measurement Method	Flow Meter
Inflows	MC, (Cooley Hat)
Outflows	Tate Treatment Plant
Notes	Call tate for # or Hand Estimation.

Tate Pump Station to Zanja

Map

Tate Pump Station can send water to the Zanja.

The red arrow marks the location where water enters the Zanja.

Site Information

Property	Value
Site Name	Tate Pump Station to Zanja
DFR #	T1
Owner	Valley
Latitude	N 34°04.463
Longitude	W 117°04.509
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Tate Pump Station)
Outflows	Zanja
Notes	Used to keep water in Zanja year round.

Tate Treatment Plant

Map

Front entrance of Tate Treatment Plant.

A view of some of the facilities at Tate Treatment Plant.

Site Information

Property	Value
Site Name	Tate Treatment Plant
DFR #	R
Owner	Valley
Latitude	N 34°04.369
Longitude	W 117°04.510
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Greenspot Foothill Pump Station)
Outflows	Tate Treatment Plant
Notes	Water treatment plant for the city of Redlands.

Wilson Creek Spreading

Map

View of the entrance of the Wilson Creek Spreading Grounds.

An empty spreading basin.

Site Information

Property	Value
Site Name	Wilson Creek Spreading
DFR #	J3
Owner	Yucaipa Valley Water District
Longitude	W 117°02.422
Latitude	N 34°05.282
SCADA	Yes
Measurement Method	Flow Meter
Inflows	MC, (River PU)
Outflows	Wilson Creek
Notes	This is a percolation basin on the North side of Bryant St.

Yucaipa Regional Park

Map

Water enters the park through a pipe and channel.

Yucaipa Regional Park fish ponds and entrance pipe.

Site Information

Property	Value
Site Name	Yucaipa Regional Park
DFR #	I3
Owner	Yucaipa Water District
Latitude	N 34°03.363
Longitude	W 117°03.002
SCADA	Yes
Measurement Method	Flow Meter
Inflows	MC, (River PU)
Outflows	Yucaipa Regional Park
Notes	Water is sent from Rive PU to Yucaipa Regional Park via Yucaipa Pipeline.

Zanja

Map

Zanja/Tate metering can send water to the Zanja.

Pictured is the outlet structure. Mentone Blvd. is 300ft north.

Site Information

Property	Value
Site Name	Zanja
DFR #	Q
Owner	Valley
Longitude	W 117°04.420
Latitude	N 34°04.439
SCADA	Yes
Measurement Method	Flow Meter
Inflows	State Water, (Zanja/Tate Meter Station)
Outflows	Zanja
Notes	This pipeline was constructed to ensure the Zanja flows year round.

Zanja West Weir to CWC Canal

Map

Left weir to Gay Overflow, Right Gate to Zanja

Green Box is a still well, Flow coming from Zanja.

Site Information

Property	Value
Site Name	Zanja West Weir to CWC Canal
DFR #	V3
Owner	BVMWC
Longitude	W 117°05.925
Latitude	N 34°04.123
SCADA	No
Measurement Method	Weir
Inflows	MC, Zanja
Outflows	Zanja, Crafton Res. (Gay Overflow)
Notes	A key is required to reach this monitoring site.

Appendix 7 Water Recharging Records

Water Year*	Santa Ana River Recharge (AF/year)	Mill Creek Recharge (AF/year)	Total Recharge (AF/year)
1912	9,103	**	9,103
1913	2,211	**	2,211
1914	23,934	**	23,934
1915	28,596	**	28,596
1916	11,776	**	11,776
1917	7,463	**	7,463
1918	4,441	**	4,441
1919	4,969	**	4,969
1920	6,145	**	6,145
1921	8,717	**	8,717
1922	80,065	24,480	104,545
1923	18,518	8,051	26,569
1924	3,304	1,244	4,548
1925	0	394	394
1926	8,678	2,044	10,722
1927	14,417	6,056	20,473
1928	1,217	4,159	5,376
1929	1,268	757	2,025
1930	2,089	2,766	4,855
1931	0	896	896
1932	10,227	6,179	16,406
1933	0	2,143	2,143
1934	222	273	495
1935	2,021	7,732	9,753
1936	541	4,375	4,916
1937	10,551	20,047	30,598
1938	6,942	4,190	11,132
1939	8,730	6,413	15,143
1940	5,707	6,547	12,254
1941	8,558	10,912	19,470
1942	4,635	5,217	9,852
1943	8,473	8,927	17,400
1944	6,394	7,478	13,872
1945	7,332	9,042	16,374
1946	3,794	2,572	6,366
1947	5,160	2,986	8,146
1948	1,134	627	1,761
1949	5,087	0	5,087
1950	2,595	208	2,803
1951	394	50	444
1952	8,786	4,197	12,983
1953	2,653	2,691	5,344
1954	6,672	2,271	8,943
1955	3,760	1,060	4,820
1956	1,234	1,140	2,374
1957	2,922	1,562	4,484
1958	11,308	5,173	16,481
1959	1,149	1,121	2,270
1960	1,937	1,686	3,623
1961	64	32	96
1962	4,756	1,883	6,639
1963	590	171	761
1964	1,099	332	1,431
1965	3,464	863	4,327
1966	5,766	4,026	9,792
1967	9,406	6,677	16,083

Water Year*	Santa Ana River Recharge (AF/year)	Mill Creek Recharge (AF/year)	Total Recharge (AF/year)
1968	6,456	3,524	9,980
1969	31,354	12,906	44,260
1970	10,330	3,222	13,552
1971	5,587	531	6,118
1972	2,881	102	2,983
1973	18,245	2,932	21,177
1974	9,458	1,167	10,625
1975	9,699	708	10,407
1976	5,905	808	6,713
1977	3,038	314	3,352
1978	52,172	13,692	65,864
1979	49,484	13,753	63,237
1980	39,054	13,662	52,716
1981	16,750	4,604	21,354
1982	16,118	5,096	21,214
1983	15,222	13,205	28,427
1984	12,995	2,504	15,499
1985	186	4,144	4,330
1986	8,198	3,993	12,191
1987	0	1,888	1,888
1988	2,057	1,718	3,775
1989	2,950	248	3,198
1990	1,436	339	1,775
1991	6,971	3,330	10,301
1992	12,206	6,559	18,765
1993	38,993	19,800	58,793
1994	11,308	9,921	21,229
1995	19,822	16,054	35,876
1996	13,041	3,741	16,782
1997	10,000	5,359	15,359
1998	39,306	16,270	55,576
1999	6,043	2,159	8,202
2000	5,871	4,001	9,872
2001	3,468	3,343	6,811
2002	1,364	386	1,750
2003	10,729	4,894	15,623
2004	2,934	3,093	6,027
2005	27,841	29,138	56,980
2006	14,476	9,510	23,787
2007	4,002	1,631	5,633
2008	17,550	3,810	21,360
2009	8,456	4,450	12,906
2010	21,674	8,891	30,565
2011	37,801	16,185	53,986
Totals	1,034,405	469,235	1,503,442

* Water year is from October 1 to September 30

** Mill Creek spreading began around 1910 but records date back only to 1921-22

Appendix 8 Seven Oaks Dam (SOD) Fact Sheet

Seven Oaks Dam and Reservoir

The dam site is on the Santa Ana River at a narrowing of upper Santa Ana Canyon, about 1 mile upstream of the canyon mouth just north of Greenspot Road.

The Dam's Purposes

Seven Oaks Dam is a vital part of the vastly improved Santa Ana River Mainstem Flood Control System. The dam:

- Provides 350-year flood protection at the dam site; and
- Keeps a 100-year flood in the river channel between Seven Oaks and Prado dams

The Dam's Features

The dam rises 550 feet above the canyon floor and spans 3,000 feet between the canyon walls. It is 40 feet wide at the top and extends 2,200 feet from its downstream toe to its upstream toe. The detached spillway is about 1,700 feet east of the dam and drains into Deep Creek. The reservoir behind the dam has a water storage capacity of 145,600 acre-feet.

The dam's location 1 mile upstream from the canyon mouth limits its public visibility. From outside the canyon, people see the upper one-third of the dam. Dam-face aesthetic treatments blend the dam in with the surrounding area.

In cooperation with the U.S. Forest Service and the U.S. Fish and Wildlife Service, the Corps incorporated several environmental features in the area to mitigate for environmental losses due to dam construction.

The Corps preserved:

- 617 acres next to the dam site (Section 5) to prevent its development due to improved access to the dam site;
- 138 acres at Filaree Flats for riparian, aquatic, and upland habitat;
- 60 acres in the streambed just below the dam site for riparian and aquatic habitat; and
- 760 acres in the Santa Ana River wash downstream of Greenspot Road to preserve the *Eriastrum (Wooly Star)* – a federally listed endangered plant.

Dam Construction

Since starting construction in 1990, the Corps built the access roads to the site, a pilot tunnel to obtain geotechnical data, testfills, and a test excavation through Government Canyon Ridge; and stripped the canyon wall for left dam abutment.

There were three construction phases: excavation for the inlet structure, construction of the outlet works, and construction of the embankment and spillway.

Purpose of the Inlet Structure. The structure's purpose is to screen sediment so it will not enter the outlet tunnel. Excavation of the inlet area for the outlet works tunnel began in August 1991.

The work included building a 1,600-foot-long outlet tunnel running through the east abutment of the dam; construction of the 200-foot high withdrawal intake tower; and building the air shaft, gate chamber, exist channel and plunge pool.

Construction of the Embankment and Spillway. This is the largest and longest construction activity. Construction occurred over 4 ½ years, from April 1993 to September 1997. The work included:

- ✓ Building a cofferdam,
- ✓ Excavating the dam foundation to bedrock up to 100 feet down
- ✓ Grouting the foundation,
- ✓ Filling the foundation excavation back to streambed level,
- ✓ Excavating for and constructing the spillway,
- ✓ Completing the intake tower,
- ✓ Building *project* roads to haul embankment materials – avoiding *local* roads,
- ✓ Excavating and transporting materials for the embankment (beginning in late 1993), and
- ✓ Constructing the earth and rockfill embankment.

The embankment required about 40 million cubic yards of fill. Thirty-five million cubic yards of *pervious* material from two sites: 17 million cubic yards (about 600,000 truckloads) from the dam site itself and 18 million cubic yards (about 700,000 truckloads) from the Santa Ana River streambed immediately below Greenspot Road. Five million cubic yards (about 150,000 truckloads) of *impervious* material from a site located 3 miles southeast of the dam site.

The Santa Ana River Mainstem Flood Control Project

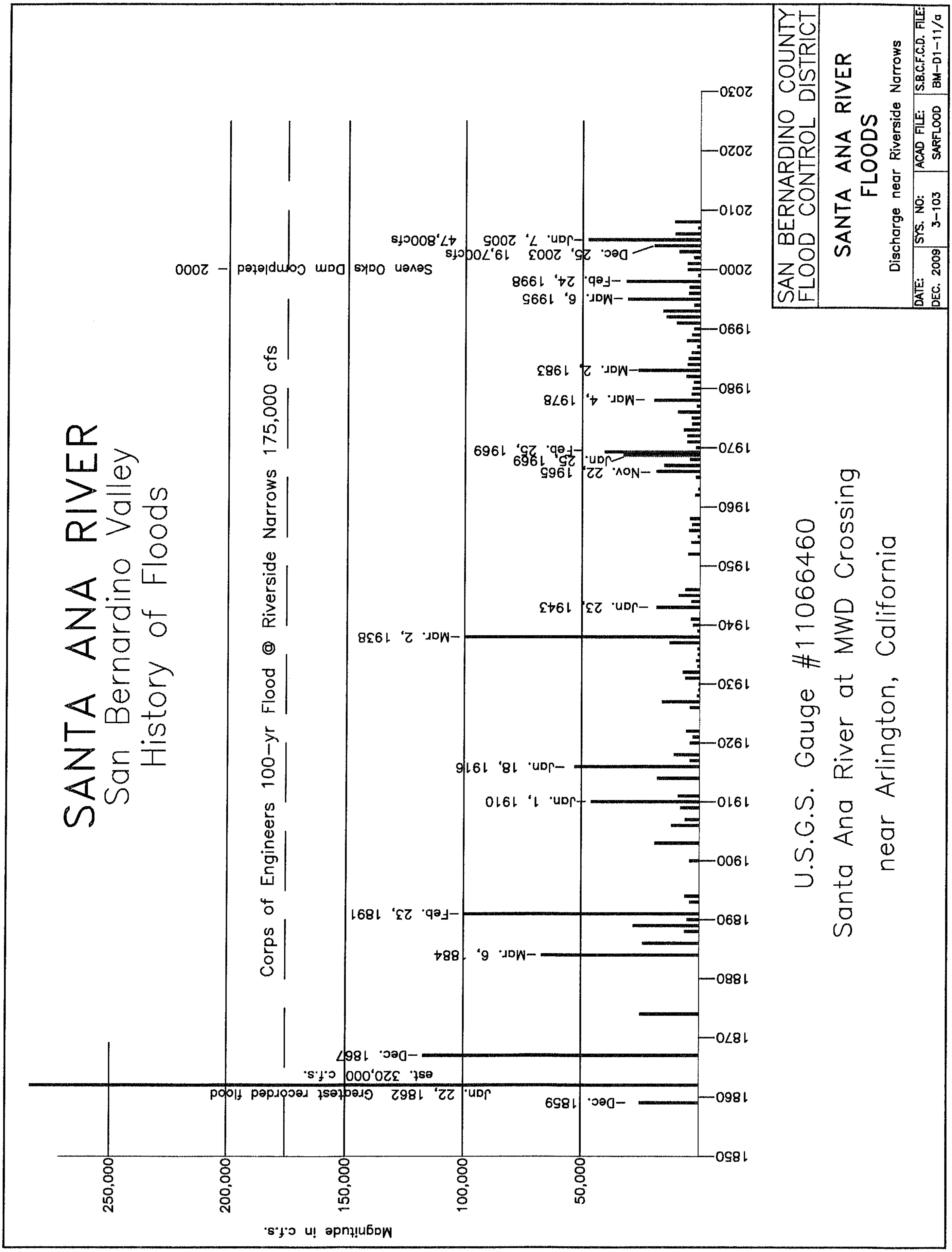
Living in Southern California today, makes it difficult for most of us even to conceive of a flood. The fact is, however, that the Santa Ana River poses the greatest flood threat west of the Mississippi River. In this century there have been 14 medium to large winter floods on the Santa Ana River – the last one in 1980. Flood damages reached millions of dollars in 1938, 1969, and 1978.

Today, without the dam, the most severe flood likely to occur along the river would flood over 110,000 acres to an average depth of 3 feet in Orange, San Bernardino, and Riverside counties – threatening over 3 million people and more than 250,000 structures. Property loss and economic damages could total $18 billion.

At the request of the governments of the three counties, Congress (in 1964) directed the Corps of Engineers to study the flooding problem and potential solutions, in all, the Corps identified and examined over 60 plans for reducing flood damages.

In 1975 (and later confirmed in 1980), the Corps and the flood control districts of the three counties recommended Congressional approval of a new flood control plan. There was widespread local government and public support for the project throughout the three counties. In 1986, Congress authorized this project for construction. The total project features, highlighted in the map below, consist of:

- ☐ Building a dam upstream in San Bernardino County (Seven Oaks Dam);
- ☐ Managing the flood plain between Seven Oaks Dam and Prado Basin;
- ☐ Raising Prado Dam and enlarging Prado Reservoir;
- ☐ Reserving land in Santa Ana Canyon below Prado as open space to provide a natural floodway and a wildlife habitat corridor;
- ☐ Improving the river channel from Santa Ana Canyon southwest to the Pacific Ocean;
- ☐ Improving 4 river tributaries in the three counties; and
- ☐ Restoring a salt water marsh at the mouth of the Santa Ana River.

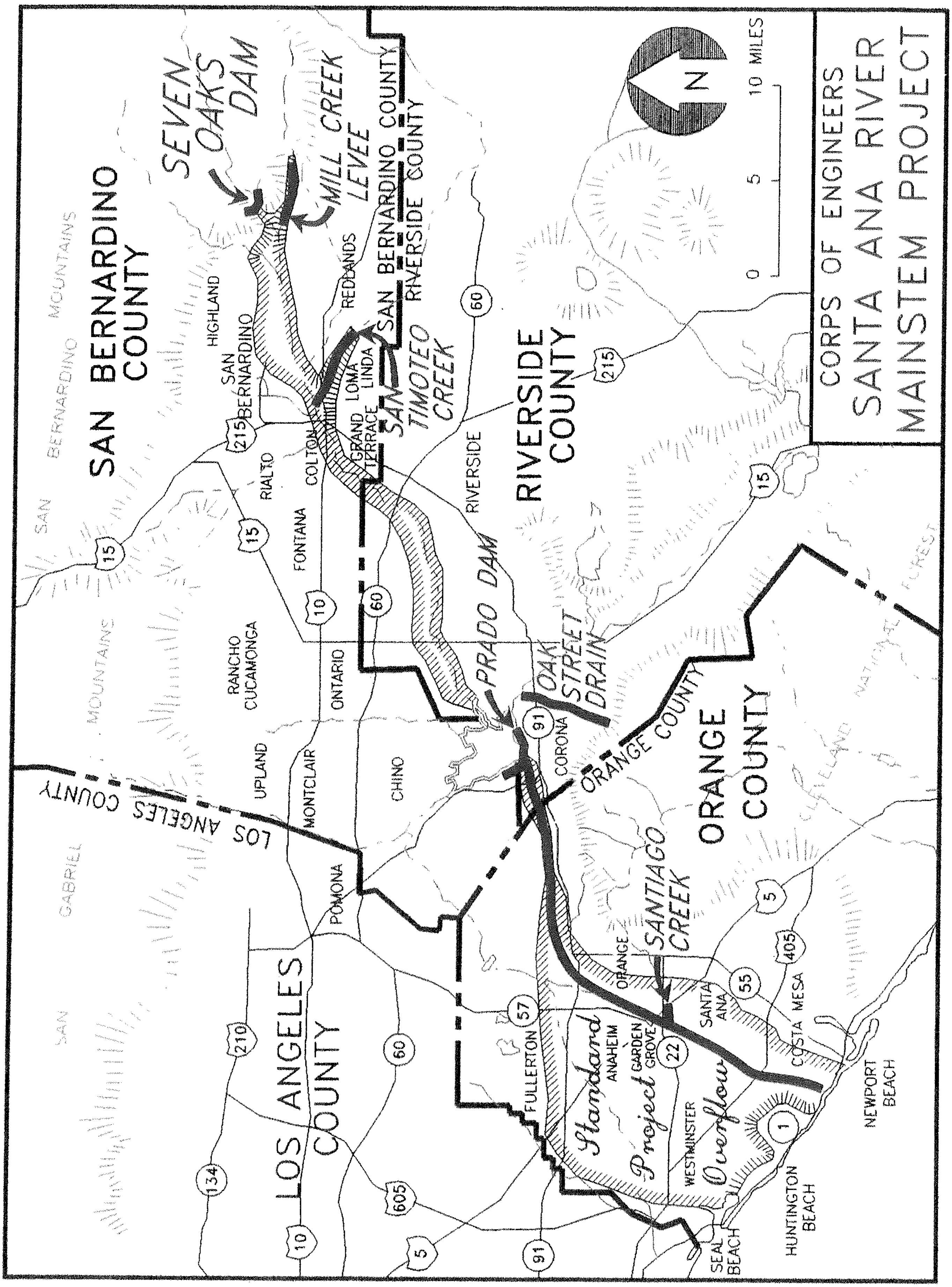

SANTA ANA RIVER
San Bernardino Valley
History of Floods
Corps of Engineers 100-yr Flood @ Riverside Narrows 175,000 cfs
Seven Oaks Dam Completed – 2000
Jan. 22, 1862 Greatest recorded flood
est. 320,000 c.f.s.
Dec. 1859
Dec. 1867
Mar. 6, 1884
Feb. 23, 1891
Jan. 1, 1910
Jan. 18, 1916
Mar. 2, 1938
Jan. 23, 1943
Nov. 22, 1965
Jan. 25, 1969
Feb. 25, 1969
Mar. 4, 1978
Mar. 2, 1983
Mar. 6, 1995
Feb. 24, 1998
Dec. 25, 2003 19,700cfs
Jan. 7, 2005 47,800cfs
Magnitude in c.f.s.
250,000
200,000
150,000
100,000
50,000
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
U.S.G.S. Gauge #11066460
Santa Ana River at MWD Crossing
near Arlington, California
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SANTA ANA RIVER FLOODS
Discharge near Riverside Narrows
DATE: DEC. 2009
SYS. NO: 3-103
ACAD FILE: SARFLOOD
S.B.C.F.C.D. FILE: BM-D1-11/a

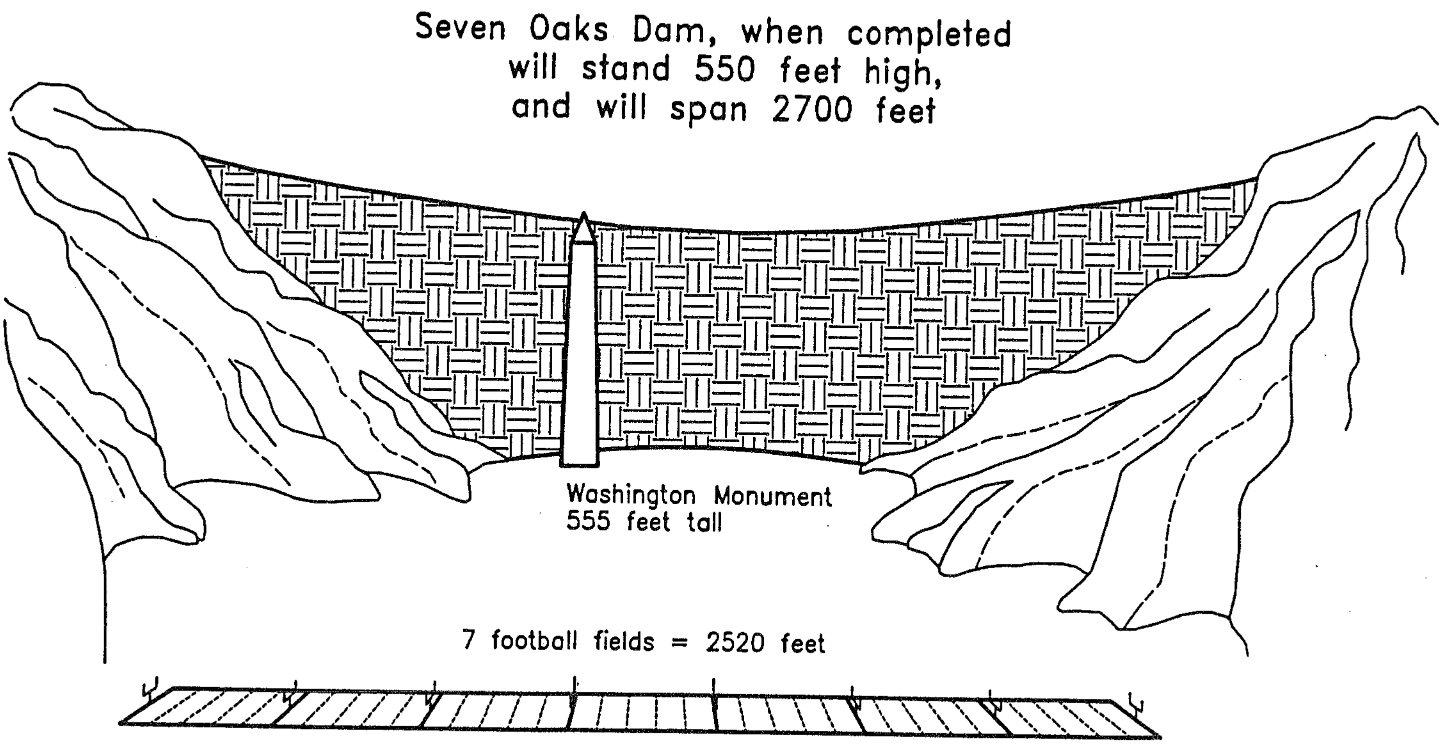
Seven Oaks Dam
Santa Ana River Basin, California
September 2003

Pertinent Data

Construction Completed		September 1999
Stream System		Santa Ana River
Drainage Area	sq. mi	177
Dam		
Type		Earth and Rock Fill
Height above Original Streambed	feet	550
Crest Length	feet	2,760
Design Freeboard	feet	5.3
Reservoir		
Elevation		
Streambed	feet, NGVD	2,060
Debris Pool	feet, NGVD	2,200*
Top of Flood Control	feet, NGVD	2,580
Top of Spillway	feet, NGVD	2,580
Top of Dam	feet, NGVD	2,610
Area - (Based on year 1999 survey)		
Debris Pool	acres	79.2
Top of Flood Control	acres	801.6
Top of Spillway	acres	801.6
Top of Dam	acres	1,066.8
Capacity - (Based on year 1999 survey)		
Debris Pool	acre-feet	3,127.66
Top of Flood Control	acre-feet	147,969.67
Top of Spillway	acre-feet	147,969.67
Top of Dam	acre-feet	174,609.23
Spillway		
Type		Trapezoidal Rockcut w/ Concrete Sill
Total Width	feet	500
Outlet Works - Multi-level Intake Structure (MLS)		
Controlled Outlet Gates		
Regulating Outlet (RO) Gate type		Vertical Lift
Number and size		2 - 5'W x 8.5'H
Emergency RO Gate type		Vertical Lift
Number and size		2 - 5'W x 8.5'H
Low Flow (LF) Gate type		Vertical Lift
Number and size		1 - 2'W x 3.5'H
Emergency LF Gate type		Vertical Lift
Number and size		1 - 2'W x 3.5'H
Conduits		
Pressure Conduit		1 - 7'W x 13.5'H / 18' Diameter
Conduit Length	feet	60 / 875
Horseshoe Section		1 - 23'W x 18'H
Conduit Length	feet	45
Downstream of RO Gates		1 - 24'W x 10'H / 18'W x 9'H
Conduit Length	feet	120 / 540
Exit Channel		
Channel Length	feet	220
High Level Intake Elevation	feet, NGVD	2,265
Diversion Intake Elevation	feet, NGVD	2,100
Outlet Works - Minimum Discharge Line (MDL)		
Controlled Outlet Valves		
Minimum Discharge Line (MDL) Gate type		Cone / Ball Valves
Number and size		1 - 24" Ball Valve
Number and size		1 - 14" Cone Valve
Number and size		1 - 8" Cone Valve
Minimum Discharge Line Extension (MDLE) Gate type		Ball Valve
Number and size		1 - 24" Ball Valve
Reservoir Design Flood (General Storm)		
Total Volume (4-day)	acre-feet	115,000
Peak Inflow	ft^3/s	85,000
Peak Outflow	ft^3/s	7,000
Peak Water Surface Elevation	feet, NGVD	2,580
Probable Maximum Flood (General Storm)		
Total Volume	acre-feet	326,000
Peak Inflow	ft^3/s	185,000
Peak Outflow	ft^3/s	180,000
Peak Water Surface Elevation	feet, NGVD	2,604.7

* Debris pool elevation at start of project life. It will be adjusted gradually to elevation 2,300 feet, NGVD as sediment deposition occurs throughout the life of the project.


CORPS OF ENGINEERS
SANTA ANA RIVER
MAINSTEM PROJECT
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
ORANGE COUNTY
LOS ANGELES COUNTY
SEVEN OAKS DAM
MILL CREEK LEVEE
SAN TIMOTEO CREEK
PRADO DAM
OAK STREET DRAIN
SANTIAGO CREEK
Standard Project Overflow
SAN BERNARDINO MOUNTAINS
SAN GABRIEL MOUNTAINS
CLEVELAND NATIONAL FOREST
0 5 10 MILES
N
HIGHLAND
SAN BERNARDINO
REDLANDS
LOMA LINDA
GRAND TERRACE
COLTON
RIALTO
FONTANA
RANCHO CUCAMONGA
UPLAND
MONTCLAIR
ONTARIO
CHINO
POMONA
RIVERSIDE
CORONA
ORANGE
ANAHEIM
FULLERTON
GARDEN GROVE
SANTA ANA
WESTMINSTER
COSTA MESA
NEWPORT BEACH
HUNTINGTON BEACH
SEAL BEACH



Adapted from
The Riverside Press-Enterprise
February 11, 1990

Table 1. MINIMUM AND MAXIMUM GATE OPENING REQUIREMENTS

GATE TYPE	MINIMUM GATE OPENING (FEET)	MAXIMUM GATE OPENING (FEET)
REGULATION OUTLET (R.O.)	.75	6.8
LOW FLOW (L.F.)	.5	2.8

Table 2. RECOMMENDED MAXIMUM RATE OF RELEASE CHANGE

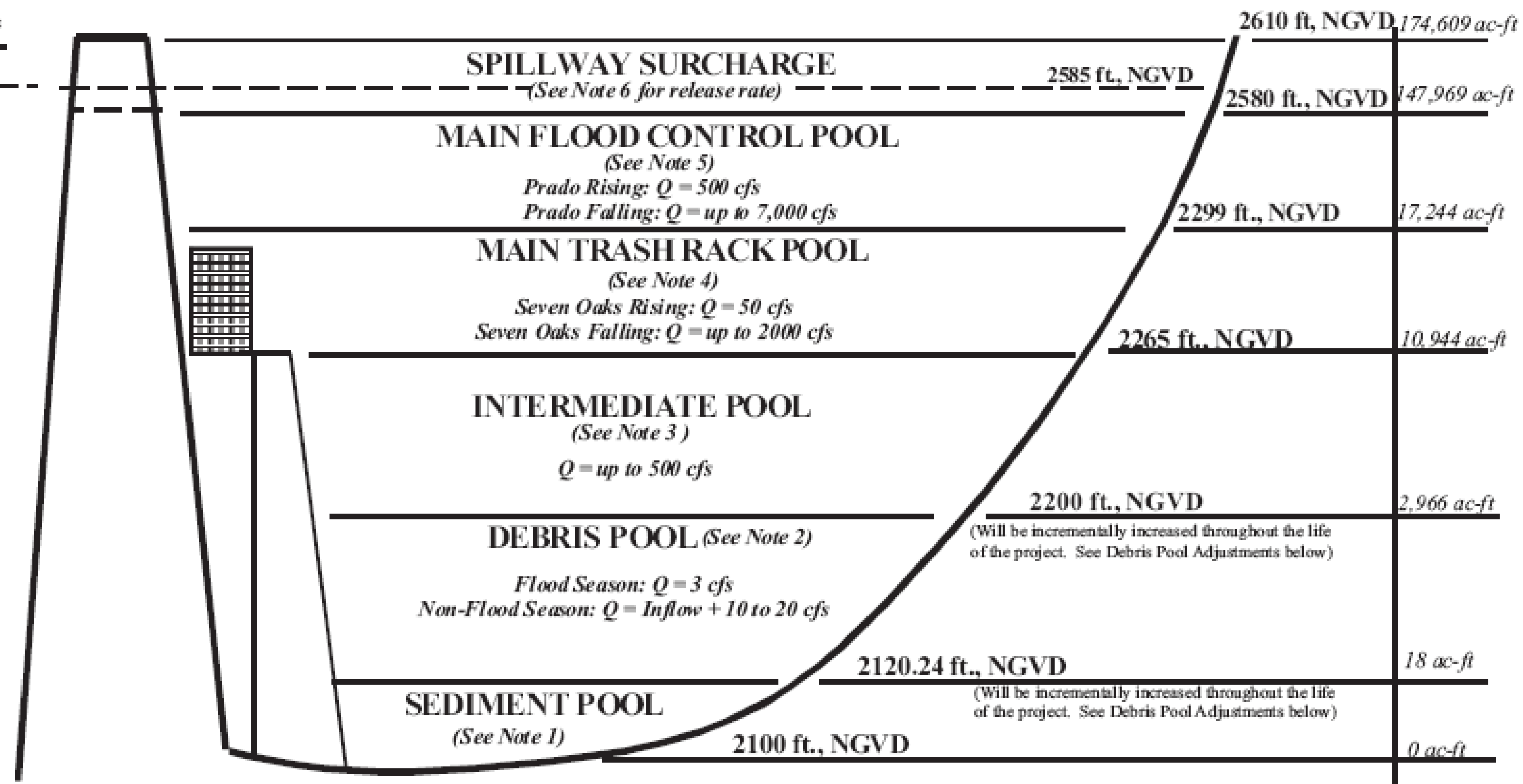
DISCHARGE	TO INCREASE FLOW	TO DECREASE FLOW
0 - 200	NO RESTRICTION	NO RESTRICTION
UP TO 500	250 CFS/HOUR	250 CFS/HOUR
500 - 4,000	500 CFS/HOUR	500 CFS/HOUR
4,000 -8,000	1000 CFS/HOUR	1000 CFS/HOUR

MDL - Minimum Discharge Line
LF - Low Flow Gate
RO - Regulation Outlet Gates (Main Gates)
MDLE - Minimum Discharge Line Extension *

* During the dry months, the MDLE will usually be used to bypass the plunge pool. The MDLE is controlled by a 30-inch ball valve. This ball valve cannot be used to regulate flows and must be either in a fully open or fully closed position.

Storage values shown were acquired from year 1999 survey data.

DESIRED GATES TO USE	REQUIRED SLUICE GATE POSITION **
MDL, LF, RO	RISING : OPEN * FALLING: OPEN *
PRADO RISING: MDL, LF PRADO FALLING: LF, RO	RISING: OPEN * FALLING : OPEN *
SEVEN OAKS RISING: MDL SEVEN OAKS FALLING: MDL, LF, RO	OPEN
MDL & LF	OPEN
MDL & LF	OPEN Once the water level approaches the top of debris pool elevation, sluice gate should be opened, and should remain open throughout the flood season (Refer to Section 7-05.b. for details).
MDL	CLOSED



(For detailed drawings of the outlet works features, see Plates 2-06 to 2-24 of this document)

* May be closed if necessary. Prior to closure during high flows, however, the LF and RO gates must be temporarily closed to avoid the possibility of damaging the sluice gate.

** Refer to Section 7-06.b. for procedures in operating the sluice gate.

DEBRIS POOL ADJUSTMENTS:

- The maximum allowance for Debris Pool storage is about 3,000 ac-ft. The minimum required Debris Pool storage by the end of project life is about 800 ac-ft.

- As sediments accumulate and additional stop logs are placed within the multilevel withdrawal structure, the top of sediment pool will rise and the debris pool storage will diminish.

- When it is suspected that the debris pool storage is approaching the minimum of 800 ac-ft, the reservoir should be re-surveyed and the top of debris pool elevation raised to re-establish the 3,000 ac-ft of debris pool storage.

- Continue raising the top of debris pool elevation over project life until the top of debris pool reaches the final elevation of 2300 ft, NGVD.

NOTES:

1. SEDIMENT POOL:
- Additional stop logs are installed as necessary prior to each flood season. Sediment pool elevation may vary in any given year. Additional stop logs may be installed during the flood season, if necessary. When reservoir water surface elevation is within this pool, releases are generally made through the MDLE.

2. DEBRIS POOL:
- Prior to using LF and or RO gates sluice gate needs to be opened. See Section 7-06.b. of this document for procedures.

3. INTERMEDIATE POOL:
- Maximum combined capacity of LF and MDL in this elevation range is 500 cfs.

- May delay releases and modify release rates if hydrologic conditions warrant to support mitigation and enhancement plans.

4. MAIN TRASH RACK POOL:
- During Rising Stages: Release 50 cfs through the MDL only.

- During Falling Stages: Release theoretical maximum safe rates. The theoretical maximum Q's at different elevation ranges are:

- @2265 ft, NGVD ---- Q = 500 cfs
- @2269 ft, NGVD ---- Q = 1,000 cfs
- @2273 ft, NGVD ---- Q = 1,500 cfs
- @2299 ft, NGVD ---- Q = 2,000 cfs

- Note that the rates shown can be adjusted depending upon the amount of trash observed, the proximity of the next storm, the time required to clean the trash racks, and operation of the dam.

- May delay releases and modify release rates if hydrologic conditions warrant to support mitigation and enhancement plans.

- See Table 1 for max & min allowable gate openings.

5. MAIN POOL:
- During Falling Stages: The Q's at different elevation ranges are:

- @2299 ft, NGVD ---- Q = 2,000 cfs
- @2300 ft, NGVD ---- Q = 2,030 cfs
- @2400 ft, NGVD ---- Q = 4,340 cfs
- @2500 ft, NGVD ---- Q = 6,560 cfs
- @2580 ft, NGVD ---- Q = 7,000 cfs

- May delay releases and modify release rates if hydrologic conditions warrant to support mitigation and enhancement plans.

- See Table 1 for max & min allowable gate openings.

6. SPILLWAY SURCHARGE:
- During Rising Stages below el 2585 ft, NGVD, maintain a combined release total of 7,000 cfs. Above el. 2585 ft, NGVD, all gates shall be closed.

- During Falling Stages: Gates may be adjusted to maintain the resulting maximum spillway flow for quicker evacuation of the remaining surcharge pool.

7. OPERATIONAL CONSIDERATIONS:
- For all release adjustments, see Tables 1 and 2.

- Scheduled releases will be curtailed, if necessary, in order to assure the safe operation of the dam (i.e., exceedance of downstream channel capacity, or any other emergencies.

- All release ranges shown can be cut or increased, as necessary, in order to allow safety inspection for inspection or for maintenance purposes.

- Instrumentation Testing Program: Collection of data to verify the dam's performance may be done if the opportunity exists.

SEVEN OAKS DAM
SANTA ANA RIVER BASIN, CALIFORNIA
WATER CONTROL MANUAL

WATER CONTROL PLAN

Revised: October 2002

(Note: Revise Plate every time debris pool elevation is increased)

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

Appendix 9 Water Quality Data

Water Quality Data

Source	Parameter	Sample Date	Derived Value	VF Symbol	Unit Symbol Measurement	Detection Limit
Hinckley WTP - Inf	Nitrate as NO3	1/16/1998	2		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	1/12/1999	0	ND	mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	7/28/1999	2.09		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	1/12/2000	0	ND	mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	7/18/2000	2.05		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	11/30/2000	0	ND	mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	2/7/2001	0	ND	mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	6/5/2001	4.2		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	8/29/2001	2.6		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	12/5/2001	3		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	1/16/2002	4		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	4/9/2002	4.5		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	8/6/2002	2.9		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	10/15/2002	0	ND	mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	1/6/2003	3.8		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	1/9/2003	4		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	4/3/2003	2		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	7/23/2003	0	ND	mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	10/15/2003	0	ND	mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	1/14/2004	2.4		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	4/12/2004	2.2		mg/L	2
Hinckley WTP - Inf	Nitrate as NO3	8/31/2005	0	ND	mg/L	0.47
Hinckley WTP - Inf	Nitrate as NO3	9/29/2005	0	ND	mg/L	0.47
Hinckley WTP - Inf	Nitrate as NO3	11/7/2005	0	ND	mg/L	0.47
Hinckley WTP - Inf	Nitrate as NO3	3/25/2008	1		mg/L	0.44
Hinckley WTP - Inf	Nitrate as NO3	6/30/2009	1.6		mg/L	0.44
Hinckley WTP - Inf	Nitrate as NO3	6/15/2010	0	ND	mg/L	0.44
Hinckley WTP - Inf	Total Dissolved Solids	1/16/1998	128		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	1/12/1999	132		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	1/12/2000	203		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	2/7/2001	150		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	1/16/2002	340		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	4/9/2002	250		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	8/6/2002	240		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	10/15/2002	320		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	1/6/2003	300		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	1/9/2003	310		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	4/3/2003	150		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	10/15/2003	190		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	1/14/2004	170		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	4/12/2004	160		mg/L	1
Hinckley WTP - Inf	Total Dissolved Solids	8/31/2005	100		mg/L	5.5
Hinckley WTP - Inf	Total Dissolved Solids	9/29/2005	120		mg/L	5.5
Hinckley WTP - Inf	Total Dissolved Solids	11/7/2005	130		mg/L	5.5
Hinckley WTP - Inf	Total Dissolved Solids	3/25/2008	144		mg/L	10
Hinckley WTP - Inf	Total Dissolved Solids	6/30/2009	250		mg/L	10
Hinckley WTP - Inf	Total Dissolved Solids	6/15/2010	120		mg/L	10
Hinckley WTP - Inf	Total Dissolved Solids	2/16/2011	130		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	4/22/2011	177		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	4/22/2011	133.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	4/25/2011	143.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	5/2/2011	140		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	5/4/2011	140		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	5/9/2011	148		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	5/16/2011	145.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	5/23/2011	124.25		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	5/31/2011	116.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	6/8/2011	113		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	7/11/2011	132.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	8/1/2011	125.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	8/15/2011	121		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	8/22/2011	137.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	8/22/2011	133		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	8/22/2011	135.25		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	8/29/2011	130.75		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	9/6/2011	130.8333		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	9/13/2011	135.6667		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	10/3/2011	137.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	10/18/2011	142		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	10/24/2011			mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	10/24/2011	137		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	11/14/2011	140.5		mg/L	
Hinckley WTP - Inf	Total Dissolved Solids	11/28/2011	146.75		mg/L	
Hinckley WTP - Inf	Turbidity	1/16/1998	1.2		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/16/1998	1.2		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/12/1999	0.5		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/12/1999	0.5		NTUs	0.1

Water Quality Data

Source	Parameter	Sample Date	Derived Value	VF Symbol	Unit Symbol Measurement	Detection Limit
Hinckley WTP - Inf	Turbidity	1/12/2000	0.5		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/12/2000	0.5		NTUs	0.1
Hinckley WTP - Inf	Turbidity	3/29/2000	0.3		NTUs	0.1
Hinckley WTP - Inf	Turbidity	3/29/2000	0.3		NTUs	0.1
Hinckley WTP - Inf	Turbidity	2/7/2001	0.7		NTUs	0.1
Hinckley WTP - Inf	Turbidity	2/7/2001	0.7		NTUs	0.1
Hinckley WTP - Inf	Turbidity	3/28/2001	0.1		NTUs	0.1
Hinckley WTP - Inf	Turbidity	3/28/2001	0.1		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/16/2002	0.5		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/16/2002	0.5		NTUs	0.1
Hinckley WTP - Inf	Turbidity	7/24/2002	0.1		NTUs	0.1
Hinckley WTP - Inf	Turbidity	7/24/2002	0.1		NTUs	0.1
Hinckley WTP - Inf	Turbidity	11/13/2002	0.1		NTUs	0.1
Hinckley WTP - Inf	Turbidity	11/13/2002	0.1		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/9/2003	1.7		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/9/2003	1.7		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/14/2004	0.8		NTUs	0.1
Hinckley WTP - Inf	Turbidity	1/14/2004	0.8		NTUs	0.1
Hinckley WTP - Inf	Turbidity	8/31/2005	2.1		NTUs	0.12
Hinckley WTP - Inf	Turbidity	8/31/2005	2.1		NTUs	0.12
Hinckley WTP - Inf	Turbidity	11/7/2005	1.6		NTUs	0.12
Hinckley WTP - Inf	Turbidity	11/7/2005	1.6		NTUs	0.12
Hinckley WTP - Inf	Turbidity	4/10/2007	0.6		NTUs	0.05
Hinckley WTP - Inf	Turbidity	4/10/2007	0.6		NTUs	0.05
Hinckley WTP - Inf	Turbidity	4/10/2007	0.55		NTUs	0.05
Hinckley WTP - Inf	Turbidity	4/10/2007	0.55		NTUs	0.05
Hinckley WTP - Inf	Turbidity	5/8/2007	1.1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	5/8/2007	1.1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	6/12/2007	1.1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	6/12/2007	1.1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	7/10/2007	1.7		NTUs	0.05
Hinckley WTP - Inf	Turbidity	7/10/2007	1.7		NTUs	0.05
Hinckley WTP - Inf	Turbidity	8/14/2007	1.1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	8/14/2007	1.1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	9/11/2007	0.8		NTUs	0.05
Hinckley WTP - Inf	Turbidity	9/11/2007	0.8		NTUs	0.05
Hinckley WTP - Inf	Turbidity	10/9/2007	0.6		NTUs	0.05
Hinckley WTP - Inf	Turbidity	10/9/2007	0.6		NTUs	0.05
Hinckley WTP - Inf	Turbidity	11/13/2007	4.4		NTUs	0.05
Hinckley WTP - Inf	Turbidity	11/13/2007	4.4		NTUs	0.05
Hinckley WTP - Inf	Turbidity	12/11/2007	0.7		NTUs	0.05
Hinckley WTP - Inf	Turbidity	12/11/2007	0.7		NTUs	0.05
Hinckley WTP - Inf	Turbidity	1/8/2008	1.9		NTUs	0.05
Hinckley WTP - Inf	Turbidity	1/8/2008	1.9		NTUs	0.05
Hinckley WTP - Inf	Turbidity	2/11/2008	0.8		NTUs	0.05
Hinckley WTP - Inf	Turbidity	2/11/2008	0.8		NTUs	0.05
Hinckley WTP - Inf	Turbidity	3/13/2008	0.55		NTUs	0.05
Hinckley WTP - Inf	Turbidity	3/13/2008	0.55		NTUs	0.05
Hinckley WTP - Inf	Turbidity	3/25/2008	0.95		NTUs	0.05
Hinckley WTP - Inf	Turbidity	3/25/2008	0.95		NTUs	0.05
Hinckley WTP - Inf	Turbidity	4/8/2008	0.35		NTUs	0.05
Hinckley WTP - Inf	Turbidity	4/8/2008	0.35		NTUs	0.05
Hinckley WTP - Inf	Turbidity	5/13/2008	0.25		NTUs	0.05
Hinckley WTP - Inf	Turbidity	5/13/2008	0.25		NTUs	0.05
Hinckley WTP - Inf	Turbidity	6/10/2008	1.7		NTUs	0.05
Hinckley WTP - Inf	Turbidity	6/10/2008	1.7		NTUs	0.05
Hinckley WTP - Inf	Turbidity	7/8/2008	1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	7/8/2008	1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	8/12/2008	0.95		NTUs	0.05
Hinckley WTP - Inf	Turbidity	8/12/2008	0.95		NTUs	0.05
Hinckley WTP - Inf	Turbidity	9/9/2008	2.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	9/9/2008	2.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	10/7/2008	4.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	10/7/2008	4.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	11/10/2008	0.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	11/10/2008	0.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	12/9/2008	0.45		NTUs	0.05
Hinckley WTP - Inf	Turbidity	12/9/2008	0.45		NTUs	0.05
Hinckley WTP - Inf	Turbidity	1/29/2009	1.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	1/29/2009	1.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	2/10/2009	0.35		NTUs	0.05
Hinckley WTP - Inf	Turbidity	2/10/2009	0.35		NTUs	0.05
Hinckley WTP - Inf	Turbidity	3/10/2009	0.85		NTUs	0.05
Hinckley WTP - Inf	Turbidity	3/10/2009	0.85		NTUs	0.05
Hinckley WTP - Inf	Turbidity	4/14/2009	0.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	4/14/2009	0.3		NTUs	0.05
Hinckley WTP - Inf	Turbidity	6/30/2009	2.7		NTUs	0.05

Water Quality Data

Source	Parameter	Sample Date	Derived Value	VF Symbol	Unit Symbol Measurement	Detection Limit
Hinckley WTP - Inf	Turbidity	6/30/2009	2.7		NTUs	0.05
Hinckley WTP - Inf	Turbidity	6/15/2010	2.1		NTUs	0.05
Hinckley WTP - Inf	Turbidity	6/15/2010	2.1		NTUs	0.05
Mill Creek	Nitrate as NO3	12/2/2010	1.8		mg/L	0.44
Mill Creek	Total Dissolved Solids	12/2/2010	230		mg/L	10
Mill Creek	Turbidity	12/2/2010	0.41		NTUs	0.05
Mill Creek	Turbidity	12/2/2010	0.41		NTUs	0.05
Santa Ana River	Nitrate as NO3	1/20/1998	2		mg/L	2
Santa Ana River	Nitrate as NO3	1/21/1999	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	10/19/1999	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	10/19/1999	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	1/11/2000	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	7/20/2000	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	11/30/2000	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	3/12/2001	2		mg/L	2
Santa Ana River	Nitrate as NO3	6/18/2001	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	9/6/2001	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	12/5/2001	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	3/6/2002	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	5/14/2002	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	8/12/2002	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	11/4/2002	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	1/29/2003	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	4/30/2003	2.1		mg/L	2
Santa Ana River	Nitrate as NO3	8/19/2003	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	11/13/2003	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	3/30/2004	3.7		mg/L	2
Santa Ana River	Nitrate as NO3	5/13/2004	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	5/18/2004	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	5/25/2004	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	6/2/2004	0	ND	mg/L	2
Santa Ana River	Nitrate as NO3	12/2/2010	0.84		mg/L	0.44
Santa Ana River	Total Dissolved Solids	1/20/1998	196		mg/L	1
Santa Ana River	Total Dissolved Solids	1/21/1999	127		mg/L	1
Santa Ana River	Total Dissolved Solids	1/11/2000	309		mg/L	1
Santa Ana River	Total Dissolved Solids	3/12/2001	180		mg/L	1
Santa Ana River	Total Dissolved Solids	3/6/2002	290		mg/L	1
Santa Ana River	Total Dissolved Solids	5/14/2002	300		mg/L	1
Santa Ana River	Total Dissolved Solids	8/12/2002	330		mg/L	1
Santa Ana River	Total Dissolved Solids	11/4/2002	350		mg/L	1
Santa Ana River	Total Dissolved Solids	1/29/2003	320		mg/L	1
Santa Ana River	Total Dissolved Solids	4/30/2003	250		mg/L	1
Santa Ana River	Total Dissolved Solids	8/19/2003	340		mg/L	1
Santa Ana River	Total Dissolved Solids	11/13/2003	360		mg/L	1
Santa Ana River	Total Dissolved Solids	3/30/2004	170		mg/L	1
Santa Ana River	Total Dissolved Solids	5/13/2004	200		mg/L	1
Santa Ana River	Total Dissolved Solids	5/18/2004	210		mg/L	1
Santa Ana River	Total Dissolved Solids	5/25/2004	260		mg/L	1
Santa Ana River	Total Dissolved Solids	6/2/2004	310		mg/L	1
Santa Ana River	Total Dissolved Solids	12/2/2010	180		mg/L	10
Santa Ana River	Turbidity	1/20/1998	0.7		NTUs	0.1
Santa Ana River	Turbidity	1/20/1998	0.7		NTUs	0.1
Santa Ana River	Turbidity	1/21/1999	0.4		NTUs	0.1
Santa Ana River	Turbidity	1/21/1999	0.4		NTUs	0.1
Santa Ana River	Turbidity	1/11/2000	0.9		NTUs	0.1
Santa Ana River	Turbidity	1/11/2000	0.9		NTUs	0.1
Santa Ana River	Turbidity	3/12/2001	47		NTUs	0.1
Santa Ana River	Turbidity	3/12/2001	47		NTUs	0.1
Santa Ana River	Turbidity	3/6/2002	1.3		NTUs	0.1
Santa Ana River	Turbidity	3/6/2002	1.3		NTUs	0.1
Santa Ana River	Turbidity	1/29/2003	20.2		NTUs	0.1
Santa Ana River	Turbidity	1/29/2003	20.2		NTUs	0.1
Santa Ana River	Turbidity	3/30/2004	2.6		NTUs	0.1
Santa Ana River	Turbidity	3/30/2004	2.6		NTUs	0.1
Santa Ana River	Turbidity	12/2/2010	19		NTUs	0.05
Santa Ana River	Turbidity	12/2/2010	19		NTUs	0.05
Tate WTP - Inf	Nitrate as NO3	1/16/1998	2	<	mg/L	2
Tate WTP - Inf	Nitrate as NO3	1/12/1999	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	8/17/1999	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	1/12/2000	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	7/18/2000	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	11/30/2000	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	2/7/2001	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	6/5/2001	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	8/29/2001	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	12/5/2001	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	1/16/2002	0	ND	mg/L	2

Water Quality Data

Source	Parameter	Sample Date	Derived Value	VF Symbol	Unit Symbol Measurement	Detection Limit
Tate WTP - Inf	Nitrate as NO3	4/9/2002	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	8/6/2002	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	10/15/2002	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	12/10/2002	0	ND	mg/L	2
Tate WTP - Inf	Nitrate as NO3	1/9/2003	2.3		mg/L	2
Tate WTP - Inf	Nitrate as NO3	4/3/2003	2.9		mg/L	2
Tate WTP - Inf	Nitrate as NO3	7/24/2003	2.1		mg/L	2
Tate WTP - Inf	Nitrate as NO3	10/15/2003	2.2		mg/L	2
Tate WTP - Inf	Nitrate as NO3	12/8/2003	3.6		mg/L	2
Tate WTP - Inf	Nitrate as NO3	4/12/2004	3.1		mg/L	2
Tate WTP - Inf	Nitrate as NO3	11/7/2005	1.8		mg/L	0.47
Tate WTP - Inf	Nitrate as NO3	6/30/2009	1.4		mg/L	0.44
Tate WTP - Inf	Nitrate as NO3	6/15/2010	1.1		mg/L	0.44
Tate WTP - Inf	Nitrate as NO3	9/12/2011	1.1758112		mg/L	
Tate WTP - Inf	Total Dissolved Solids	1/16/1998	109		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	1/12/1999	150		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	1/12/2000	176		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	2/7/2001	180		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	1/16/2002	190		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	4/9/2002	170		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	8/6/2002	190		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	10/15/2002	190		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	12/10/2002	190		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	1/9/2003	220		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	4/3/2003	180		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	10/15/2003	180		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	12/8/2003	190		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	4/12/2004	180		mg/L	1
Tate WTP - Inf	Total Dissolved Solids	11/7/2005	170		mg/L	5.5
Tate WTP - Inf	Total Dissolved Solids	6/30/2009	160		mg/L	10
Tate WTP - Inf	Total Dissolved Solids	7/27/2009	310		mg/L	10
Tate WTP - Inf	Total Dissolved Solids	6/15/2010	110		mg/L	10
Tate WTP - Inf	Total Dissolved Solids	2/28/2011	127		mg/L	
Tate WTP - Inf	Total Dissolved Solids	3/7/2011	129.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	3/21/2011	128		mg/L	
Tate WTP - Inf	Total Dissolved Solids	3/29/2011	142		mg/L	
Tate WTP - Inf	Total Dissolved Solids	4/6/2011	117.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	4/14/2011	126.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	4/18/2011	115.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	4/26/2011	106.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	5/4/2011	103.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	5/9/2011	119.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	5/16/2011	111.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	5/23/2011	117		mg/L	
Tate WTP - Inf	Total Dissolved Solids	5/31/2011	105		mg/L	
Tate WTP - Inf	Total Dissolved Solids	6/8/2011	119.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	7/11/2011	149		mg/L	
Tate WTP - Inf	Total Dissolved Solids	7/26/2011	154		mg/L	
Tate WTP - Inf	Total Dissolved Solids	8/1/2011	137.1667		mg/L	
Tate WTP - Inf	Total Dissolved Solids	8/8/2011	126.6667		mg/L	
Tate WTP - Inf	Total Dissolved Solids	8/15/2011	153.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	8/22/2011	160.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	8/31/2011	158		mg/L	
Tate WTP - Inf	Total Dissolved Solids	9/6/2011	151.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	9/13/2011	166.6667		mg/L	
Tate WTP - Inf	Total Dissolved Solids	10/3/2011	324.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	10/18/2011	163		mg/L	
Tate WTP - Inf	Total Dissolved Solids	10/24/2011			mg/L	
Tate WTP - Inf	Total Dissolved Solids	10/24/2011	172.5		mg/L	
Tate WTP - Inf	Total Dissolved Solids	11/17/2011	178		mg/L	
Tate WTP - Inf	Total Dissolved Solids	11/28/2011	189		mg/L	
Tate WTP - Inf	Turbidity	1/16/1998	1.2		NTUs	0.1
Tate WTP - Inf	Turbidity	1/16/1998	1.2		NTUs	0.1
Tate WTP - Inf	Turbidity	1/12/1999	0.2		NTUs	0.1
Tate WTP - Inf	Turbidity	1/12/1999	0.2		NTUs	0.1
Tate WTP - Inf	Turbidity	1/12/2000	0.2		NTUs	0.1
Tate WTP - Inf	Turbidity	1/12/2000	0.2		NTUs	0.1
Tate WTP - Inf	Turbidity	2/7/2001	0.6		NTUs	0.1
Tate WTP - Inf	Turbidity	2/7/2001	0.6		NTUs	0.1
Tate WTP - Inf	Turbidity	12/27/2001	0.2		NTUs	0.1
Tate WTP - Inf	Turbidity	12/27/2001	0.2		NTUs	0.1
Tate WTP - Inf	Turbidity	1/16/2002	3.2		NTUs	0.1
Tate WTP - Inf	Turbidity	1/16/2002	3.2		NTUs	0.1
Tate WTP - Inf	Turbidity	1/9/2003	2.6		NTUs	0.1
Tate WTP - Inf	Turbidity	1/9/2003	2.6		NTUs	0.1
Tate WTP - Inf	Turbidity	11/7/2005	0.46		NTUs	0.12
Tate WTP - Inf	Turbidity	11/7/2005	0.46		NTUs	0.12

Water Quality Data

Source	Parameter	Sample Date	Derived Value	VF Symbol	Unit Symbol Measurement	Detection Limit
Tate WTP - Inf	Turbidity	4/10/2007	0.35		NTUs	0.05
Tate WTP - Inf	Turbidity	4/10/2007	0.35		NTUs	0.05
Tate WTP - Inf	Turbidity	4/10/2007	0.25		NTUs	0.05
Tate WTP - Inf	Turbidity	4/10/2007	0.25		NTUs	0.05
Tate WTP - Inf	Turbidity	5/8/2007	0.55		NTUs	0.05
Tate WTP - Inf	Turbidity	5/8/2007	0.55		NTUs	0.05
Tate WTP - Inf	Turbidity	6/12/2007	0.4		NTUs	0.05
Tate WTP - Inf	Turbidity	6/12/2007	0.4		NTUs	0.05
Tate WTP - Inf	Turbidity	7/10/2007	0.7		NTUs	0.05
Tate WTP - Inf	Turbidity	7/10/2007	0.7		NTUs	0.05
Tate WTP - Inf	Turbidity	8/14/2007	0.25		NTUs	0.05
Tate WTP - Inf	Turbidity	8/14/2007	0.25		NTUs	0.05
Tate WTP - Inf	Turbidity	9/11/2007	0.4		NTUs	0.05
Tate WTP - Inf	Turbidity	9/11/2007	0.4		NTUs	0.05
Tate WTP - Inf	Turbidity	10/9/2007	0.15		NTUs	0.05
Tate WTP - Inf	Turbidity	10/9/2007	0.15		NTUs	0.05
Tate WTP - Inf	Turbidity	11/13/2007	0.3		NTUs	0.05
Tate WTP - Inf	Turbidity	11/13/2007	0.3		NTUs	0.05
Tate WTP - Inf	Turbidity	12/21/2007	20		NTUs	0.05
Tate WTP - Inf	Turbidity	12/21/2007	20		NTUs	0.05
Tate WTP - Inf	Turbidity	1/14/2008	4.9		NTUs	0.05
Tate WTP - Inf	Turbidity	1/14/2008	4.9		NTUs	0.05
Tate WTP - Inf	Turbidity	2/11/2008	6.1		NTUs	0.05
Tate WTP - Inf	Turbidity	2/11/2008	6.1		NTUs	0.05
Tate WTP - Inf	Turbidity	3/11/2008	1		NTUs	0.05
Tate WTP - Inf	Turbidity	3/11/2008	1		NTUs	0.05
Tate WTP - Inf	Turbidity	4/8/2008	0.9		NTUs	0.05
Tate WTP - Inf	Turbidity	4/8/2008	0.9		NTUs	0.05
Tate WTP - Inf	Turbidity	5/13/2008	0.75		NTUs	0.05
Tate WTP - Inf	Turbidity	5/13/2008	0.75		NTUs	0.05
Tate WTP - Inf	Turbidity	6/10/2008	0.4		NTUs	0.05
Tate WTP - Inf	Turbidity	6/10/2008	0.4		NTUs	0.05
Tate WTP - Inf	Turbidity	7/8/2008	0.25		NTUs	0.05
Tate WTP - Inf	Turbidity	7/8/2008	0.25		NTUs	0.05
Tate WTP - Inf	Turbidity	8/12/2008	0.45		NTUs	0.05
Tate WTP - Inf	Turbidity	8/12/2008	0.45		NTUs	0.05
Tate WTP - Inf	Turbidity	9/9/2008	370		NTUs	0.5
Tate WTP - Inf	Turbidity	9/9/2008	370		NTUs	0.5
Tate WTP - Inf	Turbidity	10/7/2008	1.1		NTUs	0.05
Tate WTP - Inf	Turbidity	10/7/2008	1.1		NTUs	0.05
Tate WTP - Inf	Turbidity	11/10/2008	1.1		NTUs	0.05
Tate WTP - Inf	Turbidity	11/10/2008	1.1		NTUs	0.05
Tate WTP - Inf	Turbidity	12/9/2008	5.7		NTUs	0.05
Tate WTP - Inf	Turbidity	12/9/2008	5.7		NTUs	0.05
Tate WTP - Inf	Turbidity	1/13/2009	1.3		NTUs	0.05
Tate WTP - Inf	Turbidity	1/13/2009	1.3		NTUs	0.05
Tate WTP - Inf	Turbidity	1/15/2009	0.5		NTUs	0.05
Tate WTP - Inf	Turbidity	1/15/2009	0.5		NTUs	0.05
Tate WTP - Inf	Turbidity	3/24/2009	34		NTUs	0.05
Tate WTP - Inf	Turbidity	3/24/2009	34		NTUs	0.05
Tate WTP - Inf	Turbidity	4/1/2009	2.2		NTUs	0.05
Tate WTP - Inf	Turbidity	4/1/2009	2.2		NTUs	0.05
Tate WTP - Inf	Turbidity	6/30/2009	1.6		NTUs	0.05
Tate WTP - Inf	Turbidity	6/30/2009	1.6		NTUs	0.05
Tate WTP - Inf	Turbidity	6/15/2010	5.4		NTUs	0.05
Tate WTP - Inf	Turbidity	6/15/2010	5.4		NTUs	0.05
Tate WTP - Inf	Turbidity	6/23/2010	0.41		NTUs	0.05
Tate WTP - Inf	Turbidity	6/23/2010	0.41		NTUs	0.05

All Data Came from the City of Redlands.

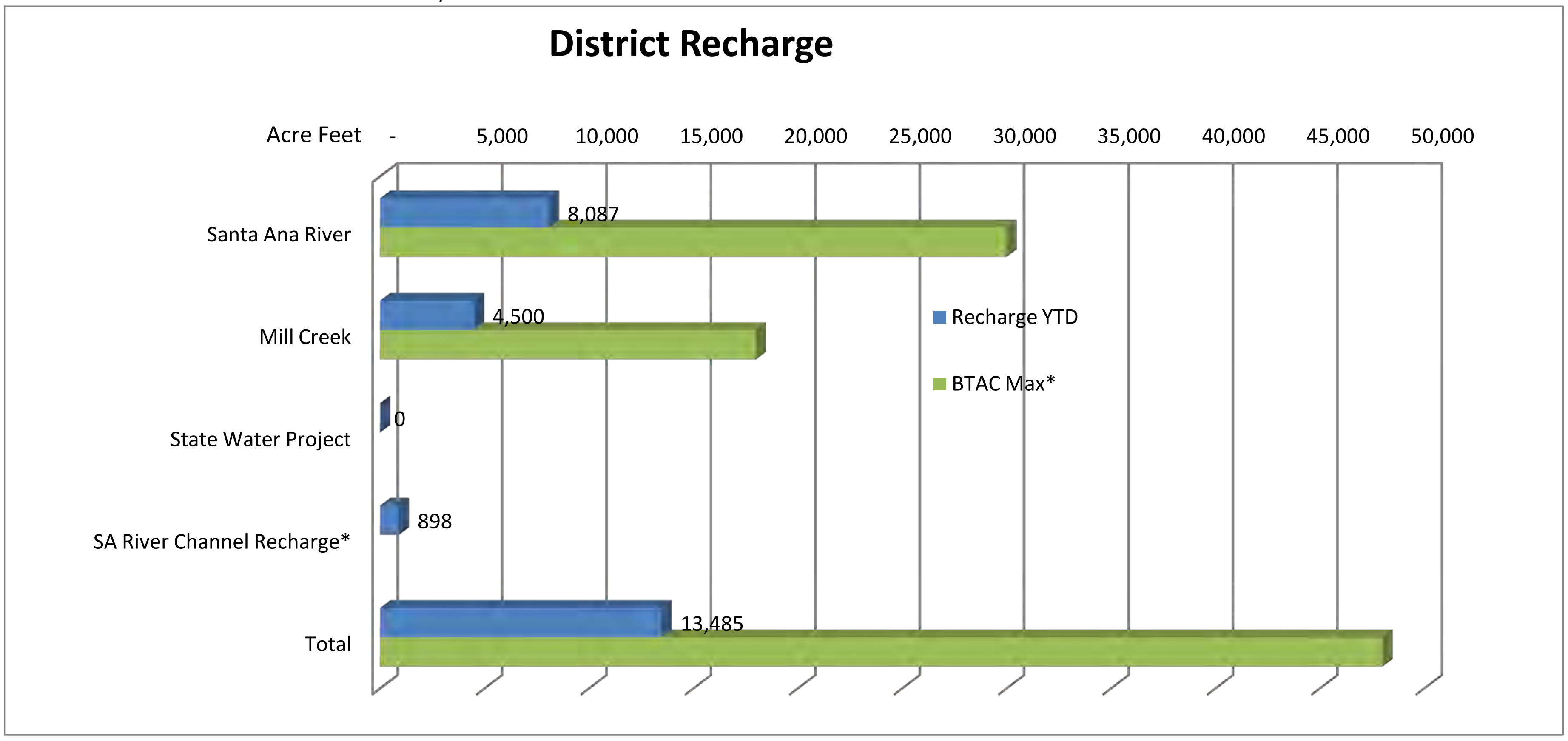
Appendix 10 Example Monthly Recharge Report

San Bernardino Valley Water Conservation District

Monthly Recharge Report **From:** 7/1/2012 **To:** 7/31/2012

	July				
	Avg Daily Recharge	**Monthly Recharge**	**Recharge YTD**	**BTAC Max***	**% Max**
Santa Ana River	9.7	300	8,087	30,000	27%
Mill Creek	2.4	75	4,500	18,000	25%
State Water Project	0.0	0	0	NA	NA
In River Channel Recharge**	2.6	81	898	NA	NA
Total	**15**	**456**	**13,485**	**48,000**	**28%**

Values in Acre Feet
**BTAC Revised Max in December 2011*
***Monitoring began in Mid-April 2011*
**** All Values Based on Water Year Oct-Sep 2012*



Appendix 11 Equipment

Equipment

Truck

Pictures

Equipment Information

Property	Value
Name/Item	Truck
Make	Ford
Model	F-150
Hours/Mileage	47,978
VIN/ID#	
Fuel Type	Unleaded
License	1305571
Condition	Good
Location	Shop
Operating Req.	
Notes	

Truck

Pictures

Equipment Information

Property	Value
Name/Item	Truck
Make	Ford
Model	F-350
Hours/Mileage	50,164
VIN/ID#	1fdwf37y5te332010
Fuel Type	Unleaded
License	1267595
Condition	Good
Location	Shop
Operating Req.	
Notes	

Truck

Pictures

Equipment Information

Property	Value
Name/Item	Truck
Make	Ford
Model	Ranger
Hours/Mileage	86,094
VIN/ID#	
Fuel Type	Unleaded
License	1018265
Condition	Good
Location	Shop
Operating Req.	
Notes	

Dump Truck

Pictures

Equipment Information

Property	Value
Name/Item	Dump Truck
Make	GMC
Model	C6500
Hours/Mileage	38,948
VIN/ID#	
Fuel Type	Unleaded
License	8k11201
Condition	Good
Location	Canyon Shop
Operating Req.	Manual Transmission
Notes	SBVWCD # 000287

Loader/Grader

Pictures

Equipment Information

Property	Value
Name/Item	Loader/Grader
Make	Case
Model	570 LXT
Hours/Mileage	4724 H
VIN/ID#	jjg0224509
Fuel Type	Diesel
License	NA
Condition	Good
Location	Canyon Shop
Operating Req.	
Notes	

Excavator

Pictures

Equipment Information

Property	Value
Name/Item	Excavator
Make	Deere
Model	60D
Hours/Mileage	60.5 H
VIN/ID#	ff0600x280124
Fuel Type	Diesel
License	NA
Condition	Good
Location	Canyon Shop
Operating Req.	
Notes	

Water Buffalo Trailer

Pictures

Equipment Information

Property	Value
Name/Item	Water Buffalo Trailer
Make	
Model	
Hours/Mileage	
VIN/ID#	1m9bt082876516859
Fuel Type	Unleaded
License	1245538
Condition	Good
Location	Canyon Shop
Operating Req.	
Notes	

Equipment Trailer

Pictures

Equipment Information

Property	Value
Name/Item	Equipment Trailer
Make	
Model	
Hours/Mileage	
VIN/ID#	105t76483
Fuel Type	
License	953203
Condition	Good
Location	Canyon Shop
Operating Req.	
Notes	

Gate Drill

Pictures

Equipment Information

Property	Value
Name/Item	Gate Drill
Make	Milwaukee
Model	Super Hole Shooter
Hours/Mileage	
VIN/ID#	568d611120022
Fuel Type	
License	
Condition	Excellent
Location	Shop
Operating Req.	
Notes	

Generator

Pictures

Equipment Information

Property	Value
Name/Item	Generator
Make	Honda
Model	Eu 2000 i
Hours/Mileage	
VIN/ID#	EAAJ-2311838
Fuel Type	Unleaded
License	
Condition	Excellent
Location	Shop
Operating Req.	
Notes	

Pressure Washer

Pictures

Equipment Information

Property	Value
Name/Item	Pressure Washer
Make	Briggs & Straton
Model	Clean Power 40
Hours/Mileage	
VIN/ID#	00778-1
Fuel Type	Unleaded
License	
Condition	Fair
Location	Shop
Operating Req.	
Notes	

Air Compressor

Pictures

Equipment Information

Property	Value
Name/Item	Air Compressor
Make	Husky
Model	Pro
Hours/Mileage	
VIN/ID#	VT631503AJ
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Miter Saw

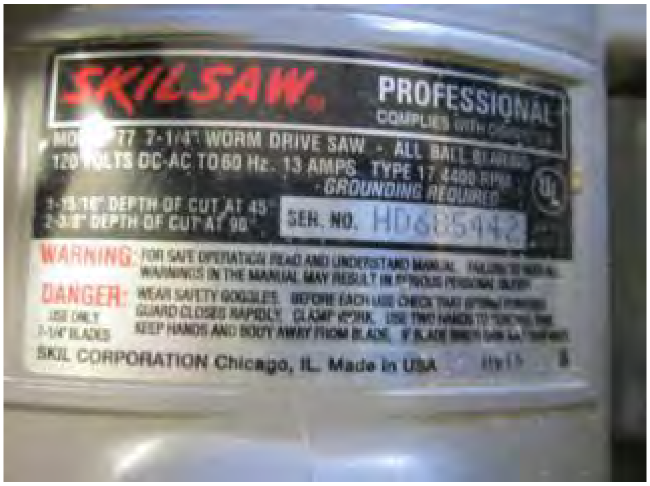
Pictures

Equipment Information

Property	Value
Name/Item	Miter Saw
Make	DeWalt
Model	DW705
Hours/Mileage	
VIN/ID#	98299
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	SBVWCD # 000277

Circular Saw

Pictures



Equipment Information

Property	Value
Name/Item	Circular Saw
Make	Skilsaw
Model	Professional
Hours/Mileage	
VIN/ID#	HD685422
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Concrete (Masonry) Saw

Pictures

Equipment Information

Property	Value
Name/Item	Concrete (Masonry) Saw
Make	Roto Zip
Model	Res1000
Hours/Mileage	
VIN/ID#	104065168
Fuel Type	
License	
Condition	Fair
Location	Shop
Operating Req.	
Notes	

Bench Grinder

Pictures

Equipment Information

Property	Value
Name/Item	Bench Grinder
Make	Jet
Model	JBG-6A
Hours/Mileage	
VIN/ID#	417572
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Arc Welder

Pictures

Equipment Information

Property	Value
Name/Item	Arc Welder
Make	Lincoln Electric
Model	AC-225
Hours/Mileage	
VIN/ID#	10420001
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Hammer Drill

Pictures

Equipment Information

Property	Value
Name/Item	Hammer Drill
Make	Milwaukee
Model	Magnum
Hours/Mileage	
VIN/ID#	67235388
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Cordless Drill

Pictures

Equipment Information

Property	Value
Name/Item	Cordless Drill
Make	Milwaukee
Model	13mm Hammer Drill
Hours/Mileage	
VIN/ID#	C15CD-120910058
Fuel Type	
License	
Condition	Excellent
Location	Shop
Operating Req.	
Notes	

Impact Drill

Pictures

Equipment Information

Property	Value
Name/Item	Impact Drill
Make	Milwaukee
Model	Impact Driver
Hours/Mileage	
VIN/ID#	B55BD120921113
Fuel Type	
License	
Condition	Excellent
Location	Shop
Operating Req.	
Notes	

Cordless Drill

Pictures

Equipment Information

Property	Value
Name/Item	Cordless Drill
Make	Ridgid
Model	R86006
Hours/Mileage	
VIN/ID#	BD082160090
Fuel Type	
License	
Condition	Poor
Location	Shop
Operating Req.	
Notes	

Sawz-all

Pictures

Equipment Information

Property	Value
Name/Item	Sawz-all
Make	Milwaukee
Model	SAWZALL
Hours/Mileage	
VIN/ID#	A18A603303530
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Grinder

Pictures

Equipment Information

Property	Value
Name/Item	Grinder
Make	Makita
Model	9557PB
Hours/Mileage	
VIN/ID#	0442618Y
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

HD Drill

Pictures

Equipment Information

Property	Value
Name/Item	HD Drill
Make	Ridgid
Model	R5010
Hours/Mileage	
VIN/ID#	AE034342990
Fuel Type	
License	
Condition	Excellent
Location	Shop
Operating Req.	
Notes	

Shop Vac

Pictures

Equipment Information

Property	Value
Name/Item	Shop Vac
Make	Ridgid
Model	WD12450
Hours/Mileage	
VIN/ID#	03269C0649
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Air Compressor Trailer

Pictures

Equipment Information

Property	Value
Name/Item	Air Compressor Trailer
Make	Sullair
Model	49HPDPQJD
Hours/Mileage	
VIN/ID#	2.0081021007e+011
Fuel Type	
License	567496
Condition	Good
Location	Shop
Operating Req.	
Notes	

SUV

Pictures

Equipment Information

Property	Value
Name/Item	SUV
Make	Chevrolet
Model	Suburban
Hours/Mileage	41270
VIN/ID#	1GNFK16T93J253741
Fuel Type	Unleaded
License	1172328
Condition	Good
Location	Shop
Operating Req.	
Notes	

Cement Mixer

Pictures

Equipment Information

Property	Value
Name/Item	Cement Mixer
Make	
Model	
Hours/Mileage	
VIN/ID#	
Fuel Type	
License	173440
Condition	Poor
Location	Shop
Operating Req.	
Notes	

Welder/Compressor Trailer

Pictures

Equipment Information

Property	Value
Name/Item	Welder/Compressor Trailer
Make	
Model	
Hours/Mileage	
VIN/ID#	
Fuel Type	
License	1245538
Condition	Fair
Location	Shop
Operating Req.	
Notes	

Generator/Welder

Pictures

Equipment Information

Property	Value
Name/Item	Generator/Welder
Make	Weldan Power
Model	G3000-LX
Hours/Mileage	278 H
VIN/ID#	161436
Fuel Type	Unleaded
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	SBVWCD # 000280

Air Compressor

Pictures

Equipment Information

Property	Value
Name/Item	Air Compressor
Make	Campbell/Hausfeld
Model	VT617204AJ
Hours/Mileage	
VIN/ID#	L4/15/97/20702
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Chain Saw

Pictures

Equipment Information

Property	Value
Name/Item	Chain Saw
Make	Poulan
Model	Wild Thing 2375LE
Hours/Mileage	
VIN/ID#	04051D300892-2
Fuel Type	Unleaded
License	
Condition	Fair
Location	Shop
Operating Req.	
Notes	

Trailer

Pictures

Equipment Information

Property	Value
Name/Item	Trailer
Make	
Model	
Hours/Mileage	
VIN/ID#	59152936
Fuel Type	
License	
Condition	Poor
Location	Shop
Operating Req.	
Notes	

Dump Truck

Pictures

Equipment Information

Property	Value
Name/Item	Dump Truck
Make	Ford
Model	
Hours/Mileage	
VIN/ID#	1FDXC70K3GVA31459
Fuel Type	
License	
Condition	Poor
Location	Shop
Operating Req.	
Notes	SBVWCD # 000286

Computer

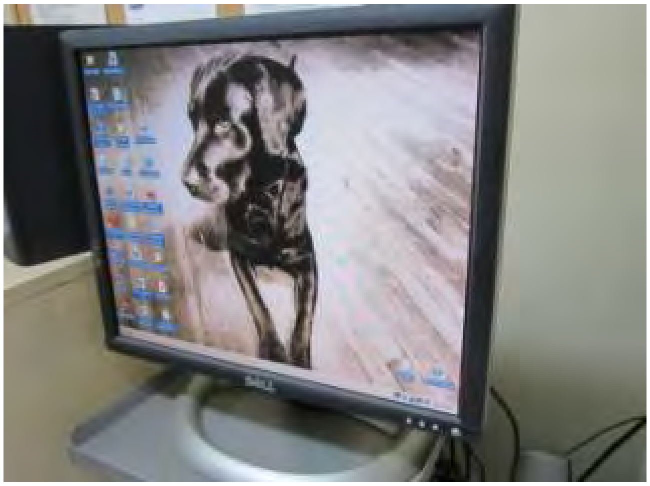
Pictures

Equipment Information

Property	Value
Name/Item	Computer
Make	Dell
Model	XPS200
Hours/Mileage	
VIN/ID#	00045-823-942-116
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Monitor

Pictures



Equipment Information

Property	Value
Name/Item	Monitor
Make	Dell
Model	
Hours/Mileage	
VIN/ID#	MX0X11064832343HK4LL
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Fax

Pictures

Equipment Information

Property	Value
Name/Item	Fax
Make	Brother
Model	FAX-560
Hours/Mileage	
VIN/ID#	U56503EK206429
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Modem

Pictures

Equipment Information

Property	Value
Name/Item	Modem
Make	Westell
Model	A90-750015-07
Hours/Mileage	
VIN/ID#	08FX09039438
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Printer

Pictures

Equipment Information

Property	Value
Name/Item	Printer
Make	HP
Model	Laserjet 1300
Hours/Mileage	
VIN/ID#	CNBJFD8943
Fuel Type	
License	
Condition	Good
Location	Shop
Operating Req.	
Notes	

Appendix 12 Basin Cleanout Frequency

Appendix 12
Basin Cleanout Frequency

Santa Ana River Facilities

Location and Number/Name	Footprint Area (in Acres)	Volume assuming avgerage depth of 7 ft. (Acre-Feet)	Reccomended Cleaning Frequency (Years)	Last Cleaned
Borrow Pit	209.68	N/A	N/A	2011
1	2.46	17.20	1	2007
2	2.29	16.02	1	2005
3	2.53	17.69	1	pre 2005
9*	2.39	16.76	N/A	N/A
10	6.28	43.99	2	2010
11	6.84	47.85	3	2010
12	2.23	15.60	3	2011
13	6.84	47.91	3	2011
14	4.26	29.84	3	2011
15	4.68	32.75	3	2011
16	1.51	10.56	3	2011
17	4.77	33.37	3	2011
D	16.88	118.15	3	2011
Subtotal	**273.64 Acres**	**447.69 Acre-Feet**		

Mill Creek Facilities

Location and Number/Name	Footprint Area (in Acres)	Volume assuming avgerage depth of 4.5 ft. (Acre-Feet)	Reccomended Cleaning Frequency (Years)	Last Cleaned
1	1.44	6.48	1	2011
2	1.09	4.90	1	2011
3	1.57	7.06	1	2011
4	0.56	2.52	2	2011
5	0.96	4.32	2	2011
6-N	0.13	0.58	2	2011
6S	1.63	7.33	3	2011
7	2.78	12.51	3	2011
8	2.01	9.04	3	pre 2005
9	0.86	3.87	3	pre 2005
10	1.01	4.54	3	pre 2005
10-W	0.12	0.54	3	pre 2005
11	1.38	6.21	3	pre 2005
11-W	0.82	3.69	3	pre 2005
12	1.77	7.96	3	2011
13	2.53	11.38	3	pre 2005
14	2.49	11.20	3	2007
15	1.79	8.05	3	pre 2005
15-W	1.33	5.98	3	pre 2005
16-N	0.85	3.82	3	pre 2005
16-S	0.84	3.78	3	pre 2005
17	1.47	6.61	3	pre 2005
18	2.59	11.65	3	pre 2005
19	0.60	2.70	3	pre 2005
20	1.39	6.25	3	pre 2005
21	1.68	7.56	3	pre 2005
22	1.41	6.34	3	pre 2005
23	0.83	3.73	3	pre 2005
24	1.08	4.86	3	pre 2005
25	0.52	2.34	3	pre 2005
26	0.94	4.23	3	pre 2005
27	0.82	3.69	3	pre 2005
28	2.88	12.96	3	pre 2005
29	1.21	5.44	3	pre 2005
30	1.91	8.59	3	pre 2005

Appendix 12
Basin Cleanout Frequency

Mill Creek Facilities

Location and Number/Name	Footprint Area (in Acres)	Volume assuming avgerage depth of 4.5 ft. (Acre-Feet)	Reccomended Cleaning Frequency (Years)	Last Cleaned
31	2.02	9.09	3	pre 2005
32	0.62	2.79	3	pre 2005
33	1.16	5.22	3	pre 2005
34	1.52	6.84	3	pre 2005
35	0.65	2.92	3	pre 2005
36	1.44	6.48	3	pre 2005
36-N	0.19	0.85	3	pre 2005
37	0.54	2.43	3	pre 2005
38	0.63	2.83	3	pre 2005
39	0.16	0.72	3	pre 2005
40	0.46	2.07	3	pre 2005
41	0.61	2.74	3	pre 2005
42	0.51	2.29	3	pre 2005
43	0.83	3.73	3	pre 2005
44	0.60	2.70	3	pre 2005
45	1.27	5.71	3	2006
46	1.01	4.54	3	pre 2005
47	0.99	4.45	3	pre 2005
48	0.66	2.97	3	pre 2005
49	0.29	1.30	3	pre 2005
50	0.66	2.97	3	pre 2005
51	0.42	1.89	3	pre 2005
52	0.59	2.65	3	pre 2005
53	0.59	2.65	3	pre 2005
Subtotal	**65.71 Acres**	**295.69 Acre-Feet**		

* Not in use (no way to convay water)

Appendix 13 Engineering Investigation Report Executive Summary

2012 Engineering Investigation Report: Executive Summary

Article 1, Section 75560 of the California Water Code requires that a Water Conservation District that proposes to levy a groundwater charge *"… shall annually cause to be made an engineering investigation and report upon groundwater conditions of the District*". In accordance with these requirements, the San Bernardino Valley Water Conservation District (District) must make the following findings and determinations as they relate to the ground and surface water conditions of the Bunker Hill Basin and those areas within the District boundary. Listed below are the required tasks and findings for the District's 2012 Engineering Investigation.

Task 1. Annual change in storage for the Bunker Hill Basin for the preceding water year (July 1, 2010 to June 30, 2011 groundwater levels)

Change in storage between Fall 2010 and Fall 2011: **116,020 acre-feet (increase)**

The amount of water stored in the Basin increased by 116,020 acre-feet between 2010 and 2011.

Task 2. Accumulated change in storage of the Bunker Hill Basin as of the last day of the preceding water year (2011)

Accumulated change in storage between July 1993 and June 2011: **-224,603 acre-feet (decrease)**

The amount in storage in the Summer of 2011 is 224,603 acre-ft less than in the Summer of 1993.

Task 3. Total groundwater production from the Bunker Hill Basin for the preceding water year (July 1, 2010 - June 30, 2011): **184,122 acre-feet**

Task 4. Estimate of the annual change in the Bunker Hill Basin storage for the current water year (July 1, 2011 - June 30, 2012): **7,700 acre-feet (increase)**

The amount of water in the Basin is estimated to increase by 7,700 acre- feet during the current water year.

Task 5. Estimate of the annual change in the Bunker Hill Basin storage for the ensuing water year (July 1, 2012 - June 30, 2013): **7,700 acre-feet (increase)**

The amount of water in the Basin is estimated to increase by 7,700 acre-ft during the ensuing water year.

Task 6. Average annual change in Bunker Hill Basin storage for the immediate past 10 water years (2001-2011) shows a decrease, although much less in magnitude than in previous years: **-362 acre-feet (decrease)**

Task 7. Estimated amount of agricultural water and other than agricultural water to be withdrawn from the groundwater supplies of the District for the ensuing water year (July 1, 2012 - June 30, 2013)

Estimated amount of agricultural water withdrawn from the groundwater supplies within the District boundary for the ensuing water year (July 1, 2012 - June 30, 2013): **6,045 acre-feet**

Estimated amount of other than agricultural water withdrawn from the groundwater supplies of the District for the ensuing water year (July 1, 2012 - June 30, 2013): **58,886 acre-feet**

Task 8. Estimated amount of water necessary for surface distribution for the ensuing water year for the Bunker Hill Basin and the District (July 1, 2012 - June 30, 2013)

Estimated amount of water necessary for surface distribution for the ensuing water year (July 1, 2012 - June 30, 2013) for the Bunker Hill Basin: **76,370 acre-feet**

Estimated amount of water necessary for surface distribution for the ensuing water year (July 1, 2012 - June 30, 2013) within the District boundary: **64,035 acre-feet**

Task 9. The amount of water which is necessary for the replenishment of the groundwater supplies of the Bunker Hill Basin and the District for the ensuing water year (July 1, 2012 - June 30, 2013)

The amount of water which is necessary for the replenishment of the groundwater supplies of the Bunker Hill Basin for the ensuing water year (July 1, 2012 - June 30, 2013): **135,843 acre-feet**

The amount of water which is necessary for the replenishment of the groundwater supplies within the District boundary for the ensuing water year (July 1, 2012 - June 30, 2013): **53,232 acre-feet**

2012 Engineering Investigation Report: Executive Summary

In addition to the above findings, Section 75505 of the California Water Code requires that a finding be made as to the amount of water necessary to be replaced in the intake areas of the groundwater basins within the District to prevent the landward movement of salt water into the fresh groundwater body, or to prevent subsidence of the land within the District. Because of its location and the elevations of its water table, the Bunker Hill Basin is not subject to salt-water intrusion and the current groundwater levels do not indicate any significant land subsidence.

Section 75540 of the California Water Code requires that the District Board establish a zone or zones where a groundwater charge is to be implemented. The Code specifically states that a single zone may include the entire District and in May 1993 the Board established the entire District as one zone. This determination may be amended in the future, but lacking any evidence to the contrary, in the 2011-11 year the entire District will remain as a single zone in regard to any groundwater charge.

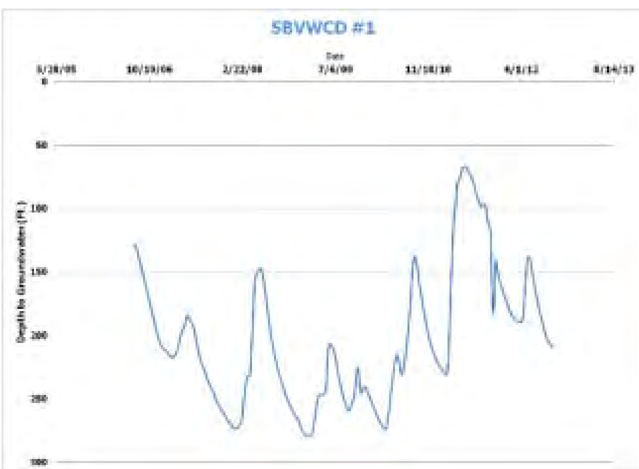
Section 75561 of the California Water Code further requires the Engineering Investigation to include a finding related to the amount of water the District is obligated by contract to purchase. At this time the District has no contractual obligation to purchase water for the replenishment of the groundwater supplies. However, instead cooperates with local and regional agencies to recharge the aquifer. The District works with San Bernardino Valley Municipal Water District (Valley) to spread excess allocation State Project Water in the District's spreading basins. In the past the District has utilized reserves to offset the cost of water purchases which have spread in its basins. Due to the significant reduction in District reserves it has not purchased water this year.

To make the findings and determinations listed above, District staff researched available hydro-geologic and engineering data for the Bunker Hill Basin. This data were compiled and analyzed and a predictive relationship between precipitation, production, and change in basin storage was made. This relationship was based on empirical data since 1993 and enables the prediction of change in storage, given certain annual production and precipitation levels. In addition, annual and accumulated change in storage values were calculated based on current and historic water level changes throughout the Bunker Hill Basin.

Appendix 14 SBVWCD Monitoring Well Locations

SBVWCD #1 (7B1)

Map

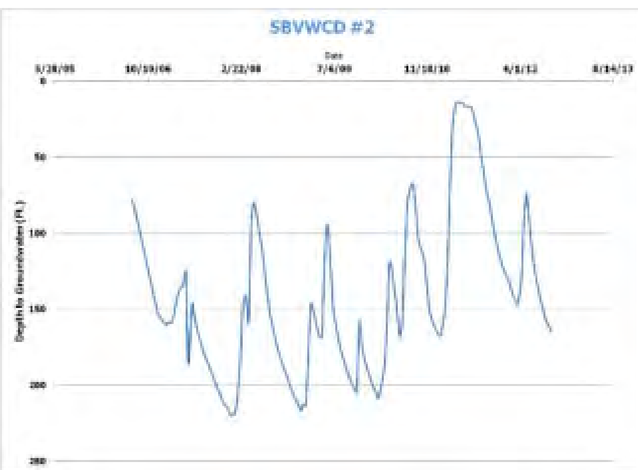


Site Information

Property	Value
Well Name	SBVWCD #1
Latitude	34°6'19.989"N
Longitude	117°7'37.654"W
Depth to Water	AVG. 201.21’
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	Photo of the well taken facing SW

SBVWCD #2 (7K1)

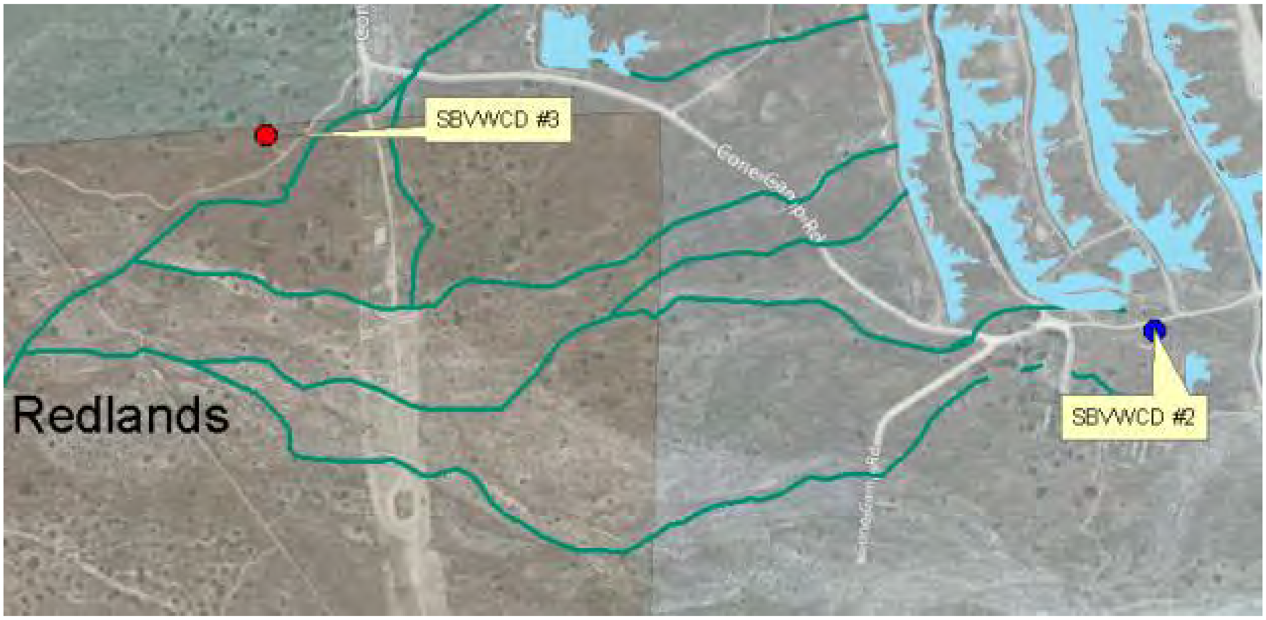
Map



Site Information

Property	Value
Well Name	SBVWCD #2
Latitude	34°5'45.164"N
Longitude	117°7'40.225"W
Depth to Water	AVG. 138.93’
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	Photo of the well taken facing SW

SBVWCD #3 (12K1)

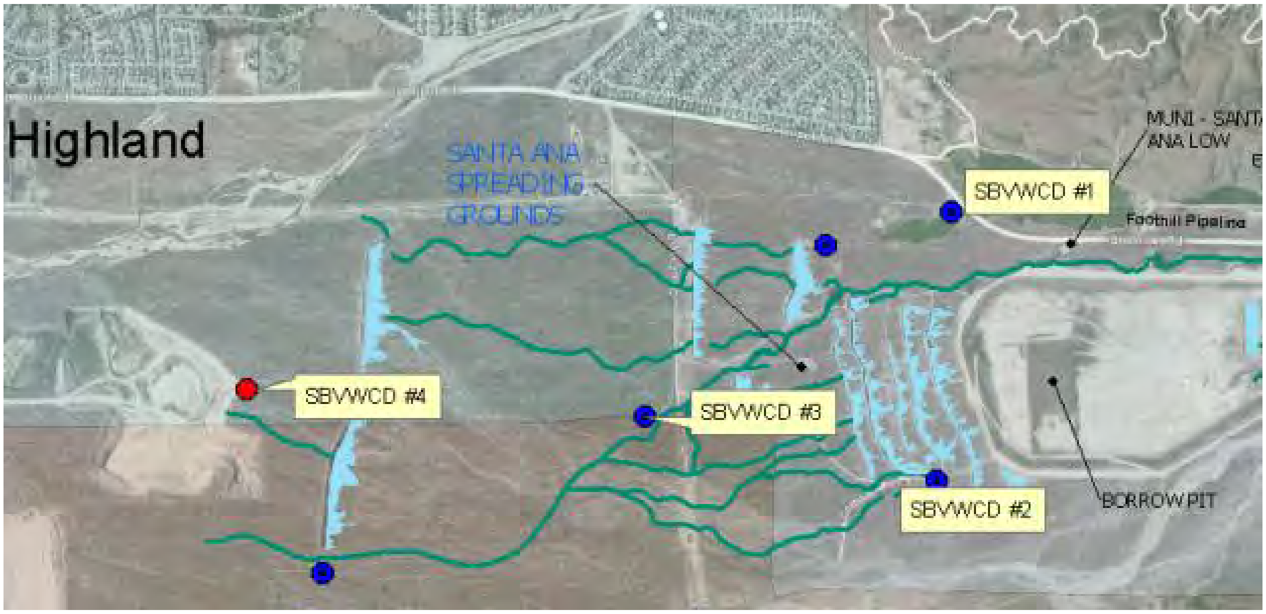


Map

Site Information

Property	Value
Well Name	SBVWCD #3
Latitude	34°5'53.831"N
Longitude	117°8'25.105"W
Depth to Water	AVG. 149.95'
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	Photo of the well taken facing NW

SBVWCD #4 (11H1)

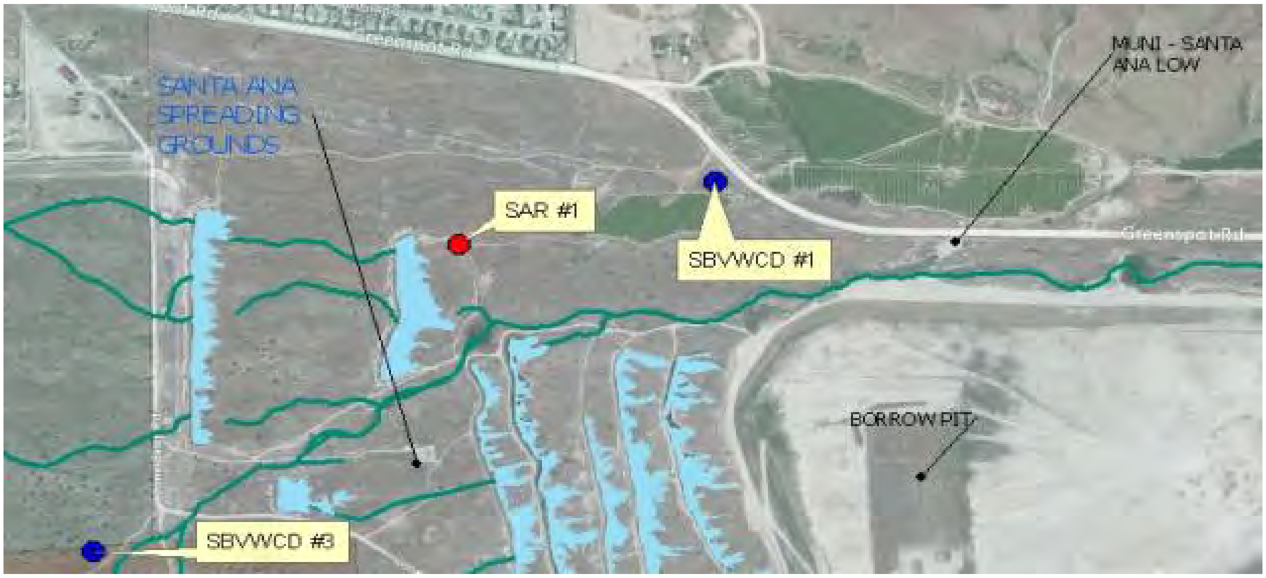


Map

Site Information

Property	Value
Well Name	SBVWCD #4
Latitude	34°5'57.826"N
Longitude	117°9'26.14"W
Depth to Water	AVG. 149.70’
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	Photo of the well taken facing West

SAR #1



Map

Site Information

Property	Value
Well Name	SAR #1
Latitude	34°6'15.631"N
Longitude	117°7'57.173"W
Depth to Water	AVG. 195.60'
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	Photo of the well taken facing West

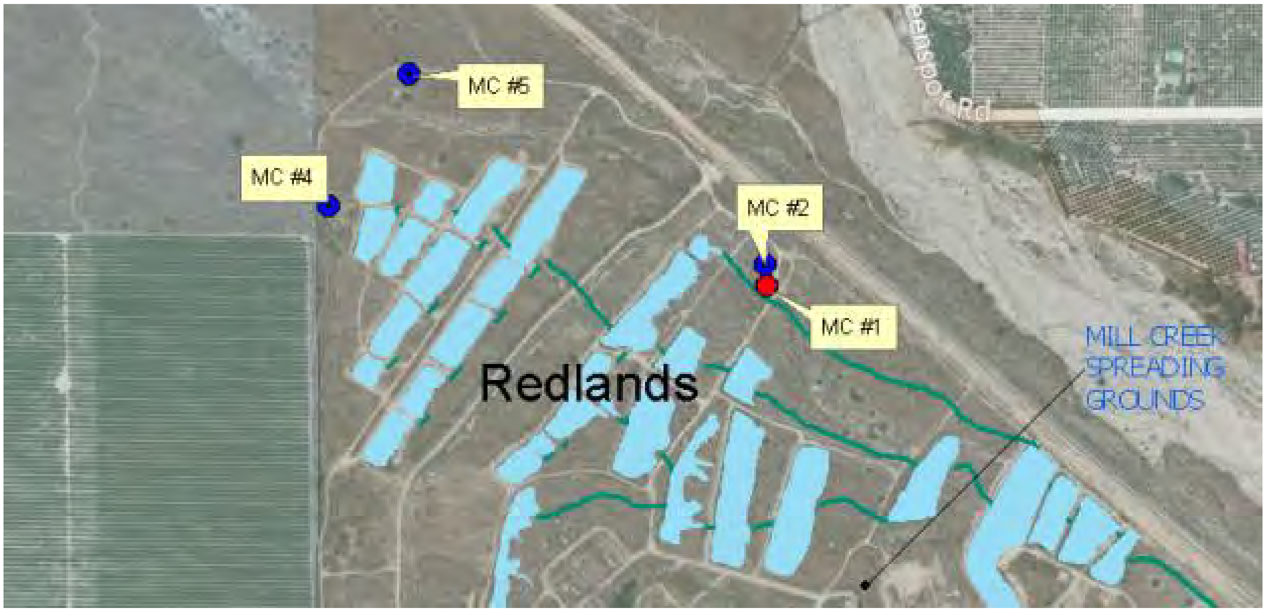
SAR #2

Map

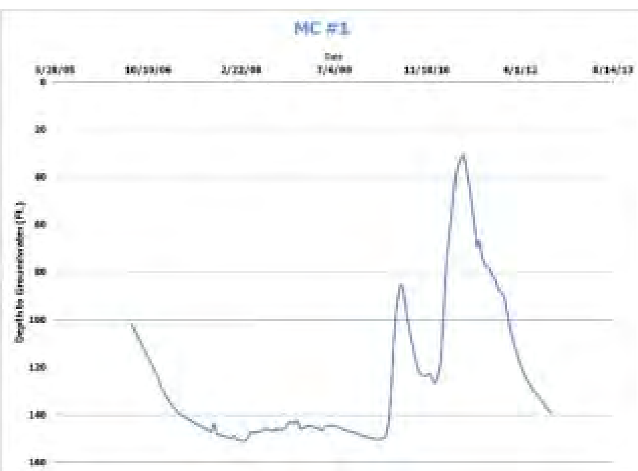
Site Information

Property	Value
Well Name	SAR #2
Latitude	34°5'33.951"N
Longitude	117°9'14.768"W
Depth to Water	AVG. 180.69’
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	Photo of the well taken facing SW

MC #1



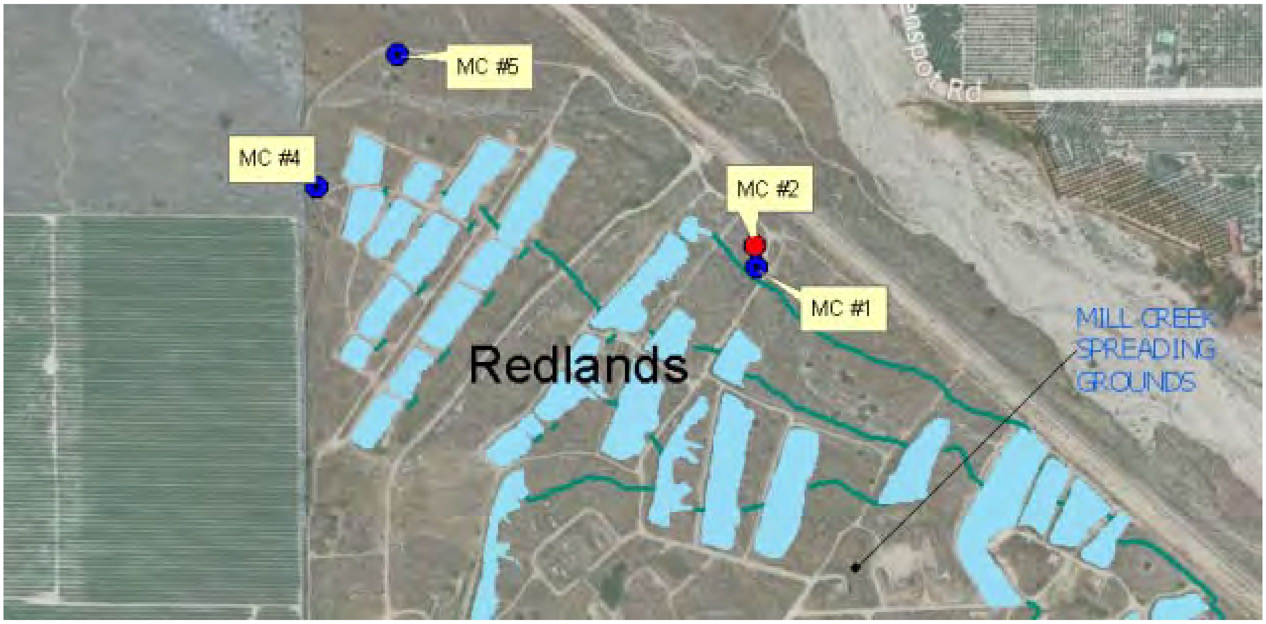
Map



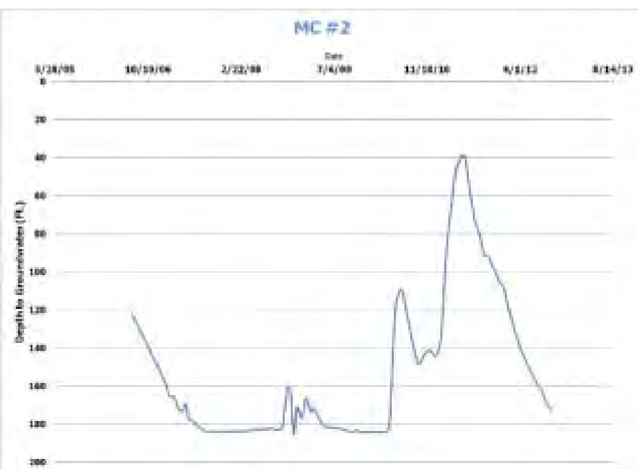
Site Information

Property	Value
Well Name	MC #1
Latitude	34°5'1.649"N
Longitude	117°6'53.634"W
Depth to Water	AVG. 123.40’
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	Picture facing West

MC #2



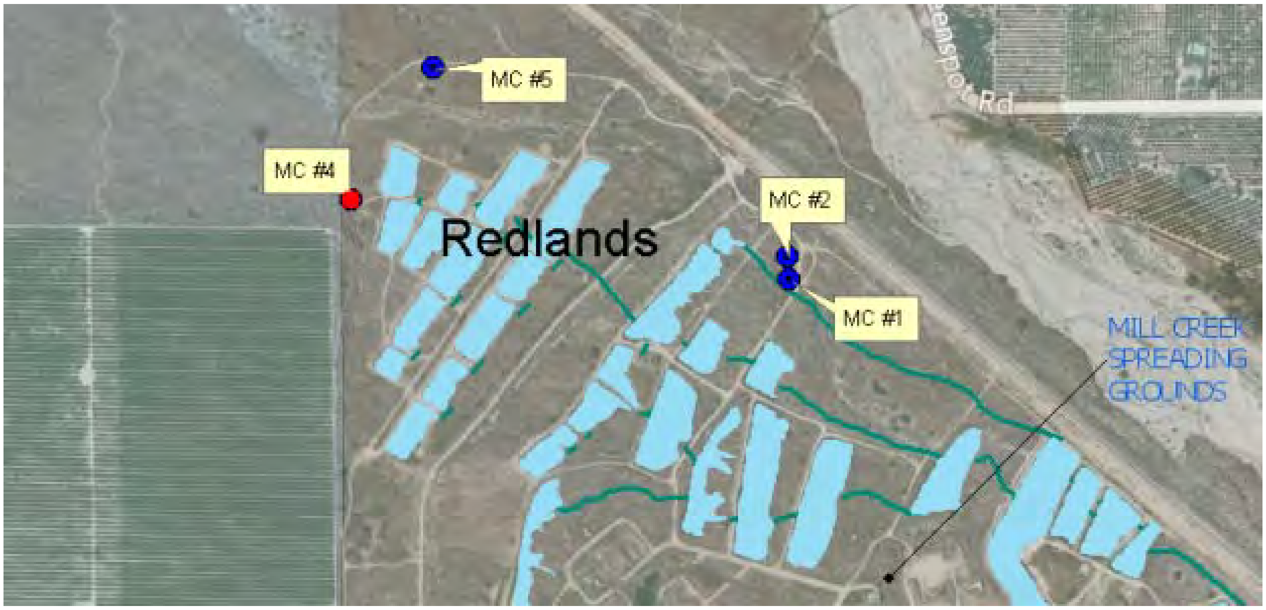
Map



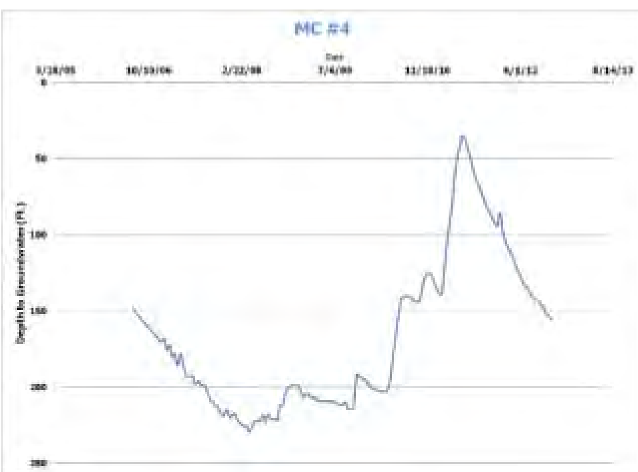
Site Information

Property	Value
Well Name	MC #2
Latitude	34°5'2.555"N
Longitude	117°6'53.745"W
Depth to Water	AVG. 150.61'
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	#2 painted on footing

MC #4



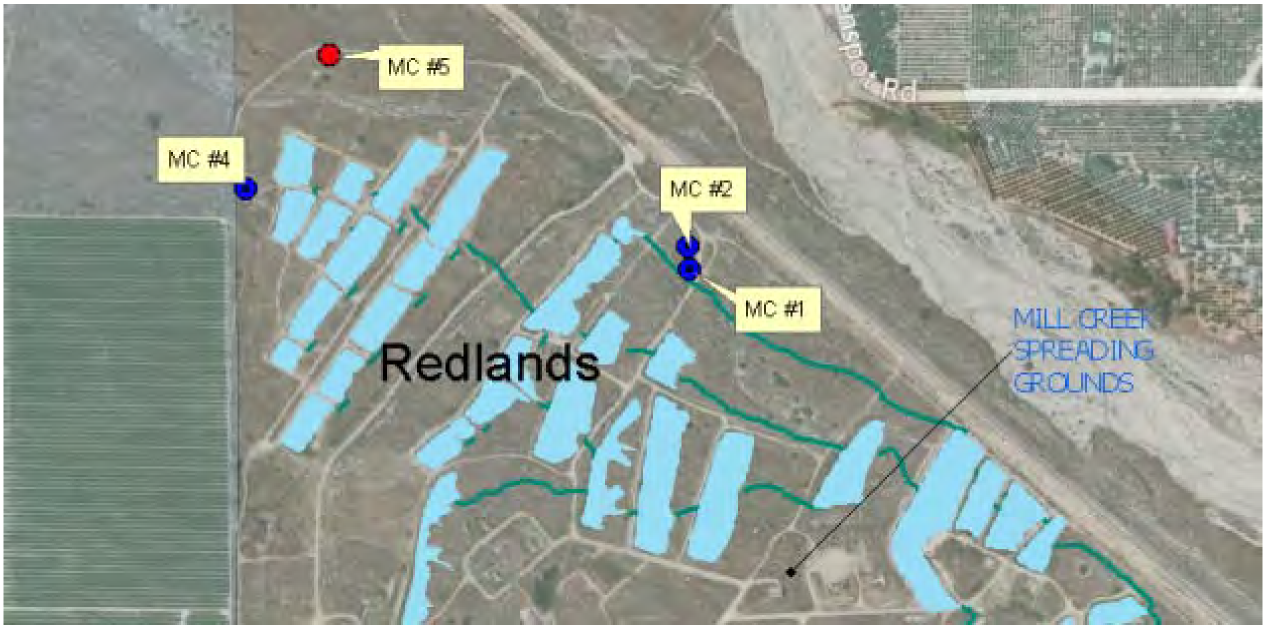
Map



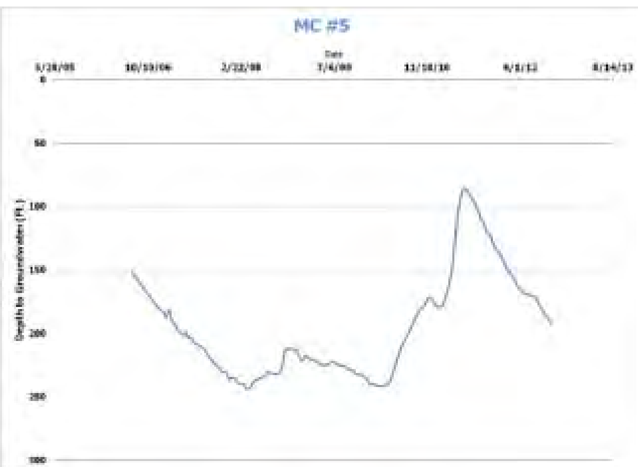
Site Information

Property	Value
Well Name	MC #4
Latitude	34°5'5.148"N
Longitude	117°7'15.672"W
Depth to Water	AVG. 164.62’
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	#4 painted on footing

MC #5



Map



Site Information

Property	Value
Well Name	MC #5
Latitude	34°5'10.703"N
Longitude	117°7'11.525"W
Depth to Water	AVG. 191.87’
Measurement Method	Well Sounder
Frequency of Measurement	Bi Monthly
Notes	Picture facing South

Appendix 15 Wash Plan Proposed Land Use and Proposed Ownership

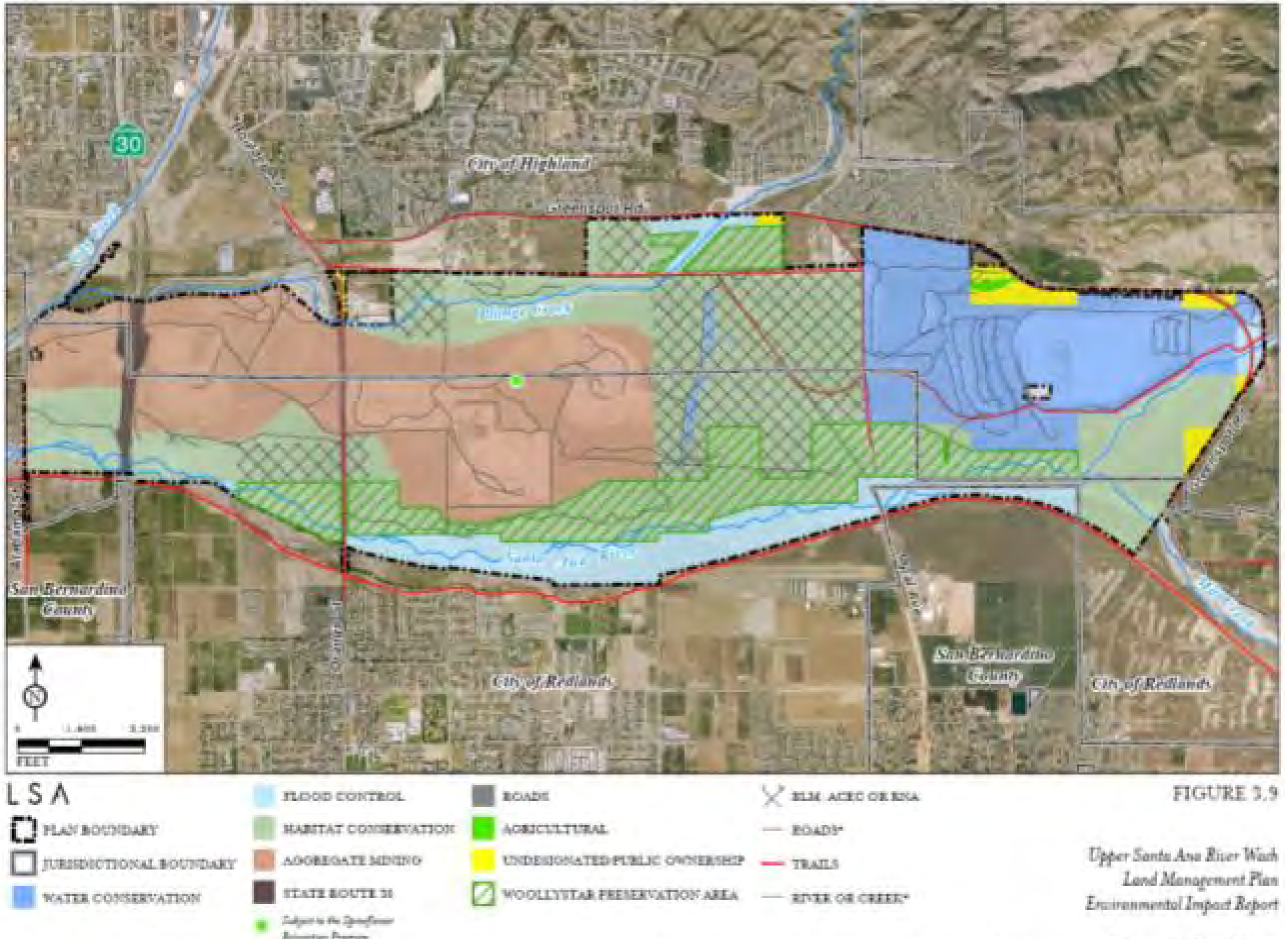


FIGURE 3.9

Upper Santa Ana River Wash Land Management Plan Environmental Impact Report

Proposed Land Uses

SOURCES: Thomas Bros. 2001, San Bernardino Valley Water Conservation District, Dudek, Santa Ana Watershed Project Authority, AirPhotoUSA, 2007.

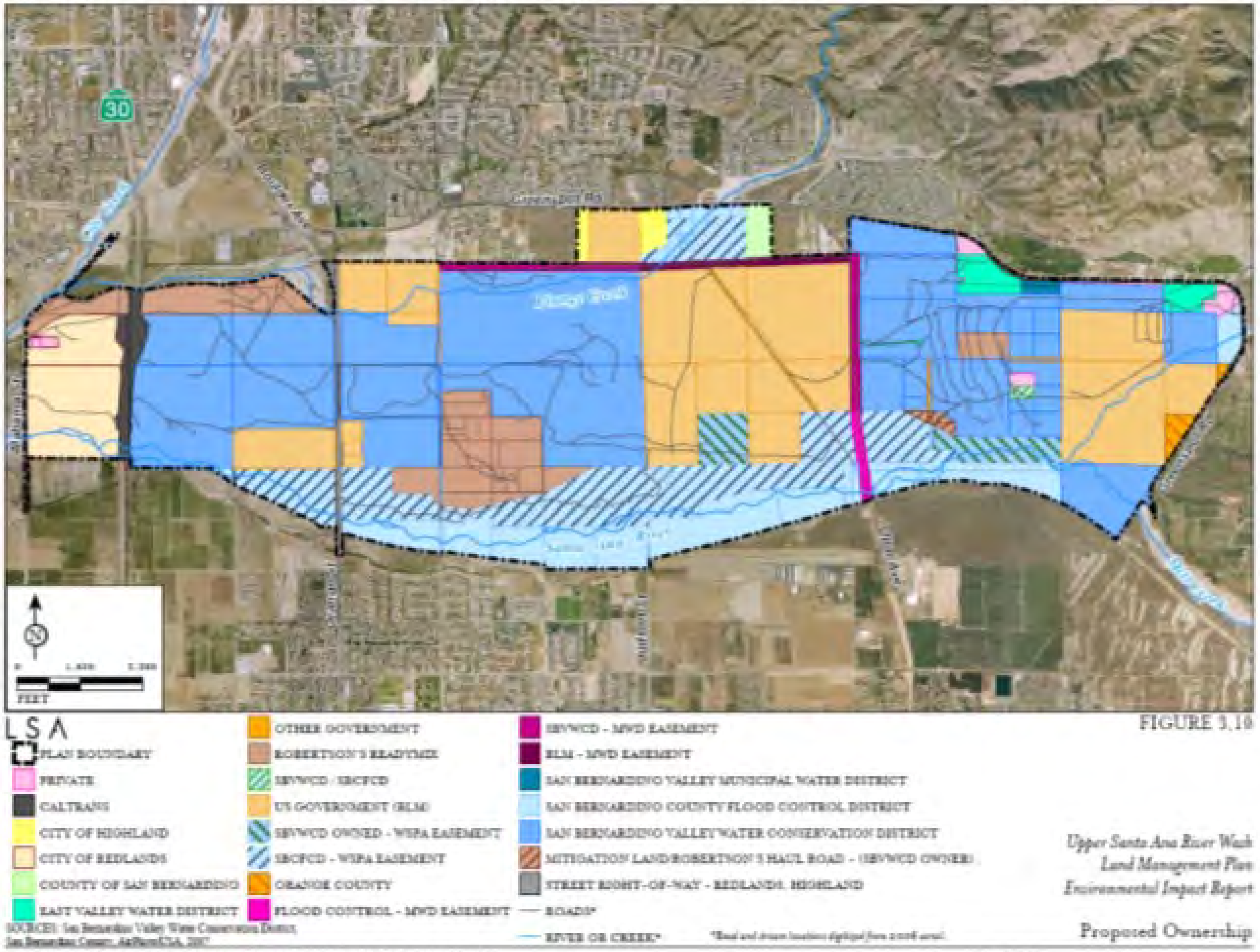


FIGURE 3.10

Upper Santa Ana River Wash Land Management Plan Environmental Impact Report

Proposed Ownership

Appendix 16 Santa Ana River Optimization Study Executive Summary

Santa Ana River Recharge Optimization Study
Executive Summary

The San Bernardino Valley Water Conservation District, in association with the San Bernardino Valley Municipal Water District retained MWH Americas, Inc., in association with GEI Consultants, to complete the Santa Ana River Groundwater Recharge Optimization Study. The purpose of the study was to evaluate the Conservation District's recharge facilities adjacent to the Santa Ana River to assess the current capabilities of the diversion, conveyance, and recharge facilities. A further goal was to determine what improvements, if any, would be required to achieve the proposed spreading objectives identified in the Upper Santa Ana River Watershed Integrated Regional Water Management Plan (IRWMP). The maximum yearly volume identified in the IRWMP is 80,000 acre-feet. The maximum instantaneous flow rate, as defined by the Districts based on the Environmental Impact Report for the Santa Ana River Water Right Applications for Supplemental Water Supply, is 500 cubic feet per second (cfs).

The project began in April of 2008. Initial work involved a review of pertinent historical information and reports, preparation of a work plan for collection of field data. Collection of field data consisted of:

- Field flow testing of the diversion and conveyance facilities
- Survey of diversion works and conveyance (measurements of dimensions and slopes)
- Soil investigation consisting of:
  - Excavation of 15 trenches
  - Collection of 72 surface soil samples
  - Drilling and sampling of 7 borings to a maximum depth of 157 feet
  - Laboratory analysis of 75 samples for grain size and hydraulic conductivity
- Construction of 6 monitoring wells and installation of automated monitoring equipment
- Several types of percolation tests at existing recharge ponds
- Physical surveys of existing well locations and elevations

Analysis of these data indicates the following:

- The sedimentary materials underlying the recharge facilities form an unconfined aquifer consisting of permeable, coarse, sandy gravel and/or gravelly sand. No significant, laterally-continuous strata of low permeability are present that would prevent the downward percolation of recharge water.
- Some existing ponds have a thin layer of silt and/or clay derived from the introduction of turbid recharge water which limits percolation capacity.
- Faulting associated with the San Andreas Fault Zone has created a groundwater barrier which limits recharge capacity on the eastern portion of the site, causing shallow groundwater that surfaces or "daylights" east (upgradient) of this barrier.
- During high runoff periods such as those that occurred in 1980, 1993, 1998 and 2005, the regional area in the vicinity of the recharge facilities may become saturated with shallow groundwater, limiting recharge in all of the facilities. However, these events have been very temporary, and may occur at a different frequency depending on the operation of the Seven Oaks Dam.
- The current intake capacity of the Intake Structure without modification is approximately 150 cfs.
- Downstream of the Intake Structure and Cuttle Weir, earthen canals limit the capacity of the conveyance facilities to approximately 300 cfs.
- The recharge capacity of the existing percolation ponds at the SAR recharge facility west of the groundwater barrier is approximately 145 cfs. With additional capacity of 50 cfs in the eastern portion of the Borrow Pit, the total estimated recharge capacity of existing facilities is 195 cfs.

- The yearly recharge goal of 80,000 acre-feet identified in the IRWMP is possible with the construction of new infiltration, diversion, and conveyance facilities, assuming ambient groundwater levels are approximately 200 feet below ground level west of the barrier to accept this water. Groundwater mounding (whereby the water table rises to the ground surface) may to occur if a percolation rate of 500 cfs is sustained for greater than approximately one month.

The final report for the study was completed in June of 2009. The report provides recommendations for improvement of existing facilities, conceptual design of physical improvements to new facilities, and maintenance and operational methods to increase capacity, thereby meeting the recharge goals defined in the IRWMP. The cost for new improvements to increase the capacity of the recharge facilities to a flow rate of 300 and 500 cfs was estimated at $ 3.6 and $9.8 million dollars, respectively.

The MWH team consisted of approximately 10 geologists, engineers, and other specialists. Expert review of the recommendations and conclusions of the study was provided by an outside technical expert. The Santa Ana River Groundwater Recharge Optimization Study was completed on schedule and under budget.

APPENDIX B

CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

December 10, 2014

Shay Lawrey, President
Jericho Systems, Inc.
28495 Deadwood Court
Redlands, CA 92373

Re: Cultural Resources Records Search and Native American Consultation
Mill Creek Water Conservation Facilities Project Initial Study
San Bernardino Valley Water Conservation District
San Bernardino County, California
CRM TECH Contract No. 2863

Dear Ms. Lawrey:

At your request, CRM TECH completed a cultural resources records search and Native American consultation for the project referenced above. These research procedures are focused on the area covered by the Mill Creek Water Conservation Facilities Project Initial Study (Jericho Systems 2014), which encompasses approximately 426 acres of rural land at the mouth of Mill Creek Canyon, in Sections 16, 17, 20, and 21 of T1S R2W, San Bernardino Baseline and Meridian (Fig. 1).

As a part of the initial study, the records search and Native American consultation were conducted under provisions of the California Environmental Quality Act (CEQA; PRC §21000, et seq.). The purpose of the research is to identify any known "historical resources," as defined by CEQA, or potential "historical resources" that may be affected by the project. This letter presents a summary of the methods, results, and final conclusion of the research.

Records Search

The records search for this study was conducted on November 3, 2014, by CRM TECH archaeologist Nina Gallardo, B.A., at the Archaeological Information Center (AIC), San Bernardino County Museum, Redlands. During the records search, Gallardo examined maps and records on file at the AIC for previously identified historical/archaeological resources in or near the study area and existing cultural resources reports pertaining to the vicinity. Previously identified historical/ archaeological resources include properties designated as California Historical Landmarks, Points of Historical Interest, or San Bernardino County Historical Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

The results of the records search indicate that at least 13 previous cultural resources studies have included portions of the study area, but the study area as a whole does not appear to have been surveyed systematically in the past. Outside of the study area but within a one-mile radius, AIC records show more than 30 other previous studies involving various tracts of land and linear features, in all covering about 40-45% of the area within the scope of the records search. As a result of these

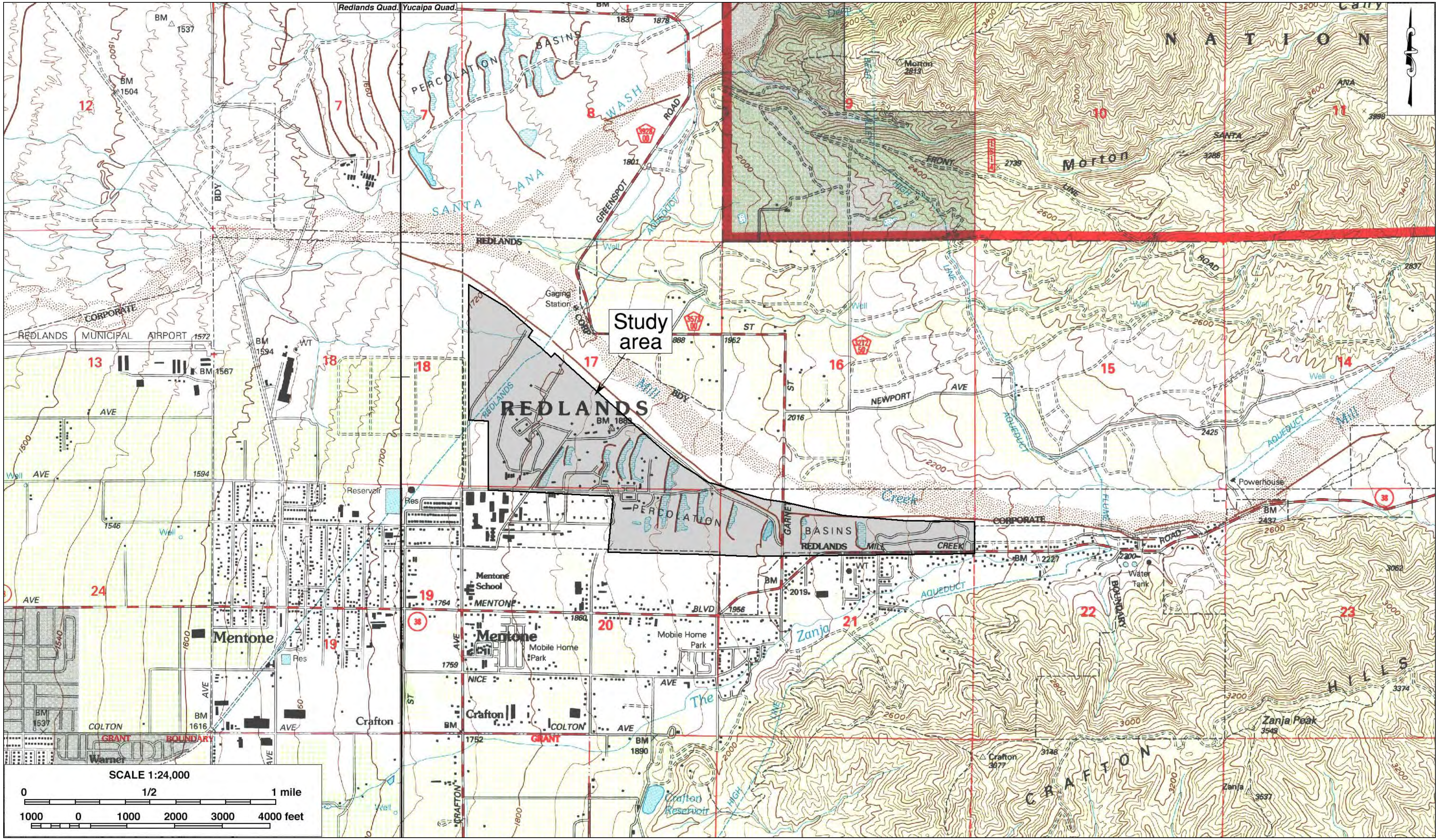


Figure 1. Study area. (Based on USGS Yucaipa, Calif., 1:24,000 quadrangle, 1988 edition)

and other similar studies in the vicinity, one prehistoric–i.e., Native American–site and 53 historic-period sites, including two "pending" sites, have been recorded within the one-mile scope of the records search.

The prehistoric site (36-021109) consisted of a single grinding slick on a granite boulder, recorded a short distance outside the northwestern project area boundary. The historic-period sites were mostly described as irrigation features, roads, and refuse deposits. Among them, 26 were recorded as lying within or partially within the boundaries of the study area. The contents of these sites were consistent to the 53 historic-period sites in general, and the vast majority of them, accounting for 21 of the 26, represented various features associated with the numerous irrigation works along Mill Creek, such as segments of canals and pipelines. These 26 sites are listed below:

Site Number	Description
36-005981	Small household trash scatter
36-008546	Concrete and cobblestone weir box on the Bear Valley Canal, ca. 1877
36-013549	Small section of the Redlands Canal, ca. 1884
36-013550	Concrete pipeline segment, 15" diameter, 85' in length
36-013551	Red ceramic pipeline segment, 151' in length
36-013552	Metal pipeline segment, 36" diameter, 8' in length
36-013553	Concrete water channel and basin
36-013554	Four metal pipeline segments, 12"-36" diameter, 6-16' in length
36-013555	Concrete water channel measuring 8'x7'x1" in size
36-013556	Metal pipe, 18" diameter, 5.5' in length
36-013557	Historic-era can scatter
36-013558	Metal pipe, 18" diameter
36-013559	Four metal pipeline segments
36-013560	Metal pipeline segment, 48" diameter, 22.5' in length
36-013561	Modern household trash dump
36-013564	Metal pipeline segment, 30" diameter, 26.5' in length
36-013565	Metal pipeline segment, 16" diameter, 12' in length.
36-013566	Cobblestone and concrete wall with embedded pipeline segment, 6" diameter
36-013567	Two metal pipeline segments, 12" diameter, 27' and 120' in length
36-013568	Metal pipeline segment, 16" diameter, 4' in length
36-013569	Brick and mortar water conveyance feature with concrete pipelines
36-013570	Concrete water channel and basin
36-013575	Three adjacent metal pipes with rivets, 24" diameter, 20' in length
36-013576	Metal pipeline segment, 12" diameter, 7' in length
36-021713	Small concrete and stone culvert under Garnet Avenue
36-024025	Garnet Avenue

Twenty-three of these sites were recorded or re-recorded during a 2008 survey covering several alternative routes for the "East Branch Extension," a state water project to connect the San Bernardino Valley Water Conservation District's Foothill Pipeline to the Crafton Hills Pump Station (Schmid and Offerman 2008:i). None of these sites was evaluated for historic significance during the 2008 study (*ibid.*:ii). Subsequently, 10 of these sites were evaluated during a second study for that project in 2010, which concluded that Sites 36-013554 through 36-013561 were not eligible for any historical designation, while 36-008546 and 36-013549 were ineligible for the National Register of Historic Places but eligible for the California Register of Historical Resources with a local level of significance, due to their association with early development in the Redlands area (Marken 2010:51-52). These two sites, therefore, qualify as "historical resources" under CEQA guidelines.

Of the other three sites, 36-005981 represented a refuse scatter in the Mill Creek Wash that was first recorded in 1987 but apparently no longer existed by 2010 (Hampson et al. 1987:1; Cotterman and Mason 2010:1), while Sites 36-021713 and 36-024025 were both features associated with Garnet Avenue (Cotterman 2010:1; Lev-Tov 2011:1). None of these three sites appears to have been evaluated for historic significance.

Native American Consultation

On November 3, 2014, CRM TECH submitted a written request to the State of California's Native American Heritage Commission for a records search in the commission's Sacred Lands File. In response, the commission states in a letter dated November 17 that the Sacred Lands File revealed no Native American cultural resources with the study area, but recommends that local Native American groups be contacted for further information. For that purpose, the commission provided a list of potential contacts in the region (see App. 1). Upon receiving the commission's reply, on November 18 CRM TECH sent written requests for comments to all seven individuals on the referral list and the tribal organizations they represent (see App. 1). As of this time, none of tribal representatives has responded.

Summary and Conclusion

Based on the records search results, the most likely historical/archaeological sites to be encountered within the study area are features associated with the many early irrigation works in the vicinity. In past studies, 21 of sites of this nature have been identified within the study area, two of which, 36-008546 and 36-013549, both of them components of important local irrigation canals, have been found to meet CEQA definition of "historical resources." Eight of the 26 sites previously recorded in the study area have been determined not to qualify as "historical resources" under CEQA, while the other 16 sites are yet to be evaluated.

Based on these findings, the study area should be considered archaeologically sensitive, especially for historic-period features related to early irrigation works. Therefore, CRM TECH presents the following recommendations to you and the San Bernardino Valley Water Conservation District:

- Future projects in the study area should avoid any impacts on Sites 36-008546 and 36-013549 that may compromise their historic significance or integrity, or require proper mitigation for such impacts if they cannot be avoided.
- When the specific scope of a project in the study area is established, the area involved should be treated with a standard Phase I, project-level historical/archaeological resources assessment, including an intensive-level field survey. Any historical/archaeological resources identified in the project area will need to be evaluated under provisions of the appropriate federal or state statutes and regulations if such evaluations have not been completed previously.

- If buried cultural materials are encountered during any earth-moving operations within the study area, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

Thank you for this opportunity to be of service.

Sincerely,

Bai "Tom" Tang, M.A.
Principal, CRM TECH

References:

Cotterman, Cary
2010 California Historical Resources Inventory site record, 36-021713. On file, Archaeological Information Center, San Bernardino County Museum, Redlands.

Cotterman, Cary, and Roger D. Mason
2010 California Historical Resources Inventory site record update, 36-005981. On file, Archaeological Information Center, San Bernardino County Museum, Redlands.

Hampson, R. Paul, Roderick S. Brown, and Margaret A. Doyle
1987 California Historical Resources Inventory site record, 36-005981. On file, Archaeological Information Center, San Bernardino County Museum, Redlands.

Jericho Systems, Inc.
2014 Initial Study for the Operations and Maintenance of Water Conservation Facilities (draft). Prepared for the San Bernardino Valley Water Conservation District, Redlands.

Lev-Tov, J.
2011 California Historical Resources Inventory site record, 36-024025. On file, Archaeological Information Center, San Bernardino County Museum, Redlands.

Marken, Mitchell
2010 East Branch Extension Phase II Project, Extended Phase Archaeological Survey and Assessment. On file, Archaeological Information Center, San Bernardino County Museum, Redlands.

Schmid, Tiffany A., and Janis K. Offerman
2008 East Branch Extension Phase II Archaeological Survey Report, San Bernardino County, California. On file, Archaeological Information Center, San Bernardino County Museum, Redlands.

APPENDIX 1

CORRESPONDENCE WITH NATIVE AMERICAN REPRESENTATIVES*

* A total of seven local Native American representatives were contacted; a sample letter is included in this report.

SACRED LANDS FILE & NATIVE AMERICAN CONTACTS LIST REQUEST

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Project: Mill Creek Spreading RS (CRM TECH Contract No. 2863)

County: San Bernardino

USGS Quadrangle Name: Yucaipa, Calif.

Township 1 South **Range** 2 West SB **BM; Section(s)** 16, 17, 20 and 21

Company/Firm/Agency: CRM TECH

Contact Person: Nina Gallardo

Street Address: 1016 E. Cooley Drive, Suite A/B

City: Colton, CA **Zip:** 92324

Phone: (909) 824-6400 **Fax:** (909) 824-6405

Email: Ngallardo@crmtech.us

Project Description: The project entails the maintenance of, and improvements to, the existing Mill Creek Spreading Basins

November 3, 2014

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

November 17, 2014

Nina Gallardo
CRM TECH
1016 E. Cooley Drive, Ste A/B
Colton, CA 92324

RE: Mill Creeks Spreading RS (CRM TECH Contract No. 2863, San Bernardino County, 2 pages
FAX: 909-824-6405

Ms. Gallardo,

Government Code §65352.3 requires local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of protecting, and/or mitigating impacts to cultural places in creating or amending general plans, including specific plans. Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above project.

As a part of consultation, the NAHC recommends that local governments conduct record searches through the NAHC and California Historic Resources Information System (CHRIS) to determine if any cultural places are located within the area(s) affected by the proposed action. A *Sacred Lands File* search was completed with negative results. Local governments should be aware that records maintained by the NAHC and CHRIS are not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a cultural place.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: Katy.Sanchez@nahc.ca.gov.

Sincerely,

Katie Wearton fo
Katy Sanchez
Associate Government Program Analyst

cc: State Clearinghouse

Native American Contacts
San Bernardino County
November 14, 2014

San Manuel Band of Mission Indians
Lynn Valbuena, Chairwoman
26569 Community Center — Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 Fax
(909) 864-3370 Fax

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad — Cahuilla
Banning , CA 92220 — Serrano
(951) 849-8807
(951) 755-5200
(951) 922-8146 Fax

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838 — Fernandeño
Newhall , CA 91322 — Tataviam
tsen2u@hotmail.com — Serrano
(661) 753-9833 Office — Vanyume
(760) 885-0955 Cell — Kitanemuk
(760) 949-1604 Fax

Serrano Nation of Mission Indians
Goldie Walker, Chairwoman
P.O. Box 343 — Serrano
Patton , CA 92369
(909) 528-9027
(909) 528-9032

Morongo Band of Mission Indians
William Madrigal, Jr.,Cultural Resources Manager
12700 Pumarra Road — Cahuilla
Banning , CA 92220 — Serrano
wmadrigal@morongo-nsn.gov
(951) 201-1866 Cell
(951) 572-6004 Fax

Ernest H. Siva
Morongo Band of Mission Indians Tribal Elder
9570 Mias Canyon Road — Serrano
Banning , CA 92220 — Cahuilla
siva@dishmail.net
(951) 849-4676

San Manuel Band of Mission Indians
Daniel McCarthy, M.S.., Director-CRM Dept.
26569 Community Center Drive — Serrano
Highland , CA 92346
dmccarthy@sanmanuel-nsn.gov
(909) 864-8933 Ext 3248
(909) 862-5152 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Mill Creek Spreading RS (CRM TECH Contract No. 2863) San Bernardino County.

November 18, 2014

William Madrigal, Jr., Cultural Heritage Program Coordinator
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, CA 92220

RE: Mill Creek Spreading Basins Project
Approximately 426 Acres near the Community of Mentone
San Bernardino County, California
CRM TECH Contract #2863

Dear Mr. Madrigal:

The San Bernardino Valley Water Conservation District is planning on maintenance and improvement work on the existing Mill Creek Spreading Basins near the community of Mentone, San Bernardino County, California. The project area encompasses approximately 426 acres of land located south of the San Bernardino County Flood Control Channel and east of Crafton Avenue. Most of the proposed maintenance and improvement activities will be to existing basins, access roads, and other facilities. The accompanying map, based on the USGS Redlands and Yucaipa, Calif., 7.5' quadrangles, depict the location of the project area in Sections 16, 17, 20, and 21, T1S R2W, SBBM. CRM TECH has been hired to conduct a cultural resource study, including the Native American scoping, for this project.

In a letter dated November 17, 2014, the Native American Heritage Commission reports that the sacred lands record search identified no Native American cultural resources within the project area, but recommends that local Native American groups be contacted for further information. Therefore, as part of the cultural resources study, I am writing to request your input on potential Native American cultural resources in or near the project area.

According to records on file at the San Bernardino Archaeological Information Center, there are 26 known historic-period sites within or partially within the boundaries of the project area, consisting mainly of canals, pipelines, and refuse scatters. Outside of the project area but within a one-mile radius, records indicate that one prehistoric site has been recorded, consisting of a bedrock milling feature. Additionally, 27 other historic-period sites have also been recorded, including roads, canals, refuse scatters, and a railroad alignment.

Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional cultural value within or near the project area that need to be taken into consideration as part of the cultural resources investigation. Any information or concerns may be forwarded to CRM TECH by telephone, e-mail, facsimile, or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and/or the lead agency, which is the San Bernardino Valley Water Conservation District for CEQA-compliance purposes. We would also like to clarify that CRM TECH, as the cultural resources consultant for the project, is not the appropriate entity to initiate government-to-government consultations. Thank you for the time and effort in addressing this important matter.

Respectfully,

Nina Gallardo, CRM TECH
Email: ngallardo@crmtech.us

Encl.: project area map